Content

Zhengzhou Sessika Industry Co.,Ltd.

Chapter I General Description

I. Product characteristics

Sessika air conditioning system is composed of the cooling system and electric control system: the cooling system is made up of evaporator, condenser, compressor, and system high-pressure and low-pressure pipelines etc., while the electric control system is made up of the controller, harness, electric control box, sensors and compressor clutch.

The controller as mounted in Sessika air conditioning, designed with intelligent digital control techniques, is provided with stable performance and easy operation, to equip the conditioner with following features:

1、**Memory function:** after the conditioner is started, the system will run at the previously set temperature.

2、**Adjustable air volume:** the air volume can be preset as desired to effectively prolong the service life of the blower.

3、**Fresh air function:** to supplement the cabin with fresh air, so as to improve the inside air quality and create a comfortable space.

4、**Fan mode:** if the cooling function is deactivated, the conditioner will run as a ventilator.

5、**Compressor protection:** the pressure switch can ensure that the air conditioner works within the normal pressure range to protect the system safety effectively; the startup delay can avoid any damages caused by frequent starts of the compressor.

II. Precautious particulars in operation

1、Before shutting down the engine, the air conditioner must be turned off.

2、If the air conditioner gives fault warning, please record the warning information, and promptly contact the after service department or the special service station of Sessika Company to facilitate the rapid removal of such faults.

3、When the conditioner is running, it is not allowed to touch the system's moving parts (fan, belt, pulley etc.); If the operation is stopped, do not touch the compressor, high-pressure pipe and other high-temperature parts immediately to avoid scalds.

4、The electric parts of conditioner shall not work when they are wet.

5、Never have the conditioner serviced by anybody other than the after serviceman of Sessika Company, to avoid the occurrence of other accidents.

6、When the conditioner is running, at least 7-8 air vents shall be opened; otherwise, the evaporator is liable to be frosted or to produce condensate water owing to the failure of discharge of cool air.

7、During the working course, if any abnormal vibration, noise or smell gives off, the conditioner shall be shut down immediately for inspection.

8、During the service period of conditioner, the dust screen in the air return grille shall be cleaned once every month; otherwise, it will influence the cooling effects of the conditioner.

9、In off season for the use of conditioner, the system shall be operated once for 15 minutes every month.

III. Comfortable use

1、When the bus is parked in summer, the direct exposure to the sunshine shall be avoided as much as possible.

2、During the operation of air conditioner, please close the inside doors and windows as well as the ventilating devices.

3、Preset a suitable temperature, preferably 25℃ or so.

4、If the inside air is dirty, activate the fresh air function to ventilate the bus.

5、Carry out routine maintenance as required in the user manual.

IV. Notices in service for clients

1、To protect your legal rights, please fill in Return Receipt for Sessika Air Conditioner Users in details, and mail it to the after service department of Sessika Company who will establish the user files for you.

2、If the conditioner needs repairs, please contact the after service department or the service station of Sessika Company.

3、We will not be responsible for any negative effects caused by the operation violating the requirements in the user manual.

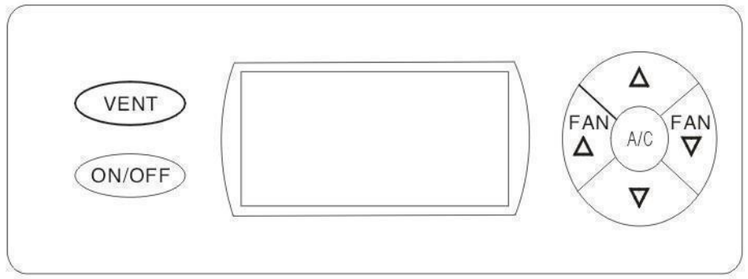
4、The Sessika air conditioner's model mark is provided at the air return vent and the compressor.

Bear in mind!

If you dismantle and repair the air conditioner without approval or have this done by anybody other than Sessika Company's special service station, any problem as resulted will not be covered in the warranty!

Chapter II Operation of Non-independent Overhead Air Conditioner

I. Operation of air conditioners equipped with KFS28A-074F1 manipulators



Instruction on function and operation of buttons

1、The air conditioner will start to cool down the cabin only when the inside temperature is higher than the preset temperature.

2、The operation mode of the air conditioning system will be shown on the controller's display screen in the form of letters and icons.

3、After the cooling operator is stopped, the compressor can only start to work again after waiting for one minute.

Startup of air conditioner: after the engine is started, the controller will indicate the inside temperature. By pressing down ON/OFF, the air conditioning system will start to work. To ensure the stable transition of the load of main generator, the conditioner will work in the preset working modes: the preset temperature is the value at which the previous shutoff is made, the evaporator blower speed is set to "High Speed", the air conditioner set to "Cooling" and the fresh air to "Cycling air", and the conditioner will be started in **delay in the following sequence:** evaporator blower low speed ? middle speed ? high speed ? condensator blower. Within several seconds after the conditioner system is started, other control buttons will remain locked; thereafter, the working mode can be adjusted within your discretion

Temperature setting: Press down "▲" or "▼", and you can preset your desired temperature within 15℃～32℃; afterwards, the digitals will flash to show the preset temperature for 10s, and then the inside ambient temperature will be restored.

Air speed setting: Press down "Air speed ▲" or "Air speed ▼", you can select the high, middle and low air speed as desired by you.

Fresh air switch: when the fresh air door is closed, press down "Fresh air" and the door will be opened; if the door is open, press down "Fresh air", and the door will be closed. After the door is opened, the air conditioner will supply fresh air into the cabin from outside.

Fan mode: If in the cabin not the cooling but the ventilation is needed, press down "A/C"; if the cooling is needed, press down "A/C" again.

Mandatory cooling: hold "▲" and "▼" at the same time for 2 seconds, and the system will enter into the mandatory cooling mode, with "PLC" indicated where the temperature is normally indicated. Press down "A/C" "▲" or "▼", the mandatory cooling mode will be cancelled to restore the normal operation.

Notice: This function is mainly used when the air conditioner is serviced in the downtime or when the cooling medium is filled in the system when the ambient temperature is low.

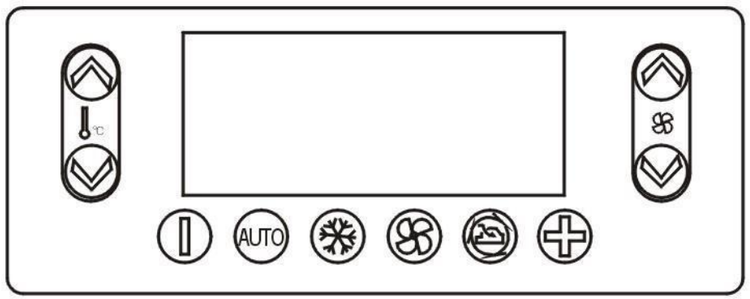
Shutoff of air conditioner: when the air conditioner is running, press down "ON/OFF", and the whole system will stop working, with the controller only indicating the temperature inside the cabin.

Special hint:

1、After the engine is started, the conditioner can be only turned on after the engine runs stably; prior to engine shutoff, the conditioner must be stopped.

2、If the air conditioner gives fault warning, please record the warning information, and promptly contact the after service department or the special service station of Sessika Company to facilitate the rapid removal of such faults.

II. Operation of air conditioners equipped with KFD28K-074E FFDD08-074A1 controller



1、The air conditioner will start to cool down the cabin only when the inside temperature is higher than the preset temperature.

2、The operation mode of the air conditioning system will be shown on the controller's display screen in the form of icons.

3、After the cooling operator is stopped, the compressor can only start to work again after waiting for one minute.

Instructions on functions and operation of buttons

On/off:

Press down this switch, and the air conditioning system will be turned on or off. The buzzer's beep tone will remind you of the effective operation.

To ensure the stable transition of the load of main generator, the conditioner will work in the preset working modes: the preset temperature is the value at which the previous shutoff is made, the evaporator blower speed is set to "High Speed", the air conditioner set to "Cooling" and the fresh air to "Cycling air", and the conditioner will be started in delay in the following sequence: evaporator blower low speed→middle speed→high speed→ condensator blower. Within several seconds after the conditioner system is started, other control buttons will remain locked; thereafter, the working mode can be adjusted within your discretion.

Automatic cooling:

Used for the changeover into the automatic mode of the air conditioning system. After the system is started normally, press down this switch, and the system will enter into the automatic mode; in such a mode, it only requires the user to preset the temperature as desired, and thereafter, the system will regulate the working modes of the compressor and blower automatically to reach and maintain the preset temperature. Meanwhile, the display screen will indicate various working modes of the air conditioner, and the buzzer's beep tone will remind you of the effective operation.

Manual cooling:

Used for the changeover into the manual cooling mode of the air conditioning system. After the system is started normally, press down this switch, and the system will enter into the manual cooling mode; in such a mode, the user is required to regulate the air volume and preset the temperature by himself, and meanwhile, the display screen will indicate the cooling icon as well as various icons of working mode defined by the user. The buzzer's beep tone will remind you of the effective operation.

Fan mode:

Used for the changeover into the fan mode of the air conditioning system. After the system is started normally, press down this switch, and the system will stop cooling and change into the fan mode; in the fan mode, the user can adjust the air volume by himself, and the system will work with the air volume defined by the user, and the icons of various working modes, as defined by the user, will be indicated on the display screen. The buzzer's beep tone will remind you of the effective operation.

Fresh air switch:

Used for the activation and deactivation of the fresh air device of the air conditioning system. After the system is started normally, press down this switch in any working mode, and start the fresh air device to bring new air into the cabin. Meanwhile, the icon of fresh air in outside circulation will be indicated on the display screen, Press down the switch again to turn off the fresh air device, then the icon of fresh air in inside circulation will be indicated on the display screen. The buzzer's beep tone will remind you of the effective operation. When the air conditioning is in off status press key to start the fresh air function, press again to turn it off.

Routing inspection switch:

Used for the activation of the self-inspection mode of the air conditioning system. After the system is started normally, press down this button, and the system will enter into the self-inspection mode; meanwhile, the icons will be indicated in order on the display screen. To exit the self-inspection mode, press down any key. When the air conditioning is turned off, press this key to activate sterilizing function, keep people off during sterilization, press  again to exit sterilization.

Setting of temperature:

Used for the setting of temperature within a range of 15℃－32℃. Each time press down this button, and the preset temperature will go up or down by 1℃; if holding this button, the preset temperature will jump till the highest or lowest value is reached. The buzzer's beep tone will remind you of the effective operation.

Setting of air speed:

Used for the setting of high, middle and low air speeds, from high to low, or from low to high. In the automatic mode, the system will automatically decide the air speed by comparing the outside temperature with the inside one, without requiring the user to preset the speed. The buzzer's beep tone will remind you of the effective operation.

Mandatory cooling:

Hold the manual cooling button for at least 3s, and, upon hearing three beep tones from the controller, the system will enter into the mandatory cooling mode; at this moment, only the air speed is adjustable. To cancel the mandatory cooling, press down any control button other than “air speed” and “fresh air”.

This function is mainly used when the air conditioner is serviced in the downtime or when the cooling medium is filled in the system when the ambient temperature is low.

Special hint:

1、**After the engine is started, the conditioner can be only turned on after the engine runs stably; prior to engine shutoff, the conditioner must be stopped.**

2、**If the air conditioner gives fault warning, please record the warning information, and promptly contact the after service department or the special service station of SessikaCompany to facilitate the rapid removal of such faults.**

III. Operation of CAN air conditioning system equipped with FFDD06-074D1 controller

1、The air conditioner will start to cool down the cabin only when the inside temperature is higher than the preset temperature.

2、The operation mode of the air conditioning system will be shown on the controller's display screen in the form of icons.

3、After the cooling operator is stopped, the compressor can only start to work again after waiting for one minute.

Instructions on functions and operation of buttons

On/off: Press down this switch, and the air conditioning system will be turned on or off. The buzzer's beep tone will remind you of the effective operation.

To ensure the stable transition of the load of main generator, the conditioner will work in the preset working modes: the preset temperature is the value at which the previous shutoff is made, the evaporator blower speed is set to "High Speed", the air conditioner set to "Cooling" and the fresh air to "Cycling air" and the conditioner will be started in delay in the following sequence: evaporator blower low speed→middle speed→high speed→ condensator blower. Within several seconds after the conditioner system is started, other control buttons will remain locked; thereafter, the working mode can be adjusted within your discretion.

Automatic cooling

Used for the changeover into the automatic mode of the air conditioning system. After the system is started normally, press down this switch, and the system will enter into the automatic mode; in such a mode, it only requires the user to preset the temperature as desired, and thereafter, the system will regulate the working modes of the compressor and blower automatically to reach and maintain the preset temperature. Meanwhile, the display screen will indicate various working modes of the air conditioner, and the buzzer's beep tone will remind you of the effective operation.

Manual cooling:

Used for the changeover into the manual cooling mode of the air conditioning system. After the system is started normally, press down this switch, and the system will enter into the manual cooling mode; in such a mode, the user is required to regulate the air volume and preset the temperature by himself, and meanwhile, the display screen will indicate the cooling icon as well as various icons of working mode defined by the user. The buzzer's beep tone will remind you of the effective operation.

Fan mode:

Used for the changeover into the fan mode of the air conditioning system. After the system is started normally, press down this switch, and the system will stop cooling and change into the fan mode; in the fan mode, the user can adjust the air volume by himself, and the system will work with the air volume defined by the user, and the icons of various working modes, as defined by the user, will be indicated on the display screen. The buzzer's beep tone will remind you of the effective operation.

Fresh air switch:

Used for the activation and deactivation of the fresh air device of the air conditioning system. After the system is started normally, press down this switch in any working mode, and start the fresh air device to bring new air into the cabin. Meanwhile, the icon of fresh air in outside circulation will be indicated on the display screen, Press down the switch again to turn off the fresh air device, then the icon of fresh air in inside circulation will be indicated on the display screen. And the buzzer's beep tone will remind you of the effective operation. When the air conditioning is in off status press key to start the fresh air function, press again to turn it off.

Routing inspection switch:

Used for the activation of the self-inspection mode of the air conditioning system. After the system is started normally, press down this button, and the system will enter into the self-inspection mode; meanwhile, the icons will be indicated in order on the display screen. To exit the self-inspection mode, press down any key. When the air conditioning is turned off, press this key to activate sterilizing function, keep people off during sterilization, press again to exit sterilization.

Setting of temperature:

Used for the setting of temperature within a range of 15℃ – 32℃. Each time this button is pressed down, the preset temperature will go up or down by 1℃; if holding this button, the preset temperature will jump till the highest or lowest value is reached. The buzzer's beep tone will remind you of the effective operation.

Setting of air speed: Used for setting of air speed (near gale)

Used for the setting of high, middle and low air speeds, from high to low, or from low to high. In the automatic mode, the system will automatically decide the air speed by comparing the outside temperature with the inside one, without requiring the user to preset the speed. The buzzer's beep tone will remind you of the effective operation.

Mandatory cooling:

Hold the manual cooling button for at least 3 seconds, and, upon hearing three beep tones from the controller, the system will enter into the mandatory cooling mode; at this moment, only the air speed is adjustable. To cancel the mandatory cooling, press down any control button other than "air speed" and "fresh air".

This function is mainly used when the air conditioner is serviced in the downtime or when the cooling medium is filled in the system when the ambient temperature is low.

Instruction on functions of emergency switch on the electric control box

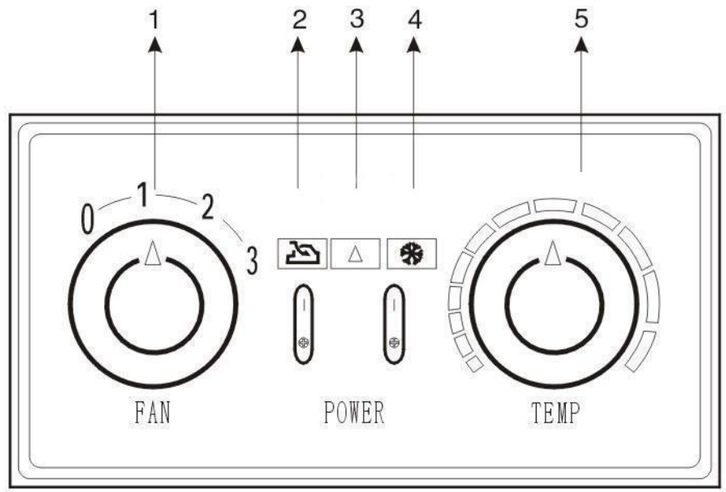
When the controller or communication has faults and there is "00" warning, press the emergency switch on the electric control box in the evaporator after which the corresponding indicator lamp shines (red), the system enters the emergency work state, the evaporation and condensator blowers run at high speed and the compressor is also working. When there is pressure fault, the compressor and condensor blower will stop working and will not resume until the pressure becomes normal.

Remark: at the normal work state, both the emergency switch and the corresponding indicator lamp (red) shall be off.

Special hint:

1、**After the engine is started, the conditioner can be only turned on after the engine runs stably; prior to engine shutoff, the conditioner must be stopped.**
2、**If the air conditioner gives fault warning, please record the warning information, and promptly contact the after service department or the special service station of SessikaCompany to facilitate the rapid removal of such faults.**

IV. Instruction on operation of knob FFDD01-074A panel



1、Air speed switch (high-speed, medium-speed, low-speed)
2、Fresh air swtich
3、Pressure fault indicator
4、Cooling swtich
5、Temperature setting knob (scope: 15~31℃)

Power supply and air volume knob

After the installation and electric connection are finished and the main power supply system and engine start to work, turn this switch to turn on or off the air conditioning system and adjust the air speed.

“0” indicates to turn off the control system.

“1” indicates to turn on the air conditioning system and make the evaporation blower run at a low speed.

“2” indicates to turn on the air conditioning system and make the evaporation blower run at a medium speed.

“3” indicates to turn on the air conditioning system and make the evaporation blower run at a high speed.

Temperature setting knob

Used for setting of the temperature.

The temperature can be set between 15℃ and 31℃. Turn this knob to make its arrowhead aim at corresponding value, and only such setting is valid.

Fresh air switch

Under the condition of operation, press this switch to open or close the fresh air.

“1” indicates to open the fresh air.

“0” indicates to close the fresh air

Cooling switch

Under the condition of operation, press this switch to open or close the cooling function.

“1” indicates that the machine is in the state of cooling.

“0” indicates that the machine is in the state of ventilation.

Fresh air indictor

“A” indicates that the fresh air is in the working state. If the location of A shines (green), the fresh air switch is turned on; if this location does not shine, the fresh air switch is turned off.

Pressure fault indicator

The location of A indicates of pressure fault of the system. If this location shines (red), the system has pressure fault.

Cooling indicator

The location of A indicates the working state of the compressor.

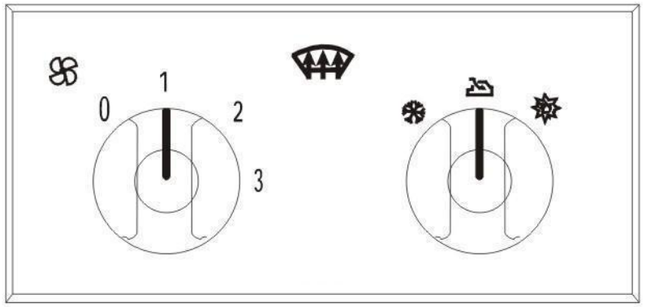
If the green lamp at the location of A shines, the compressor is started and the machine is in the cooling state; if the yellow lamp here shines, the machine is in the waiting state.

Special hint:

1、**After the engine is started, the conditioner can be only turned on after the engine runs stably; prior to engine shutoff, the conditioner must be stopped.**

2、**If the air conditioner gives fault warning, please record the warning information, and promptly contact the after service department or the special service station of SessikaCompany to facilitate the rapid removal of such faults.**

V. Operation of cab air conditioner equipped with CSQ1-074 controller

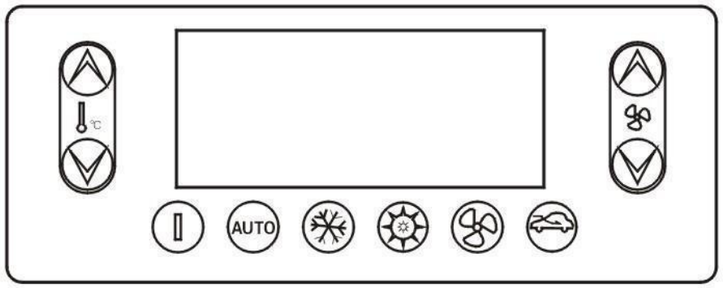


Heating and defrosting: under the condition that the main body of vehicle is being heated, turn the right-mode select switch rightwards, and turn the air volume switch to the suitable location to activate the heating and deforesting function.

Cooling and defrosting: firstly start the air conditioning system, then turn the mode select switch leftwards and finally turn the air volume switch to the suitable location to activate the cooling and defrosting function.

Ventilation: place the mode select switch in the middle, fix the necessary air volume and then the ventilation function can be activated.

VI.GZHD08-074B1 operation in double deck bus



On/off:

After finishing the connection of the main power supply and the engine, press down key, to control the start and stop of the air conditioning system, the buzzer's beep will confirm operation.

To ensure a stable transition of the main engine of the motor vehicle, the AC worked under the previously set working mode, the inside temperature set to be the set temperature in last operation, the evaporating fan motor set to be high speed, AC set to be cooling mode. Air damper set to be innerloop circulation. According to low mediumhigh speed sequence, the

condensing fan motor start by a delay. the within the first 5 s when the air conditioning start, the other control switch is in "locked" mode to protect the alternator of the motor vehicle in a stable transition

Automatic Cooling

key is used to switch to automatic cooling mode. When system start normally, , press down key, then system switches to the automatic mode; in such mode, it only requires the user to preset the temperature as desired, and thereafter, the system will regulate the working modes of the compressor and the blower automatically to reach and keep the preset temperature. Meanwhile, the display will indicates AUTO the buzzer's beep will confirm the operation

Manual Cooling and Mandatory Cooling

key is used to switch to the manual cooling mode After the system is started normally, press down key, then the system will enter into the manual cooling mode； in such mode，the user is required to regulate the air volume and preset the temperature by himseIf, and meanwhile，the display screen will indicates icon. The buzzer's beep will remind you of the effective operation.

Press key and hold on for at least 3s until hearing 3 buzzer's beep, system will enter the mandatory cooling mode. At this moment, only air spped is adjustable. Press down any key to cancel the mandatory cooling mode but or

Ventilation

key is used to switch to the ventilation mode. After the system is started normally press down , then the system will stop cooling and switch to ventilation mode ; in the ventilation mode, the user can adjust the air flow by himself, and the system will work with the air flow set by the user, mind will be indicated on the display screen. The buzzer's beep will remind you of the effective operation.

Fresh Air

key is used to open or close the fresh air damper. After the system is started normally, press down key. The fresh air damper will open and bring fresh air into the cabin. Meanwhile, the icon is displayed on the screen. press key again to clos the air damper. The icon icons po will disappear when the air damper is closed. The buzzer's beep will remind you of the effective operation.

This function is mainly used when the AC is in idle mode for maintenance or the AC is running under a very low ambient temperature.

Switch between upper storey and substrate

U/S key is used to switch the AC between the upper storey and substrate.System start normally, the default display is the temperature set and air flow of upper storey, press U/S this key to realize the display switch between the upper level and the lower level. at the same time, there is a indicates in the temperature display zone, shows "U" or "S" to represent upper storey or substrate

Temperature Set

key is used to set the target temperature of the cabin between 15℃ and 32℃. Each press of key system target temperature rise by 1℃ until 32℃. Each press of key, target temperature fall by 1℃ until 15℃. the buzzer's beep will remind you of the effective operation

Air Velocity Set

key is used to set the air velocity(7 grades velocity), by pressing icon key the air flow is set from lowest one to the highest one, or in reverse direction by pressing key. In automatic mode, the system will decide the air velocity automatically by detect the temperature inside the cabin without requiring the user to preset the velocity. The buzzer's beep will remind you of the effective operation

Special note:

1、When the engine starts, Start the AC after the engine running in stable condition

2、Turn off the AC before turning off the engine.

When the air conditioning failure happens, remember the failure code and contact the after service of Sessika AC timely to eliminate the failure as soon as possible.

Chapter III Repair and Maintenance of Air Conditioner

The working condition of automobile air conditioner is quite worse. The long-term vibration and corrosion will cause leakage and reliability reduction of the system. The compressor is high-speed equipment in the air conditioning system. The abrasion of high-speed parts will reduce the performance of the compressor and the fine scrapes formed in the course of abrasion will pollute the cooling oil and block the system, resulting in malfunction of the compressor and system. Therefore it shall be subject to regular and daily repair and maintenance.

Repair item		Method	Maintenance cycle				
			Daily	Weekly	Monthly	Quarterly	Yearly
Cooling system	Cooling quality	Observed by the pipeline liquid glasses	★				
	Pipeline	Whether any joint leaks		★			
		Whether the attaching clamp is loose		★			
		Whether the hose is damaged		★			
	Dry filter	Be replaced					※
Compressor	Oil amount of cooler	Observe the oil level of liquid glasses	★				※
	Shaft seal	Check whether there is oil leakage mark with white paper			★		
	Belt	Tensioned with jockey wheel			★		
	Bolt	Tighten the loose one			※		
Condenser	Condenser	Clean				★	
	Fan motor	Check and replace the brush					※
	Bearing	Fill oil and check					※
Evaporator	Air suction filter mesh	Clean		★			
	Evaporator	Remove the dust					★
	Blower motor	Measure the voltage, current and rotation speed			★		
	Expansion valve	Dismount and clean the filter mesh					★
Electric element	Harness	Check whether the wire clip is loosen			★		
	Electric controller	Intactness of the element			★		
	Pressure relay	est the high-pressure and low-pressure operation				★	

★---Maintenance must be carried out.
※---Maintaining or not depends on the condition of the AC system

Engine	Battery	Check the discharge ability		★			※
	Belt of generator	Tension			★		
	Rotation speed	Measure		★	★		
	Voltage of generator	Test the output side of motor		★	★		
Bearing of compressor jockey wheel		Replace the lithium grease or imported grease				★	

★---Maintenance must be carried out.
※---Maintaining or not depends on the condition of the AC system

Inspection on tension of belt

The loose V-belt will skid and thus reduce the power transfer efficiency and wear out quickly so the belts of the compressor and generator shall be inspected regularly according to the following table.

Belt type	New belt	At the moment of repair	Tension degree
A	392 ~ 588N (40 ~ 60Kgf)	294 ~ 392N (30 ~ 40Kgf)	8 ~ 10mm
B	490 ~ 686N (50 ~ 70Kgf)	343 ~ 441N (35 ~ 45Kgf)	8 ~ 10mm

Inspection on refrigerant

Start the air conditioner and set the temperature at the lowest value. After the engine runs at 180r/m for 10 minutes, open the return air grille and observe the liquid glasses through this grille. If the liquid surface is clear without air bubble or is free from air bubbles within 45 seconds, the refrigerant is sufficient; if there are many air bubbles on the liquid surface, it is necessary to supplement the refrigerant

Inspection on the lubrication oil of compressor

The lubrication oil of the compressor is used to lubricate the rotation parts and sealing components of the compressor. If the lubrication oil is not sufficient, the compressor can not work normally and even be damaged. If there is too much lubrication oil, the cooling capacity will decrease and the system will be subject to liquid impact and other phenomena.

Quicken the idle speed to the normal operation speed. After the compressor operates for about 15 minutes, check the lubrication oil: the oil level shall be at the 1/4-3/4 of the liquid glasses. It is better to use two glasses to inspect the liquid level because the mounting position of compressor may be inclined.

Cleaning of filter mesh

Open the return air grille on the top inside the vehicle, take off the dust trap of return oil grille, check the cleanness of the dust trap and clean it with compression air if necessary. If the dust trap is quite dirty or blocked, place it in the warm water mixed with neutral detergent, then wash it with clean water and finally dry it.

Cleaning of condenser

1、Take off the condensation blower or protect it with plastic sheets.
2、Wash the radiation fins with high-pressure water. Notice that the pressure shall not be too high otherwise the radiator may be damaged. If the fins are blocked severely, it is necessary to remove the oil stain firstly and then wash them with the neutral detergent.
3、Remove the dirt in the condenser.

Cleaning of evaporator

1、Take of the evaporation blower or protect it with plastic sheets.
2、Protect the electric controller and return air inlet with plastic sheets to prevent water from flowing into the compartment.
3、Other steps are same as those for condenser.

Inspection on the electric control system

Each interface of the electric control system of air conditioner must be connected well otherwise the air conditioner can not work normally.

1、Check whether the connectors between the air conditioner controller and the harness, the harness in the air duct and the electric controller of evaporator, the compressor and the harness are connected properly and the copper elements are smooth and free from oxidation layer or dirt.

2、Check whether the relay and fuse in the electric controller of air conditioner are in good condition and connected well.

3、Check Whether the power cords of the air conditioning system are connected properly with the connection bolts of generator, fuse box and evaporator (the bolts are tightened, and the joints are smooth and free from oxidation layer or dirt).

4、Check the electric control system of the air conditioner at the return air inlet is earthed properly (the bolts are tightened, and the joints are smooth and free from oxidation layer or dirt).

Chapter IV Analysis on Simple Faults

This chapter aims to acquaint you with the structure and function of the air conditioner and help you to operate the air conditioner properly and find and eliminate the hidden troubles to avoid severer fault and loss, optimize the operation of the system and prolong its service life. The wrong repair of the air conditioner may hurt and damage the people and equipment so only the qualified and professional technicians or technicians of the Company are allowed to repair the air conditioner.

Once finding the malfunction of the air conditioner, please contact the after service department and stations of Sessika timely.

Low-voltage fault

If the input voltage keeps less than 21V for more then 3 seconds, the low-voltage fault occurs. After this fault occurs, the evaporation blower of the air conditioning system will be forced to run at a low speed, the condensation blower will stop, and all control buttons except for the On/off button are locked; the system

keeps on inspecting the voltage and all output signals will be low level if the input voltage keeps less than 16V for more than 3 seconds. This fault is can not be resumed. Its fault code is Er01.

High-voltage fault

If the input voltage keeps more than 30.5V for over 3 seconds, the high-voltage fault occurs. After this fault occurs, all output signals will be low level and the ambient temperature and fault code will be displayed. This fault will not be eliminated until the normal voltage is resumed for more than 3 seconds. Its fault code is Er02.

Pressure fault

If the pressure of the system is too high (higher than 25 ± 0.3 Kg) or too low (lower than 0.3 ± 0.3 Kg) when the system is in the course of cooling, the pressure fault will occur, after which occurs the cooling output will be low level while the signals of air speed and fresh air are unaffected and the fault code is shown on the display screen. This fault can not be eliminated until the normal pressure is resumed for more than 3 seconds. Its fault code is Er04.

Defrosting sensor fault

Once the system detects that the defrosting sensor circuit is off or short and the temperature is not less than 70℃ or not over -9℃, the sensor fault signal will occur. After this fault occurs, the output of cooling signal is determined by the cooling time, set temperature and return air temperature instead of defrosting sensor signal to ensure that the compressor will stop for 5 minutes after 60 minutes' operation provided that the system is in the course of cooling. This fault can be eliminated automatically in the course of operation. Its fault code is Er16.

Return air sensor fault

Once the system detects that the return air sensor circuit is short or off, the temperature is not less than 70℃ or not over -9℃, “H” and “L” will be displayed respectively on the place where the temperature is shown. After this fault occurs, the output of the cooling signal is determined by the cooling time instead of return air sensor signal and set temperature to ensure that the compressor can stop for 5 minutes after 60℃ operation provided that the system is in the course of cooling. This fault can be eliminated automatically in the course of operation.

Defrosting state

Once the defrosting temperature is less than 2℃, the system will enter the defrosting state. For the KZD21B-074E, KFS28A-074E and DFD28K-074E panel, the display screen will show the word of "Waiting", the lower fault code display shows C and the system stops cooling; for the KFD28K-074E and KFD28K-074D, the defrosting icon lights up (yellow). When the defrosting temperature is over 4℃, the defrosting state is deactivated.

Waiting state

The compressor must be restated one minute later after it is stopped. In this waiting period, the fault code display screen shows the waiting time in second with one digit and it shows "0" after one minute for KZD21B-074E, KFS28A-074E and DFD28K-074E panel; the cooling lamp turns to yellow from white for KFD28K-074E and KFD28K-074D.

If the return air temperature is not over 3℃, the air conditioning system will enter the waiting state of cooling.

Abnormal phenomena of system

Item	Cause of fault	Countermeasures
The evaporator does not work	There is no power supply	Check the generator and master fuse
	The controller has faults	Replace the controller
	The fuse is burnt out	Find out the reason and replace the fuse
	The realy is damaged	Replace the relay
	The control harness is not connected well	Connect the harness well
	The blower or speed-adjustment resistance is damaged	Replace the blower or speed-adjustment resistance
The condenser does not work	There is no power supply	Check the generagor
	The controller has faults	Replace the controller
	The fuse is burnt out	Find out the reason and replace the fuse
	The realy is damaged	Replace the relay
	The control harness is not connected well	Connect the harness well
	The blower or speed-adjustment resistance is damaged	Replace the blower or speed-adjustment resistance

The compressor does not work	There is no power supply	Check the generagor
	The controller has faults	Replace the controller
	The fuse is burnt out	Find out the reason and replace the fuse
	The realy is damaged	Replace the relay
	The clutch control lead is not connected well	Connect the lead well
	The clutch is damaged	Repair or replace the clutch
	The compressor is damaged	Repair or replace the compressor
The manipulator has no display	The main body of vehicle does not offer power supply	Check and repair the power supply circuit of main body of vehicle
	The 5A fuse in the electric controller of air conditioner is burnt out	Find out the reason and replace the fuse
	The controller has faults	Replace the controller
	The power cords of controller are not connected well	Chek and repair them

Chapter V Technical Parameters of Air Conditioner

Due to the incessant improvement of products, the actual product may different from this data.

Model	Cooling capacity (Kcal/h)	Voltage/ current (V/A)	Max. evaporation air flow (m^3/h)	Max. condensation air flow (m^3/h)	Applicable type of vehicle (m)	Refrigerant
Two pieces FRP rooftop mounted unit						
BFFD-00	16000	DC24/55	3400	4800	7.0 ~ 7.5	R134a
BFFD-01	18000	DC24/60	4000	5400	7.5 ~ 8.0	R134a
BFFD-02	21000	DC24/60	4000	5400	8.0 ~ 8.5	R134a
BFFD-03	22000	DC24/65	4000	5700	8.5 ~ 9.0	R134a
BFFD-04	24000	DC24/70	4000	5700	9.0 ~ 9.5	R134a
	26000	DC24/70	4000	5700	9.0 ~ 10.0	R134a
BFFD-05	28000	DC24/80	6000	7600	9.5 ~ 11.0	R134a
	30000	DC24/85	6000	7600	9.5 ~ 11.0	R134a

BFFD–06	32000	DC24/95	7000	9500	11.0 ~ 12.5	R134a
BFFD–07	38000	DC24/105	7000	9600	12.5 ~ 14.0	R134a
BFFD–09	52000	DC24/150	12000	15200	14.0 ~ 18.0	R134a
One piece FRP rooftop mounted unit						
BFZD–01	18000	DC24/60	4000	5400	7.5 ~ 8.0	R134a
BFZD–02	21000	DC24/60	4000	5400	8.0 ~ 8.5	R134a
BFZD–03	22000	DC24/65	4000	5700	8.5 ~ 9.0	R134a
Two pieces aluminum rooftop mounted unit						
LFD–01	16000	DC24/55	3400	4800	7.0 ~ 7.5	R134a
LFD–03	21000	DC24/65	4000	5700	8.0 ~ 8.5	R134a
LFD–04	24000	DC24/70	4000	5700	9.0 ~ 9.5	R134a
LFD–05	28000	DC24/85	6000	7600	9.5 ~ 11.0	R134a
LFD–06	32000	DC24/95	7000	9500	11.0 ~ 12.5	R134a
LFD–07	38000	DC24/105	7000	9600	12.5 ~ 13.7	R134a
LFD–09	52000	DC24/150	12000	15200	14.0 ~ 18.0	R134a
Two pieces aluminum rooftop mounted for city bus						
LFD–04G	24000	DC24/70	4000	5700	8.0 ~ 9.0	R134a
LFD–05G	28000	DC24/85	6000	7600	9.0 ~ 11.0	R134a
LFD–06G	32000	DC24/95	7000	9500	11.0 ~ 12.0	R134a
LFD–07G	38000	DC24/105	7000	9600	12.0 ~ 13.7	R134a
Luxury rooftop mounted unit						
GFDD–05	28000	DC24/90	6000	7600	9.5 ~ 11.0	R134a
GFDD–06	32000	DC24/120	7000	9500	11.0 ~ 12.5	R134a
GFDD–07	38000	DC24/125	7000	10800	12.5 ~ 13.7	R134a
Rooftop mounted unit with Micro-channel heat exchanger						
PFD–I	14000	DC24/50	3400	3800	6.0 ~ 7.0	R134a
PFD–II	16000	DC24/55	3400	4800	7.0 ~ 7.5	R134a
PFD–III	18000	DC24/60	4000	5400	7.5 ~ 8.0	R134a
PFD–IV	21000	DC24/65	4000	5400	8.0 ~ 8.5	R134a
PFD–V	24000	DC24/70	4000	5700	8.5 ~ 9.5	R134a
PFD–VI	28000	DC24/85	6000	7600	9.5 ~ 11.0	R134a
PFD–VII	32000	DC24/95	7000	9500	11.0 ~ 12.5	R134a
Rear mounted for luxury double deck bus						
GZHD–08G	48000	DC24/125	8000	10800	10.0 ~ 12.0	R134a
GZHD–08	48000	DC24/125	8000	10800	10.0 ~ 12.0	R134a

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Compact parallel disposal rooftop mounted unit						
SDD–03	22000	DC24/65	4000	5700	8.5 ~ 9.0	R134a
SDD–04	24000	DC24/70	4000	5700	9.0 ~ 9.5	R134a
SDD–05	28000	DC24/85	6000	7600	9.5 ~ 11.0	R134a
SDD–06	32000	DC24/95	7000	9500	11.0 ~ 12.5	R134a
RSDD–05G	26000	DC24/65	4000	5700	8.5 ~ 9.5	R407c
RSDD–06G	32000	DC24/85	6000	7600	10.5 ~ 11.5	R407c
RSDD–07G	36000	DC24/95	7000	9500	11.5 ~ 13.0	R407c
Split mounted unit						
FFND–01	14000	DC24/50	3400	4800	6.0 ~ 7.0	R134a
Front dual system rooftop mounted unit						
FZDS–03	21000	DC24/60	4000	5400	8.0 ~ 8.5	R134a
BFZS–03	22000	DC24/65	4000	5700	8.5 ~ 9.0	R134a
FFDS–04	24000	DC24/70	4000	5700	9.0 ~ 9.5	R134a
FFDS–05	28000	DC24/85	6000	7600	9.5 ~ 11.0	R134a
FFDS–06	32000	DC24/95	7000	9500	11.0 ~ 12.5	R134a
BFFS–06	32000	DC24/95	7000	9500	11.0 ~ 12.5	R134a
Electrical rooftop mounted unit						
EFND–02	16000	DC24/50 AC220/16	3400	4800	7.0 ~ 7.5	R134a
EZDS–04	26000	AC220/38	3000	4700	8.5 ~ 9.5	R407c
EZDS–05	30000	AC220/42	6000	9400	9.5 ~ 11.0	R407c
EZDS–06	34000	AC380/27	6000	9400	11.0 ~ 12.7	R407c
EZDD–06	32000	AC220/46.5	6000	9400	11.0 ~ 12.5	R407c
Sub-engine rooftop mounted unit						
DFDD–04	24000	DC24/70	4000	5700	9.0 ~ 9.5	R134a
DFDD–05	28000	DC24/85	6000	7600	9.5 ~ 11.0	R134a
DFDD–06	32000	DC24/95	7000	9500	11.0 ~ 12.7	R134a
DFDD–07	38000	DC24/105	7200	10800	12.5 ~ 13.7	R134a

Appendix

Table 1 Fault codes of KFD28K-074E1 FFDD08-074A1 and GZHD08-074B1 controller

Code	Low voltage	High voltage	Pressure fault	Defrosting sensor fault	Short circuit of return air sensor	Open circuit of return air sensor
Er01	※					
Er02		※				
Er04			※			
Er05	※		※			
Er06		※	※			
Er16				※		
Er17	※			※		
Er18		※		※		
Er20			※	※		
Er21	※		※	※		
Er22		※	※	※		
H					※	
L						※

Remarks:

①: ※ indicates that the fault is found at the fault detection point.

②: The KFD28K-074E controller will display the fault code and give audible hint when the voltage and compressor have faults, while it will display the fault code but give no audible hint when there is other fault. Meanwhile, the fault code and the set temperature will be displayed alternatively.

③: When there is such fault, the display screen of KZD21B-074E and DFD28A-074E controller only show the ambient temperature and display the fault code at the bottom right corner.

Table 2 Fault codes of KFS28A-074F1 controller

Code	Low voltage	High voltage	Fault of pressure of left circuit	Fault of pressure of right circuit	Fault of temperature sensor of left circuit	Fault of temperature sensor of right circuit
Er01	※					

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Er02		※				
Er04			※			
Er05	※		※			
Er06		※	※			
Er08				※		
Er09	※			※		
Er10		※		※		
Er12			※	※		
Er13	※		※	※		
Er14		※	※	※		
Er16					※	
Er17	※				※	
Er18		※			※	
Er20			※		※	
Er21	※		※		※	
Er22		※	※		※	
Er24				※	※	
Er25	※			※	※	
Er26		※		※	※	
Er28			※	※	※	
Er29	※		※	※	※	
Er30		※	※	※	※	
Er32						※
Er33	※					※
Er34		※				※
Er36			※			※
Er37	※		※			※
Er38		※	※			※
Er40				※		※
Er41	※			※		※
Er42		※		※		※
Er44			※	※		※
Er45	※		※	※		※
Er46		※	※	※		※
Er48					※	※
Er49	※				※	※
Er50		※			※	※
Er52			※		※	※
Er53	※		※		※	※

Er54		※	※		※	※
Er56				※	※	※
Er57	※			※	※	※
Er588		※		※	※	※
Er60			※	※	※	※
Er61	※		※	※	※	※
Er62		※	※	※	※	※

Remarks:

①: ※ indicates that the fault is found at the fault detection point.

②: When there is such fault, the display screen of controller only shows the ambient temperature and displays the fault code at the bottom right corner.

Table 3 Fault codes of controller FFDD06-074D1

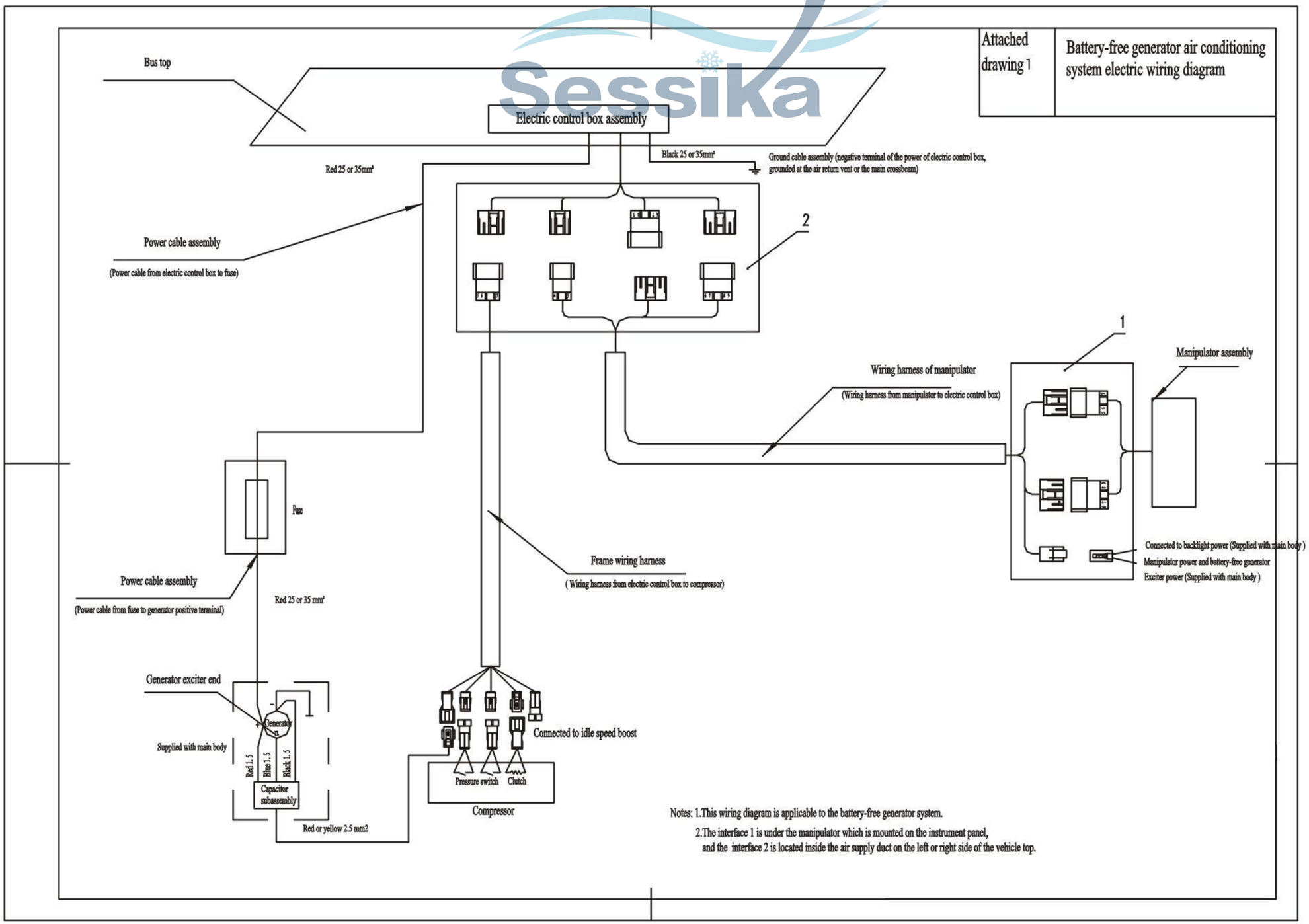
Code	Communication Error	Low voltage	Higt voltage	Pressure switch	Defrosting sensor	Return air sensor short	Return air sensor open
Er–00	※						
Er–01		※					
Er–02			※				
Er–04				※			
Er–05		※		※			
Er–06			※	※			
Er–16					※		
Er–17		※			※		
Er–18			※		※		
Er–20				※	※		
Er–21		※		※	※		
Er–22			※	※	※		
Er–H						※	
Er–L							※

Remarks:

①: ※ indicates that the fault is found at the fault detection point.

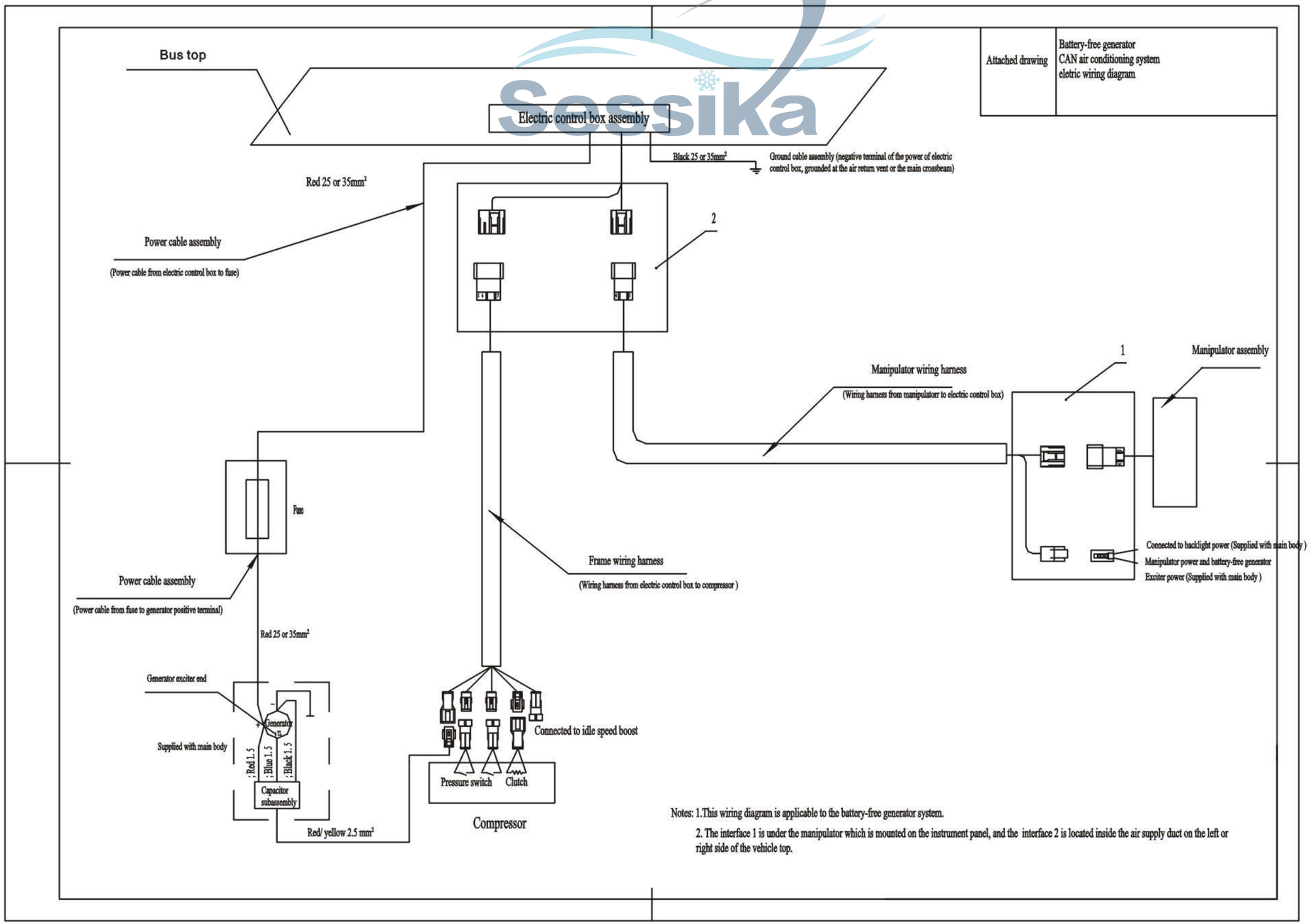
②: The controller will display the fault code and give audible hint when the voltage and compressor have faults, while it will display the fault code but give no audible hint when there is other fault. Meanwhile, the fault code and the set temperature will be displayed alternatively.

Attached drawing 1	Battery-free generator air conditioning system electric wiring diagram

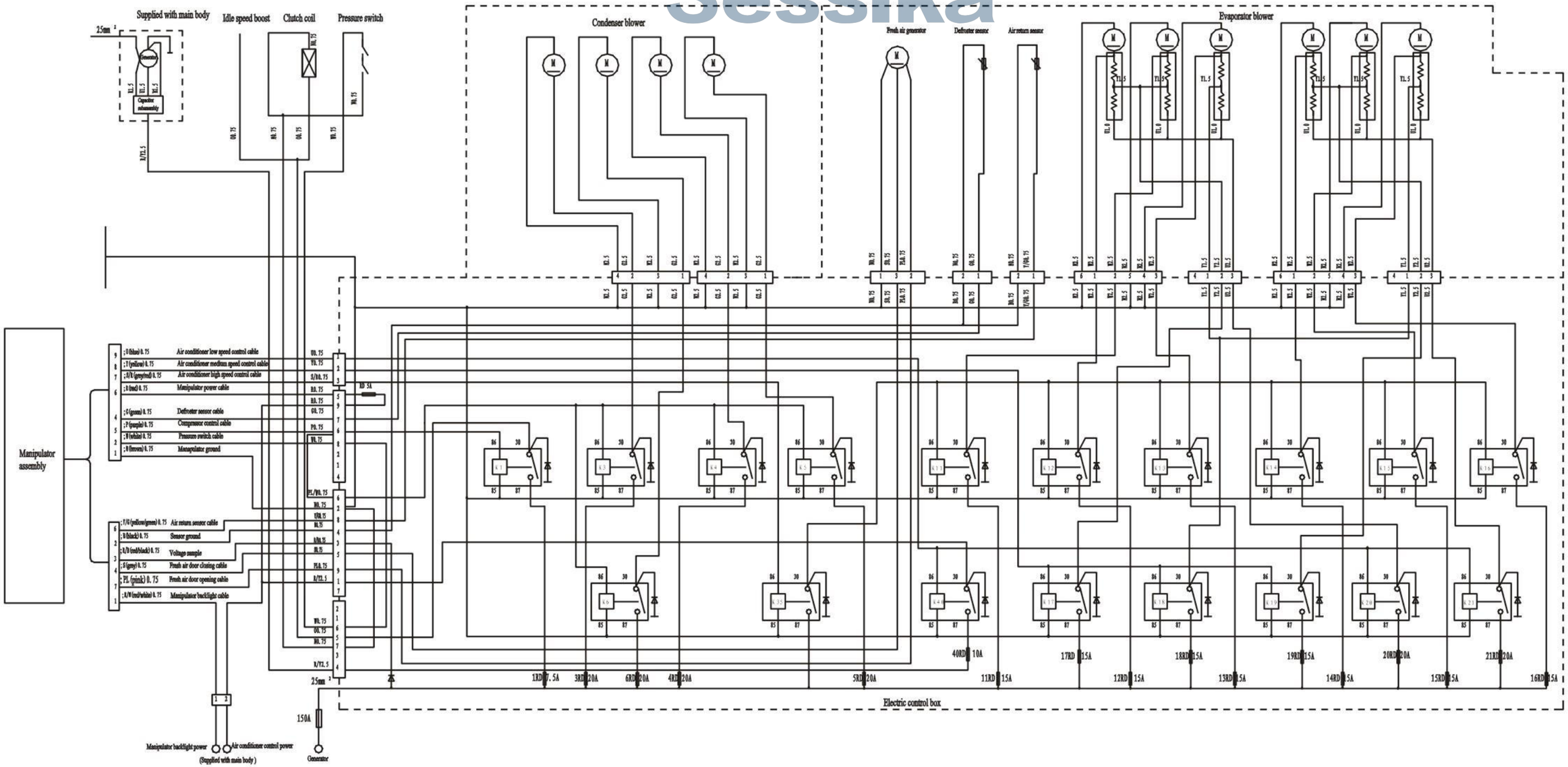


Notes: 1.This wiring diagram is applicable to the battery-free generator system.

2.The interface 1 is under the manipulator which is mounted on the instrument panel, and the interface 2 is located inside the air supply duct on the left or right side of the vehicle top.

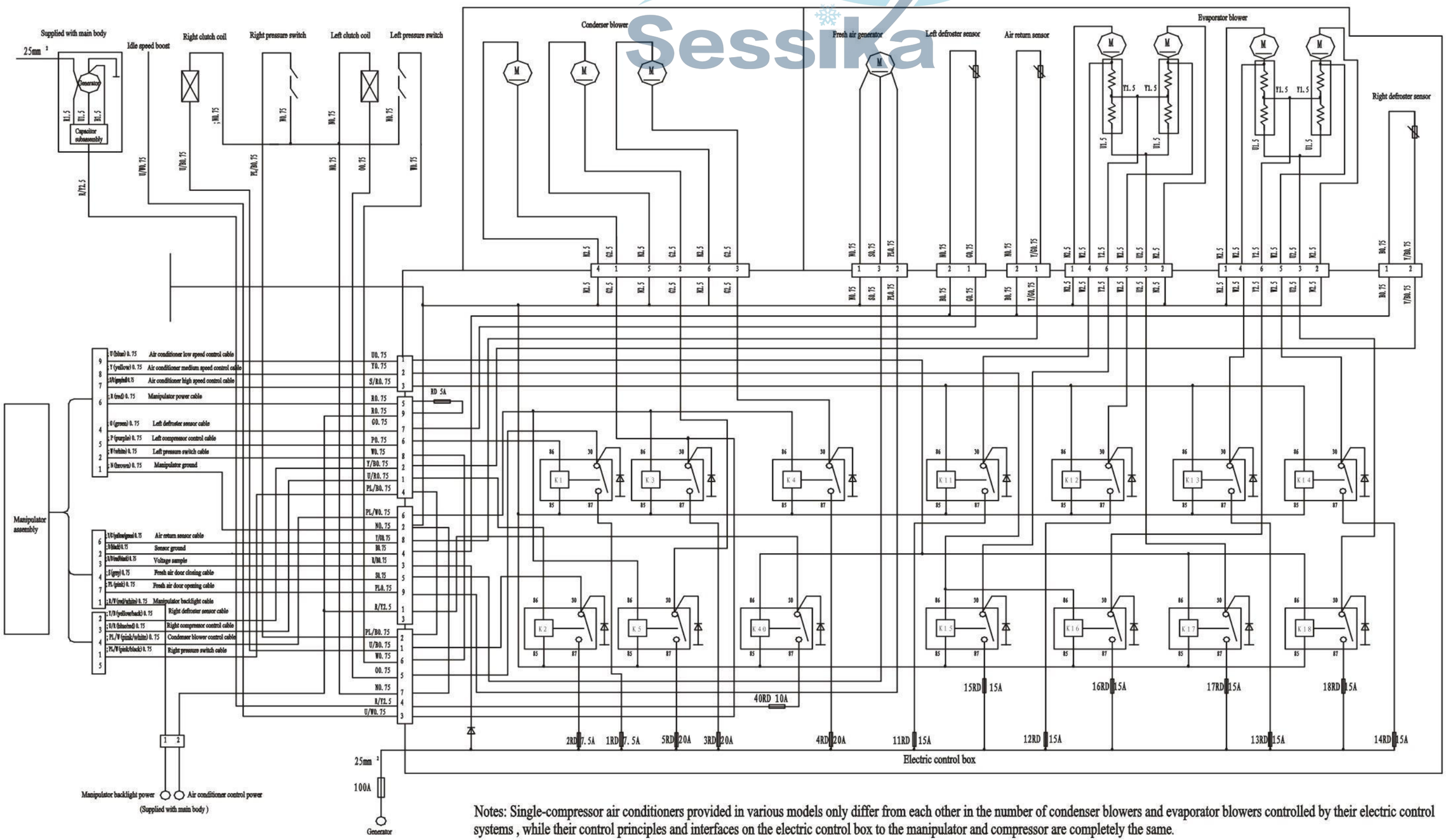

Attached drawing
Battery-free generator
CAN air conditioning system
eletric wiring diagram
Bus top
Electric control box assembly
Black 25 or 35mm²
Ground cable assembly (negative terminal of the power of electric control box, grounded at the air return vent or the main crossbeam)
Red 25 or 35mm²
Power cable assembly
(Power cable from electric control box to fuse)
2
1
Manipulator assembly
Manipulator wiring harness
(Wiring harness from manipulatorr to electric control box)
Fuse
Power cable assembly
(Power cable from fuse to generator positive terminal)
Red 25 or 35mm²
Frame wiring harness
(Wiring harness from electric control box to compressor)
Connected to backlight power (Supplied with main body)
Manipulator power and battery-free generator
Exciter power (Supplied with main body)
Generator exciter end
Supplied with main body
Red 1.5
Blue 1.5
Black 1.5
Capacitor subassembly
Red/ yellow 2.5 mm²
Connected to idle speed boost
Pressure switch
Clutch
Compressor
Notes: 1.This wiring diagram is applicable to the battery-free generator system.
2. The interface 1 is under the manipulator which is mounted on the instrument panel, and the interface 2 is located inside the air supply duct on the left or right side of the vehicle top.

Attached drawing 3: Single-compressor air conditioning system electric control principle diagram



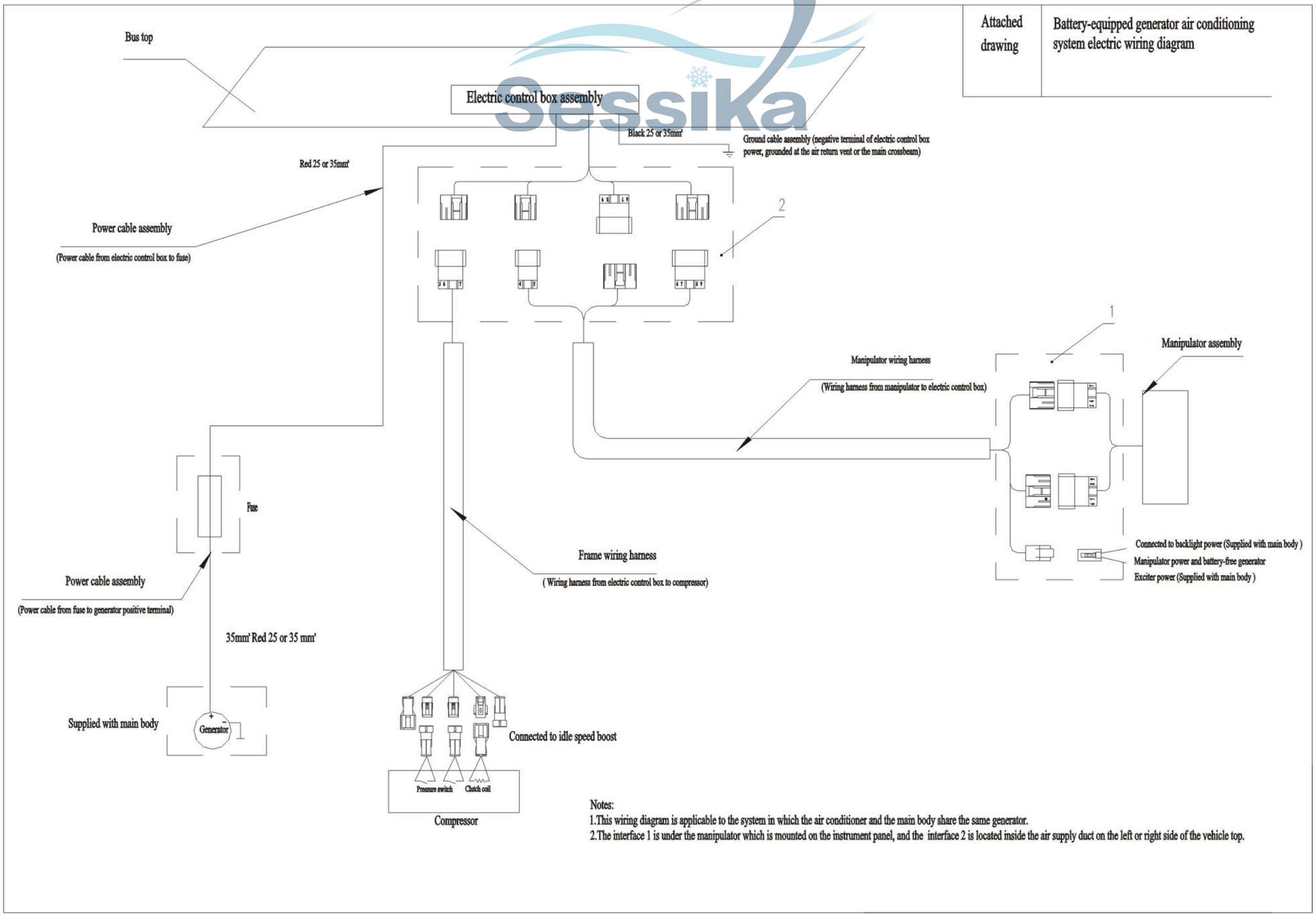
Notes: Single-compressor air conditioners provided in various models only differ from each other in the number of the condenser blowers and evaporator blowers controlled by their electric control systems , while their control principles and interfaces on the electric control box to the manipulator and compressor are completely the same.

Attached drawing 4: Double-compressor air conditioning system electric control principle drawing



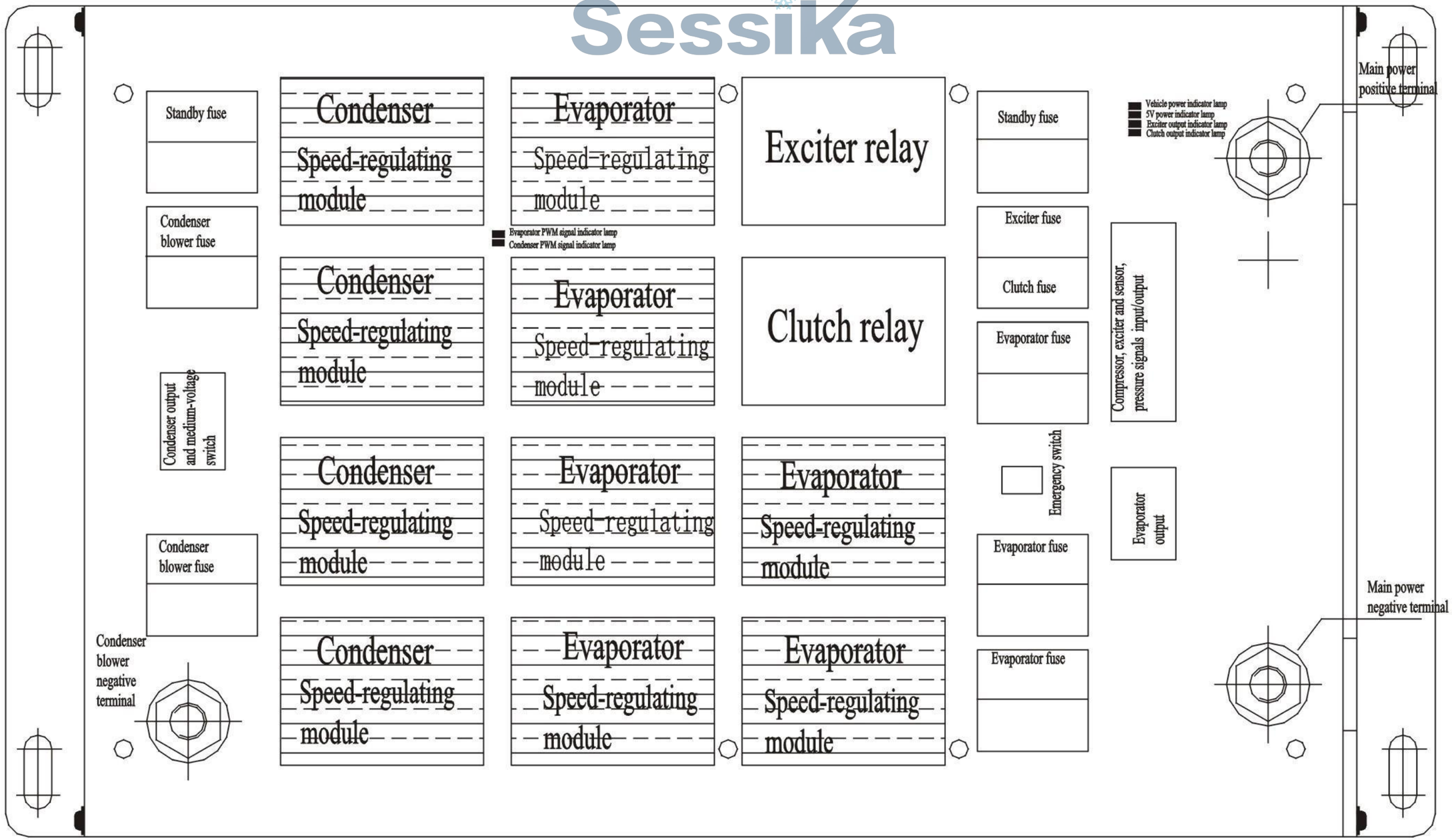
Notes: Single-compressor air conditioners provided in various models only differ from each other in the number of condenser blowers and evaporator blowers controlled by their electric control systems , while their control principles and interfaces on the electric control box to the manipulator and compressor are completely the same.

Attached drawing	Battery-equipped generator air conditioning system electric wiring diagram



Notes:
1.This wiring diagram is applicable to the system in which the air conditioner and the main body share the same generator.
2.The interface 1 is under the manipulator which is mounted on the instrument panel, and the interface 2 is located inside the air supply duct on the left or right side of the vehicle top.

Plane Layout of Electric Control Box



Attached Drawing 7: CAN Bus Electric Control Principle Drawing