



KINGTEC
TECHNOLOGIES

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A12 Control panel operation manual

Used on refrigerator car DC12V/24V Version NO.: A12



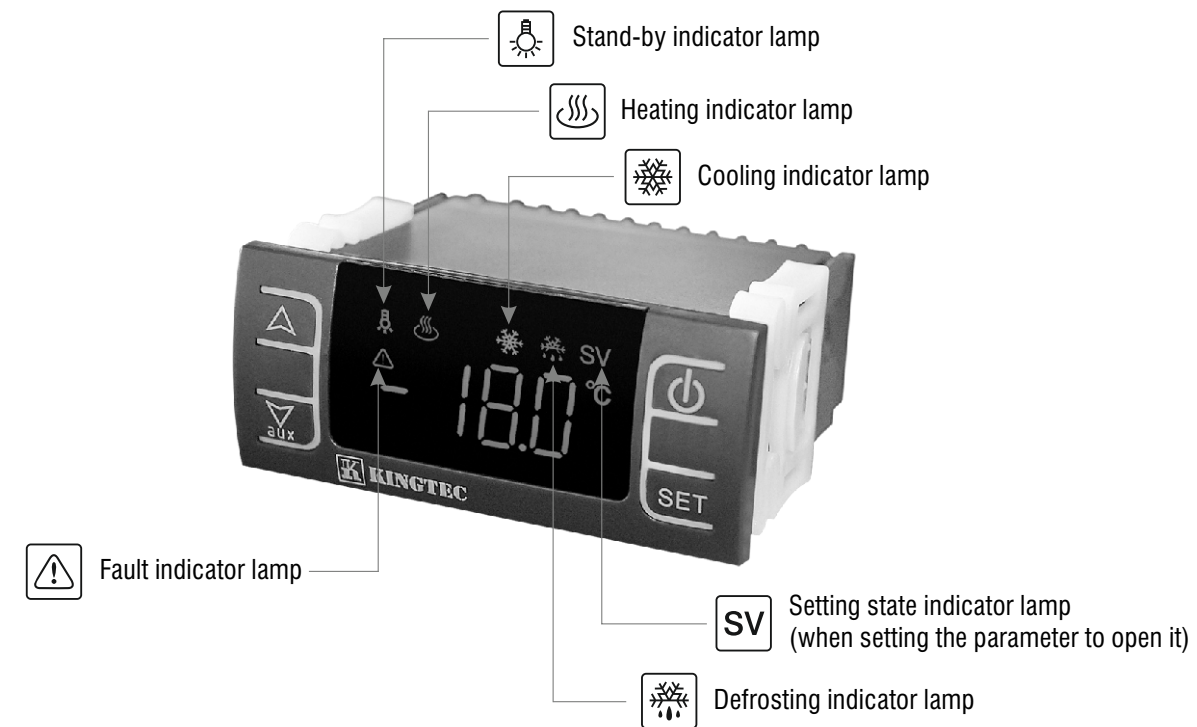
K10088 (01-10)

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1. INDICATOR LAMP INSTRUCTIONS

A12 Panel appearance



2. KEYS INSTRUCTIONS

1. Single key (there're four keys)
- Pressing the top right corner key  :
- Power switch key. Pressing this key for 3 seconds to starting up. Pressing this key again for 3 seconds to shut down. When it have fault pressing this key again to remove the fault.
- Pressing the top left corner key  :
- Up-regulation key. In normal situation pressing this key can raise setting temperature to setting upper limit (SETH); in the checking state pressing this key raise change parameter or check the prior fault code. Can be pressed continuous.
- Pressing lower left corner key  :
- Down-regulation. In normal situation pressing this key can reduce setting temperature to setting lower limit (SETL); in the checking state pressing this key reduce change parameter or check the prior fault code. Can be pressed continuous.
- Pressing lower right corner key  :
- Mode key. When in stand-by mode is AC/DC switching key; when entering into checking or modifying mode,pressing this key can scroll check setting parameter, pressing this key again to to save the parameter; when it have faults, pressing this key can remove the fault.
2. Special key
- Press key  +  : In setting mode, when it's confirmed, pressing these two keys at the same time to return normal display mode or waiting for 12S auto quit setting.
- Key  +  : power or mode key for 15 seconds system parameter restore to factory value.

3. ALARM FAULT CODE DISPLAY

FAULT CODE LIST		
FAULT CODE	FAILURE NOTES	UNIT STATE
E0	Communication failure	Off
E1	High-voltage alarm (analog)	Off (When used on 12V; 5.5V When used on 24V;30.0V)
E2	Low-voltage alarm (analog)	Off)When used on 12V;10.0V When used on 24V;18.0V(
E3	Cooling system high pressure alarm	Off
E4	Cooling system low pressure alarm	Off
E5	AC Power Failure	Off i after 1 minute have AC signal i Start
E6	Return air temperature sensor fault	Off
E7	Air outlet temperature sensor fault	Off
E8	Defrosting temperature sensor fault	Off

- Notes:
1. If the above fault codes has been display, it can be reboot only through press the key of the power switch or the key of the mode to clear the fault codes after stop the machine; if the fault codes can not be clear, that means the corresponding fault are still remains; should clear the fault according to the fault code had been display and the alarm status.
2. The function to check the fault code, the system can record the failures has been display in the process of the operation, and will retained the record of the fault code, in order to analysis the issues by the after-sales maintenance personnel. Press key  for 3s enter into the first grade P1 see the fault code, will display the failure code occurred before on the display box.Pressing key   to check the fault occurred.If it did not happen, so the fault is not shown.

4. SETTING AND VIEW DISPLAYS

Setting method: pressing key  enter into setting temperature adjusting; after enter and check the 1 i 2 grade setting, press  to switch the next code cycle. When setting a parameter, press and  to  change the parameters, parameter stops flashing, waiting for the next step.(if the parameters are still flashing, then press  to enter the next parameter)

First grade setting and view: press key  for 3S enter into the first grade setting and checking, after enter into the first grade setting and view, each press  will display the next group of code.

CHECK MOTHOD	CODE	SETTING OR THE RANGE OF CHECK	EX-FACTORY VALUE	INSTRUCTION
Press key  again	P1	Code display or flashing	—	Display the fault code (can store up to 16); if the fault exists, then the fault light and the code blinking, so remove invalid; If the fault disa ppears, only the fault code display, press mode key removal;
Press key  again	P2	-40~80 i	—	Display temperature air outlet sensor temperature
Press key  again	P3	-10-18V	—	Checking the voltage of battery
Press key  again	P4	-40~80 i	—	Display defrosting sensor temperature
Press key  again	P5	0, 0.5. 1, 1.5, 2, 2.5, 2 hours	2	Setting or check the interval time of timing defrost (30 for cancel the timing defrost)
Press key  again	P6	3Ÿ4Ÿ5Ÿ6, 45 minutes	5	Setting or check the time of defrosting

CHECK MOTHOD	CODE	SETTING OR THE RANGE OF CHECK	EX-FACTORY VALUE	INSTRUCTION
Press key  again	P7	0~10C	2	Temperature difference of return setting
Press key  again	P8	10-60 Second	10	Cooling starting up delay time setting
Press key  again	P9	YES/NO	NO	YES: When have key signal, auto running DC mode. NO: When have key signal, manual running DC mode.
Press key  again	PA	YES/NO	NO	YES: When DC working, when it have g signal input faults, delay for 1 minute the unit auto switch to standby mode auto running the unit; AC can't switch to DC. No: AC and DC can not transfer.
Press key  again	PB	12c/24c/12H/24H 12d/24d	12C	Displays the current operating mode:12C: AC / DC mode without heating function. Show 12H, AC model no heating function, DC mode of water heating function. 12d: AC, DC models have heat heating. 24V system, corresponding to the same display 24C, 24H, 24d
Press key  again	PC	F/C	C	The currently displayed temperature units. F(°F): Fahrenheit. C (°C): C

Second grade setting and checking: pressing key  for 8S enter into the second grade setting and checking: it can only enter when the state of temperature shown normally.

CHECK MOTHOD	CODE	SETTING OR THE RANGE OF CHECK	EX-FACTORY VALUE	INSTRUCTION
Press key  again	F0	-35-30	15	Set the upper limit of the maximum temperature (SETH)
Press key  again	F1	-35-30	-25	Set the temperature in the lowest limit (SETL)
Press key  again	F2			Reservation
Press key  again	F3	0-20	15	Defrost limit temperature
Press key  again	F4	3-35	25	Defrost terminal temperature

5. A12 PANEL MOTHOD OF USE

1. Press  , after turn on the power switch, start automatically. (Factory setting) When the first grade parameter P8 setted to YES, it is auto start, when there is DC signal, then it needn't pressing key  , delay for 1 minute, auto start DC mode; When P8 setted to No, when there have DC signal, then it need to press key  manually to start.
2. Setting the temperature inside the car, a range of 25 ℃ -25℃.
3. Setting the process to star the air-conditioning, generally, it had been set before ex-factory, if there is not any special circumstances, the users may be used directly.

Air-conditioning settings and how to use startup programs:

Pre-boot setting: Setting the following parameters (see the settings and the display settings methods), they are usually had been set before ex-factory:

After setting the above parameters, press  to start the air-conditioning, the compressor protection time is invalid at the first start.

Under the preparation of electrical state, to connect the standby power plug firstly, connected to AC power, switches to charging state and the charging light  lights, now press  , the unit work; if the preparation of electrical light  did not light, then check the power outlet is plugged or the fault in the controller.

Defrost

DEFROST WORK MODE		
Permissive condition	Condition 1	Defrost sensor temperature reaches the defrosting admissible temperature setting.
	Time reach	The time of defrosting reaches the interval time of defrosting setting and meet the requirement of condition 1, start defrosting.
	Manual defrost	In start state pressing key  for more than 3 seconds and meet the requirement of condition 1, start defrosting.
	Defrost switch close	After defrost switch closed to enter and meet the requirement of condition 1, start defrosting.
DEFROST TERMINATION METHOD: (TO MEET THE ANY CONDITION BELOW PROMOTE DEFROSTING STATE)		
Terminal condition	Temperature termination	Defrost sensor temperature allowed to defrost termination temperature setting.
	Time termination	The time of defrost finished.
	Manual termination	In defrosting mode to press key  more than 3 seconds.

6. A12 CONTROL CIRCUIT INPUT, OUTPUT TERMINALS STRUCTURE AND FUNCTION

When matching small relayboard to use (There're 7 relays)

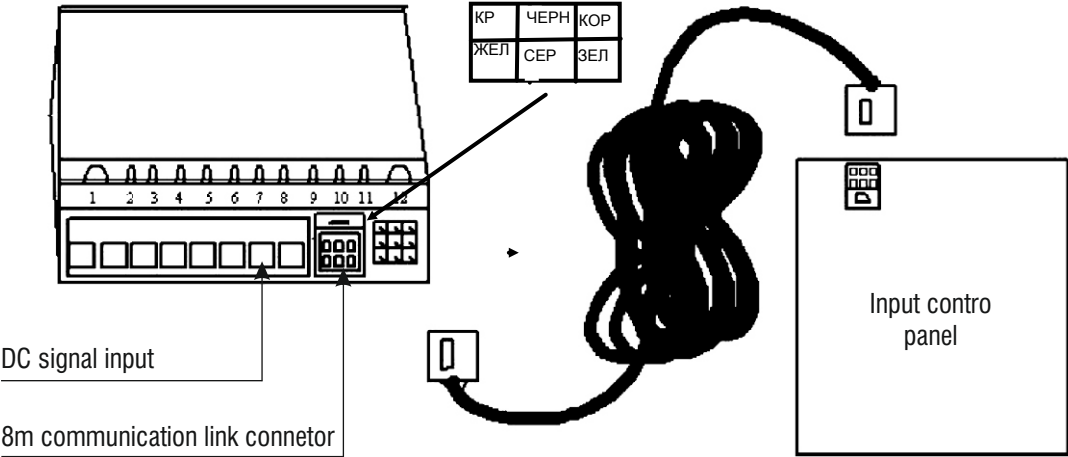
	14	15	16	17	18	19	20	21	22	23	24	25
1	2	3	4	5	6	7	8	9	10	11	12	13

- 1). Empty
- 2). Empty
- 3). Defrost switch
- 4). AC power switch
- 5). Low pressure switch
- 6). High pressure switch
- 7). The public terminal of sensor
- 8). Air outlet sensor input
- 9). Defrost sensor input
- 10). Return air temperature sensor
- 11). 12V system is empty 24V system to connect voltage checking line
- 12). 12V system to connect positive terminal of battery
24V system to connect power mode 12V

- 13). Connect the negative terminal of battery
- 14). Empty
- 15). Condenser fan
- 16). Condenser fan
- 17). Evaporator fan
- 18). Evaporator fan
- 19). DC DC clutch
- 20). DC DC clutch
- 21). AC DC clutch
- 22). AC DC clutch
- 23). Heating solenoid valve
- 24). Defrost output
- 25). Stand-by output

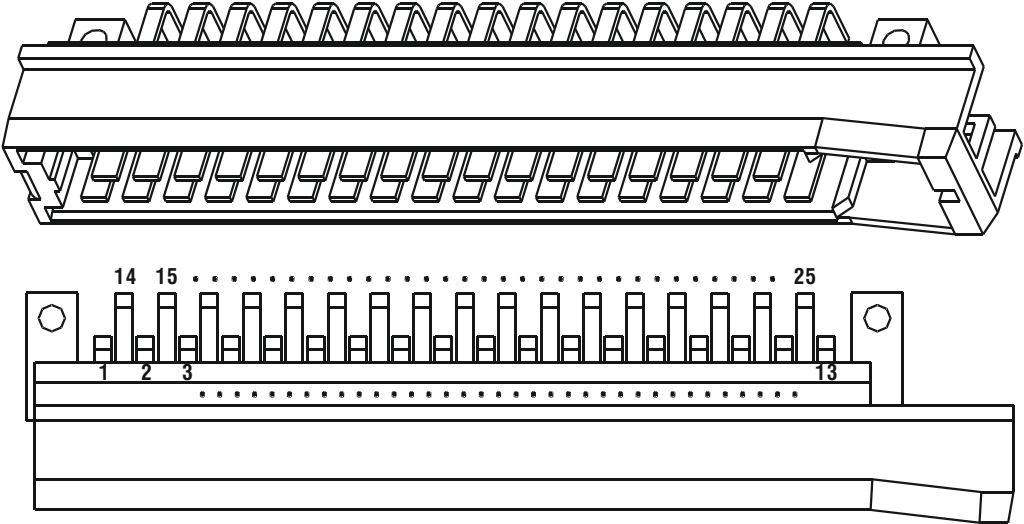
7. WIRING METHOD OF THE MAINBOARD AND RELAYBOARD
(AS THE PICTURE SHOWN BELOW)

Wiring harness and circuit board corresponding to connect



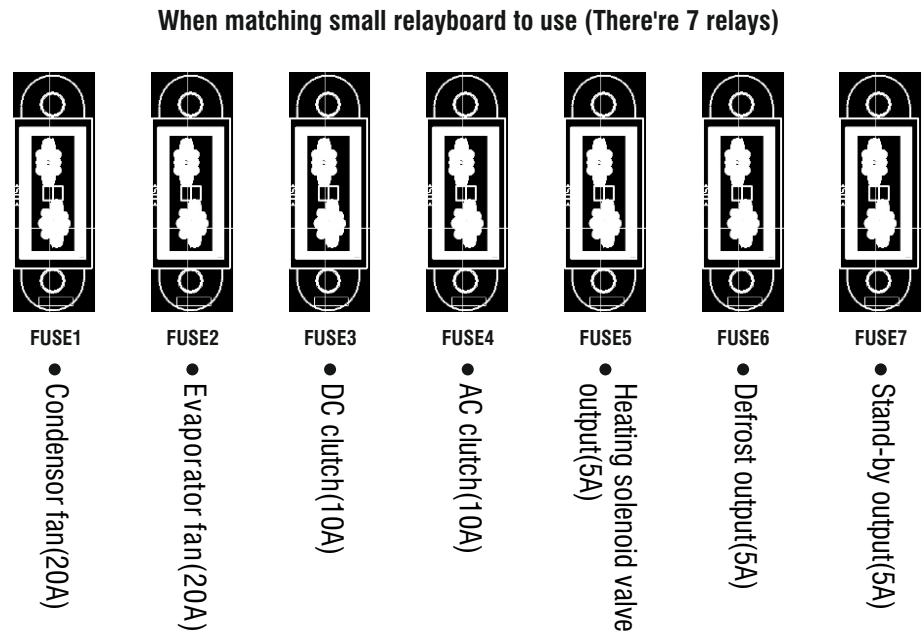
Wiring method of the mainboard of control panel and relayboard as the picture shown above.

Interface of the external wiring harness input /output as below:



Note: when connecting this interface must be inserted into the right place

8. THE CORRESPONDING RELATION BETWEEN A12 OUTPUT INDICATOR LAMP AND OVER LOAD



9. AC / DC AUTOMATICALLY CHANGE FUNCTION

Running the relationship between AC/DC Mode And Signal

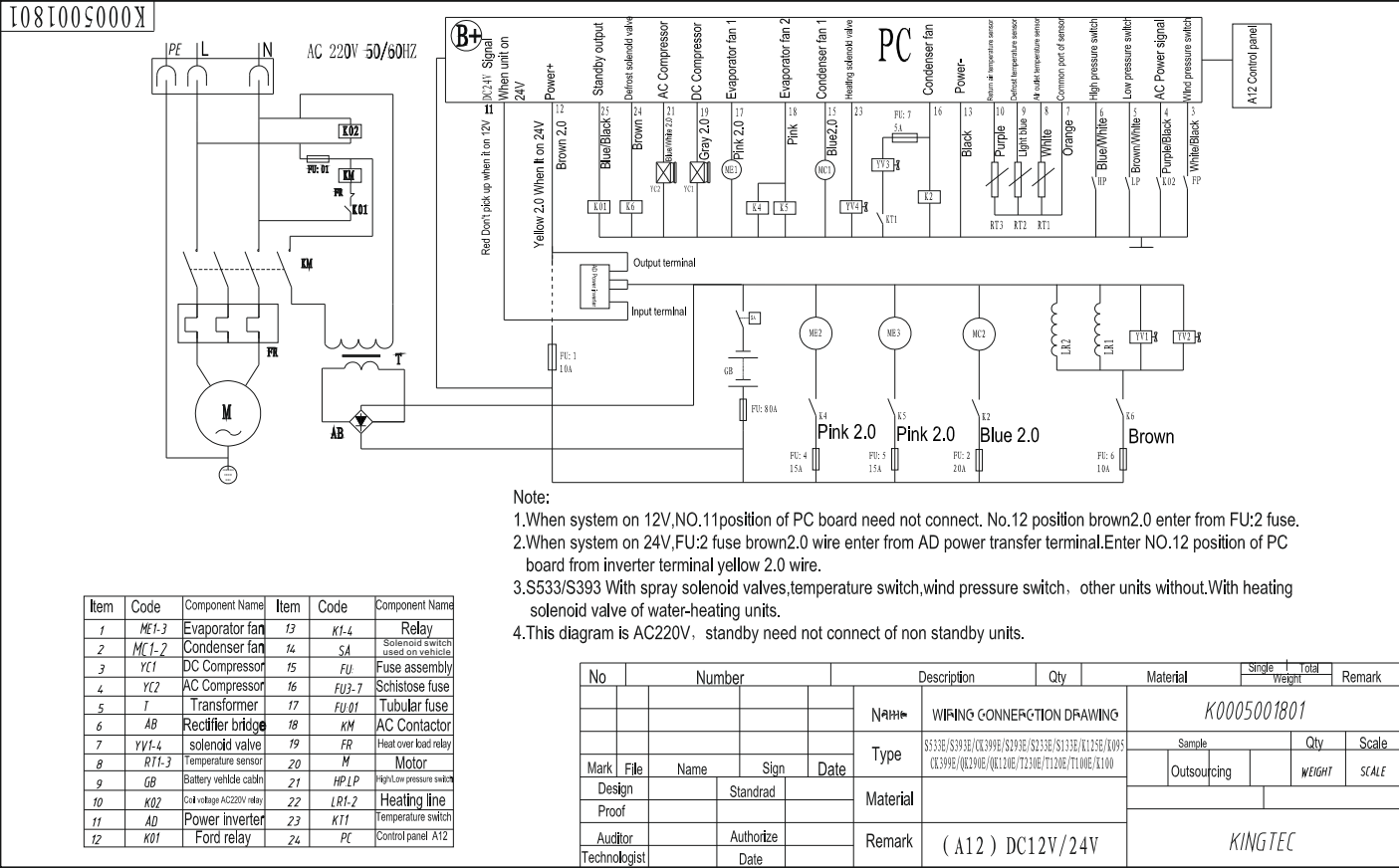
SIGNAL CONDITION		STATE
Have ACsignal	Have DC signal	Running AC mode
Have ACsignal	No DC signal	Running AC mode
No ACsignal	Have DC signal	Running DC mode
No ACsignal	NoDC signal	Can not start the unit

- When the first grade table P9 is setted YES, it is auto start DC mode, NO is manually auto mode.
 - P9 is YES, have DC signal, it needn't press key  , after controller delay for 1 minute, automatically start DC mode; During running in DC mode, if DC signal disconnect, then controller delay for 1 minute, close the controller automatically, during this period DC signal recover, then continue to run DC mode.
 - P9 is NO, have DC signal, it need to press key  , to start the unit; during running DC mode, if DC signal disconnect, then controller delay for 1 minute, close the controller automatically, then continue to run DC mode.
- When the user plug the AC power (220V/380V), the controller switches to AC mode automatically, when the user unplug the AC

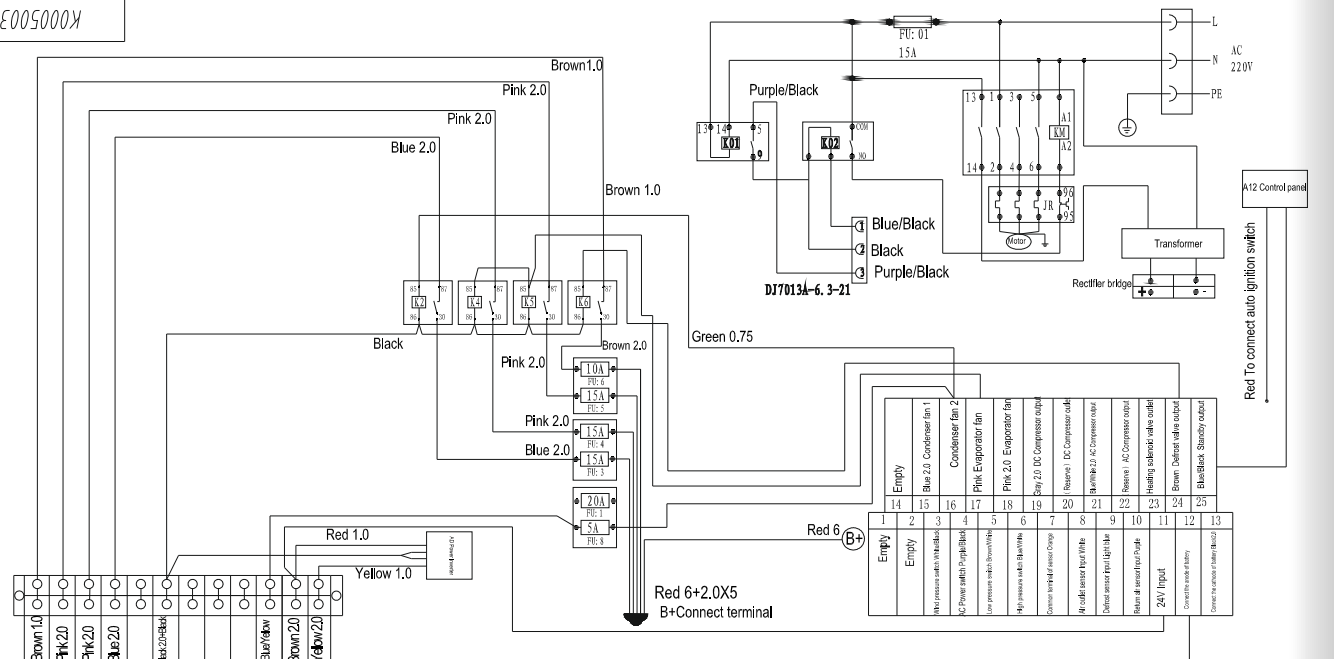
power, the controller switches to DC mode automatically. There are following features in the first grade setup menu PA = yes, otherwise, only detected the AC/DC signal automatically on power.

- a. When working in stand-by AC, only when the g diaconnected fault, the unit can not auto switch to engine mode auto running air-conditioner system, display E5 fault code, during this period g signal recover, after 30 seconds remove the fault automatically and start automatically AC running.
- b. When operating in engine way DC mode, texting that there's stand-by signal, stand-by indicator lamp  flashing, the unit operating AC mode automatically after1 minutes, the stand-by lamp is often on.

10. STAND-BY ELECTRIC SCHEMATIC DIAGRAM



108E005000X

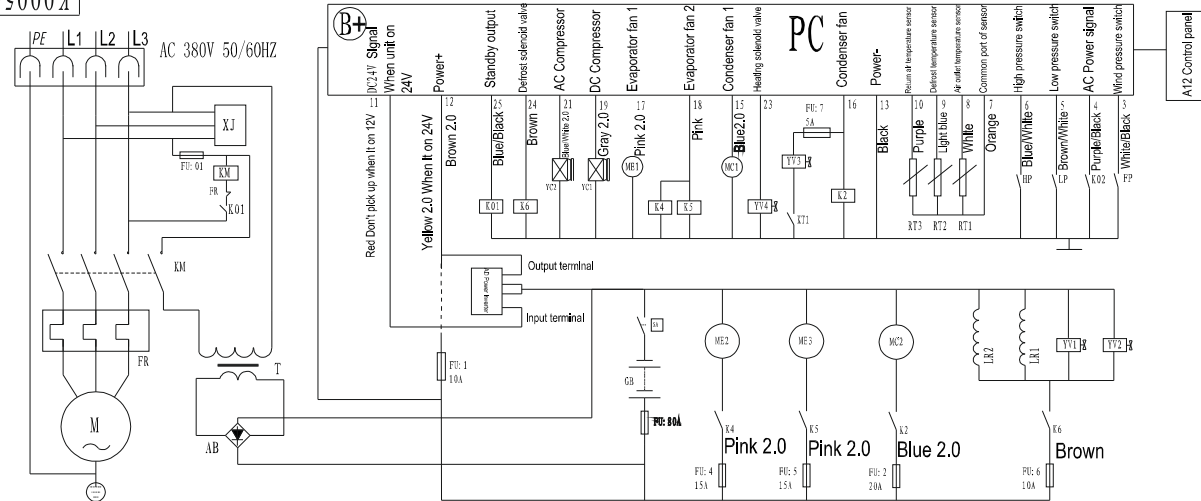


Note:

- When the system on 12V/AD power module need not connect.
- S533/S393 With spray solenoid valves, temperature switch, wind pressure switch, other units without; With heating solenoid valve of water-heating units.
- This diagram is AC220V, Standby need not connect of non standby units.

Y1	Y2	Y3	Y4	Y5	Y6
No	Number	Description	Qty	Material	Single Weight
		Name		WIRING CONNECTION DRAWING	
		Type		S533E/S393E/CX399E/S293E/S233E/S133E/K125E/K095 CX399E/QX290E/QX120E/T230E/T120E/T100E/K100	
Mark	File	Name	Sign	Date	
Design		Standrad			
Proof					
Auditor		Authorize			
Technologist		Date			
		Remark		(A12) DC12V/24V	

008T005000X



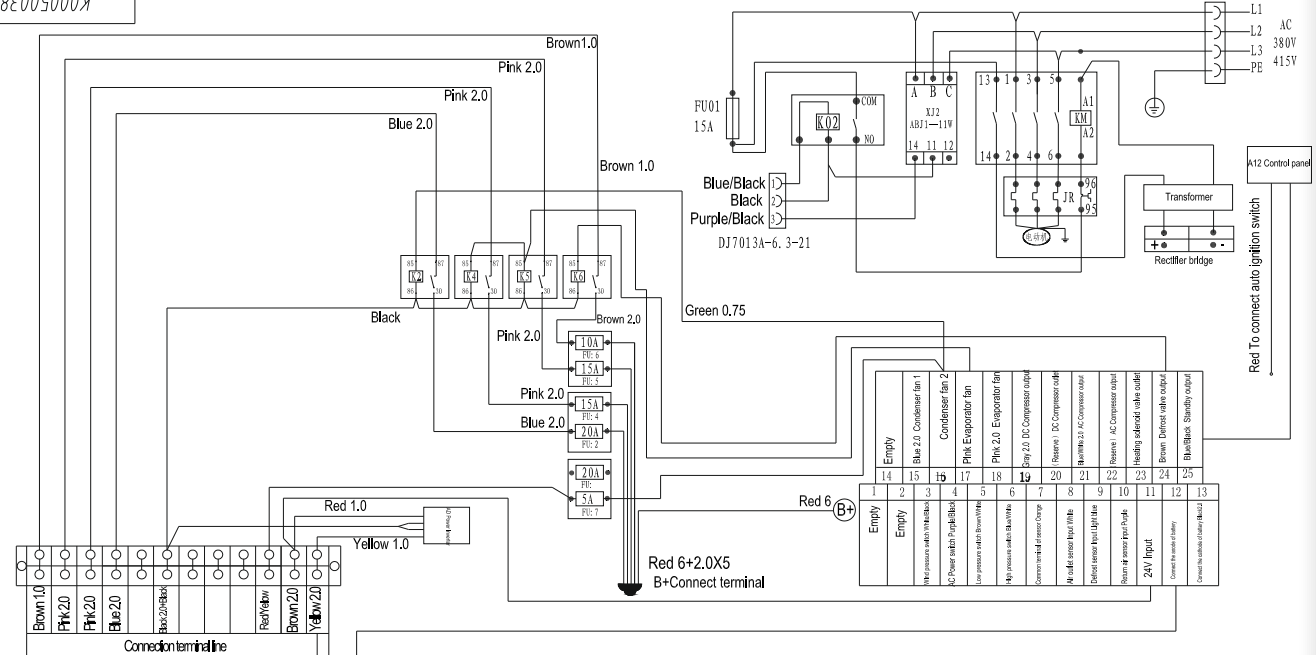
Note:

- When system on 12V, NO.11 position of PC board need not connect. No.12 position brown2.0 enter from FU:2 fuse.
- When system on 24V, FU:2 fuse brown2.0 wire enter from AD power transfer terminal. Enter NO.12 position of PC board from inverter terminal yellow 2.0 wire.
- S533/S393 With spray solenoid valves, temperature switch, wind pressure switch, other units without. With heating solenoid valve of water-heating units.
- This diagram is AC380V, standby need not connect of non standby units.

Item	Code	Component Name	Item	Code	Component Name
1	ME1-3	Evaporator fan	13	K1-L	Relay
2	MC1-2	Condenser fan	14	SA	Solenoid switch used on vehicle
3	YC1	DC Compressor	15	FU	Fuse assembly
4	YC2	AC Compressor	16	FU3-7	Schistose fuse
5	T	Transformer	17	FU-01	Tubular fuse
6	AB	Rectifier bridge	18	KM	AC Contactor
7	YV1-4	solenoid valve	19	FR	Heat over load relay
8	RT1-3	Temperature sensor	20	H	Motor
9	GB	Battery vehicle cabin	21	HP LP	High/Low pressure switch
10	XJ	3P AC Protector	22	LR1-2	Heating line
11	AD	Power inverter	23	KT1	Temperature switch
12	K01	Ford relay	24	PC	Control panel A12

No	Number	Description	Qty	Material	Single Weight	Remark
		Name		WIRING CONNECTION DRAWING		
		Type		S533E/S393E/CX399E/S293E/S233E/S133E/K125E/K095 CX399E/QX290E/QX120E/T230E/T120E/T100E/K100		
Mark	File	Name	Sign	Date		
Design		Standrad				
Proof						
Auditor		Authorize				
Technologist		Date				
		Remark		(A12) DC12V/24V		

008E005000X

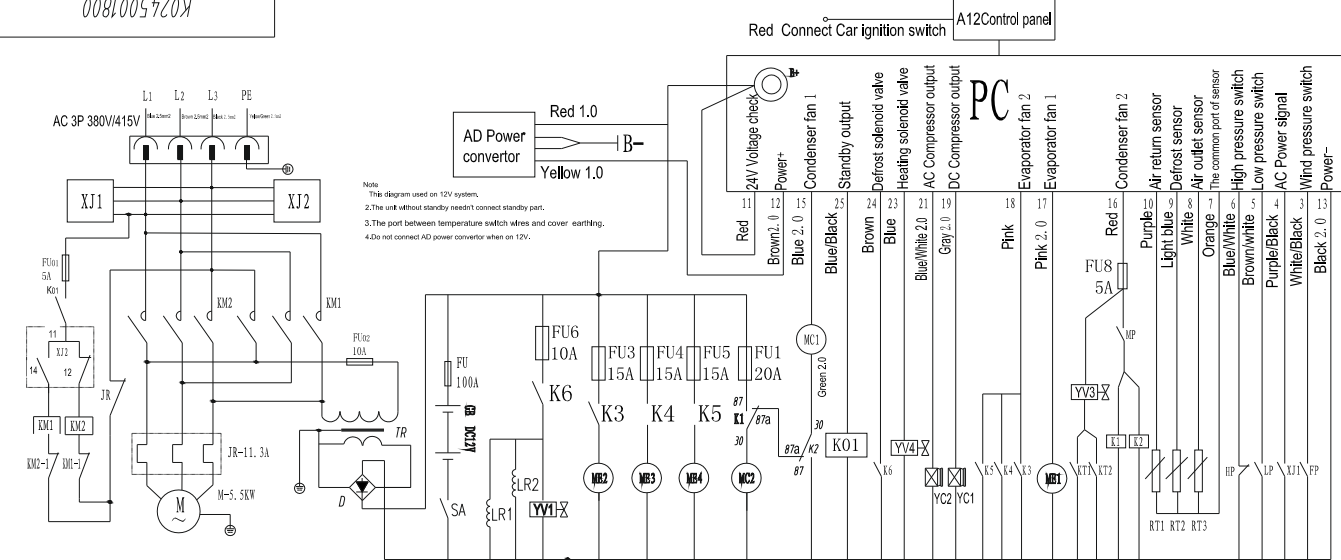


Note:

- When the system on 12V, AD power module need not connect.
- S533/S593 With spray solenoid valves, temperature switch, wind pressure switch, other units without. With heating solenoid valve of water-heating units.
- This diagram is AC380V. Standby need not connect of non standby units.

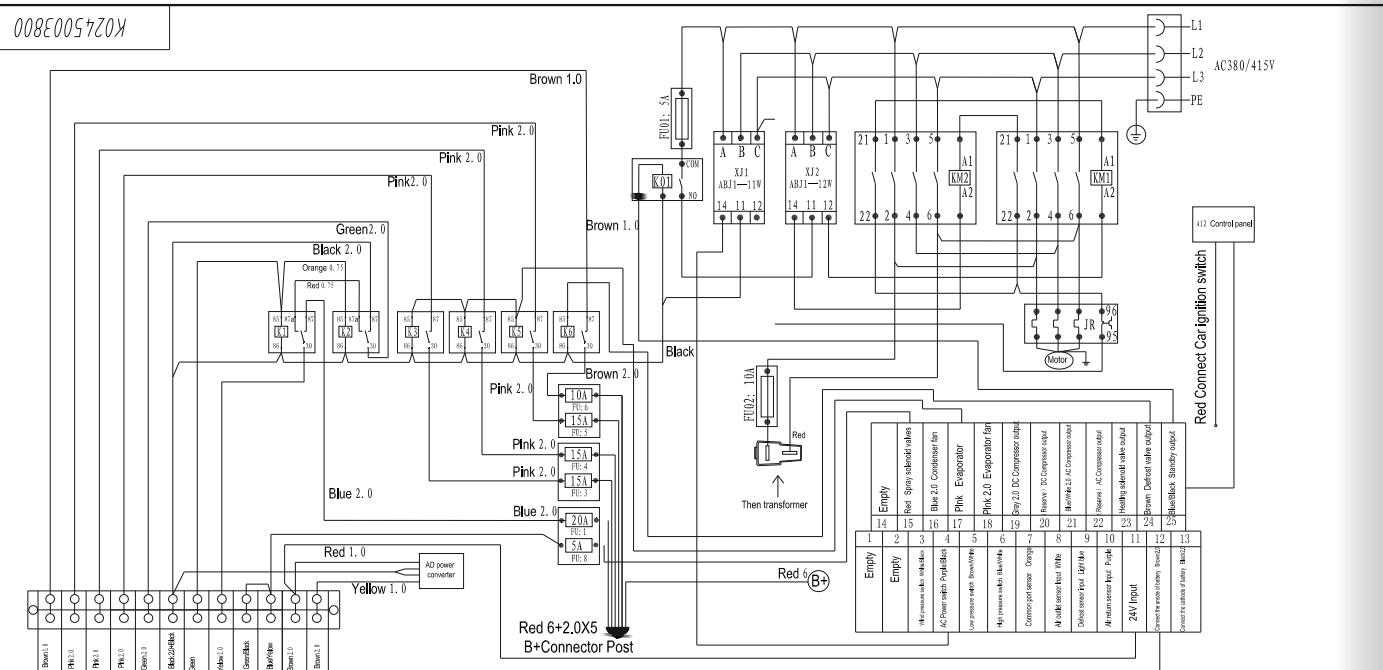
Y1		Y2			Y3			Y4		Y5				Y6	
No		Number			Description			Qty	Material		Single Weight		Total		Remark
						Name	WIRING CONNERCTION DRAWING			K0005003800					
						Type	S533E/S593E/CX399E/S293E/S233E/S133E/K125E/K109S CX399E/QL290E/QL120E/T230E/T120E/T109E/K100			Sample		Qty		Scale	
Mark	File	Name		Sign	Date	Material				Outsourcing		WEIGHT		SCALE	
Design				Standrad											
Proof															
Auditor				Authorize		Remark	(A12) DC12V/24V			KINGTEC					
Technologist				Date											

K025001800



18	FP	Wind pressure switch	50~500Pa	36	Relay board	A12 With control panel
17	WE-4	Evaporator fan	12V/24V	35	PC	Car carry
16	WE-2	Condenser fan	12V/24V	34	BATT	Standby control relay
15	YC1	Magnetic clutch (Unit)	12V/24V	33	M1	220V/24V Coil 120W
14	YC2	Magnetic clutch/Standby	12V/24V	32	K1-6	Relay
13	TR	Transformer	380V/15.5V 100W	31	FU	Fuse assembly
12	D	Rectifier bridge	100V/100V	30	FR1-0	Shipfuse
11	SA	Solenoid switch	Car carry	29	FR1-4	Shipfuse
10	TS	Spray solenoid valve	12V/24V	28	FR1	Shipfuse
9	TS2	Defrost solenoid valve	12V/24V	27	FR1-2	Shipfuse
8	TS1	Cooling solenoid valve	12V/24V	26	FR1	Shipfuse
7	TS1	Heating solenoid valve	12V/24V	25	M	Motor
6	TS1	Defrost temperature sensor	With control panel	24	MP	High pressure switch
5	TS2	Air outlet temperature sensor	With control panel	23	LP	Low pressure switch
4	TS1	Air outlet temperature sensor	With control panel	22	HP	High pressure switch
3	XJ1	3PAC Protector	AB11~11W	21	LR2	Heating wire
2	XJ2	3PAC Protector	AB11~12W	20	LR1	Heating wire
1	AD	Power converter	24V Transfer 12V	19	NTL	Temperature switch (Other opt)
Item Code	Component	Specifications	Remark	Item Code	Component	Specification

Y1		Y2			Y3			Y4		Y5							Y6	
No		Number			Description			Qty		Material			Single Weight		Total		Remark	
							Name	Schematic Diagram			K0245001800							
							Type	S733E			Sample			Qty		Scale		
Mark	File	Name		Sign	Date	Outsourcing					WEIGHT		SCALE					
Design				Standrad			Material				PAGE		PAGE					
Proof																		
Auditor				Authorize			Remark	A12(DC12V/24V)			KINGTEC							
Technologist				Date														



Note:
The model of control panel is A12;
AD power convert module needn't install when DC on 12V.

Y1	Y2	Y3	Y4	Y5	Y6
No	Number	Description	Qty	Material	Remark
		Name	WIRING CONNERCTION DRAWING	K0245003800	
		Type	S733E	Sample	Qty
Mark	File	Name	Sign	Date	Scale
Design		Standrad			WEIGHT
Proof					SCALE
Auditor	Authorize				
Technologist	Date	Remark	(A12) DC12V/24V	KINGTEC	