Controller Operation Instruction

(62710010, 62710011, 62700170, 62700171)

Product Feature

- Refrigeration、Ventilate and strong refrigeration 3 work pattern
- Infrared remote control function
- Wind speed high, middle, low hand operation, controller is adjustable
- vehicle mains input examine function
- all quality goods electronic element, designed by senior hardware engineer, have electrical parameter and quite reliable.
- Control software using expert-level air conditioning control theory, with particular emphasis on control details , the air conditioning system and vehicle power supply protection measures are very complete
- temperature sensor fault, air conditioning line pressure fault and power supply voltage fault detection function
- complete fault alarm indication and fault handling mechanism

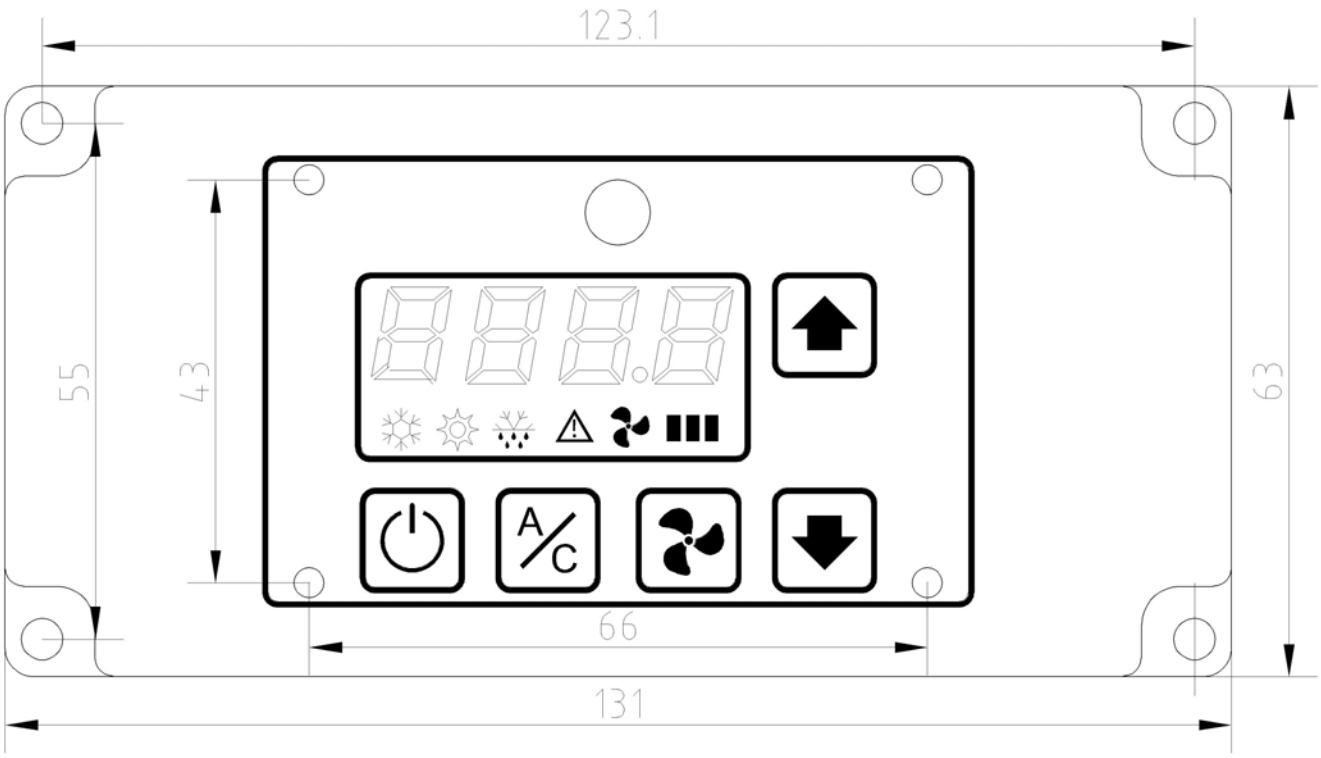
Remark1. Detail Citing Show

①Output Delayed Function——it has the corresponding delay time between the Key Th and implementation output, reduce the air conditioning malfunction effectively
②Compressor anti-frequency start function - the compressor must start more than 30 secondsinterval from last closing time.
③Power protection function - when adjust air flow or switch compressor, will be in accordance with the order of the corresponding time interval to achieve the current buffer processing, let the power supply escape the big influence from surge current.

Technical Parameter

■ rated operational voltage :	DC24V / 12V
■ working voltage max allow band:	DC16V ~ DC32V / DC8V ~ DC16V
■ rated operational current :	Less than100mA
■ voltage detection range :	DC0V ~ DC50V
■ using temperature range :	-20℃ ~ 85℃
■ temperatureresetprecision :	**1**℃
■ temperature set range :	**15**℃ ~ **40**℃
■ temperature display precision :	**0.1**℃
■ temperature display range :	**-9**℃ ~ **85**℃
■ temperature detect control standards :	Inside temperature control is air grill temperature sensor as the criterion. , Defrost temperature control is defrost temperature sensor as the criterion.
■ temperature sensor model :	**B =3275K 25**℃**, R_{25} = 5KΩ**
■ pressure switch signal type:	Normal ground connection, unnormal disconnect and hang in the air
■ high、middle、low three grade output capacity	max**15A**
■ refrigeration control output capacity	**max5A**
■ Input Extend :	Humidity sensor、oxygen sensor、defrost sensor outside temperature sensor、air quality sense
■ output extend :	humidifier, ozonateur etc.
■ controller protection level :	IP54
■ **EMC** testing standard :	ISO 11452
■ Weight :	200gram

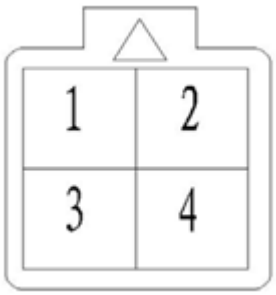
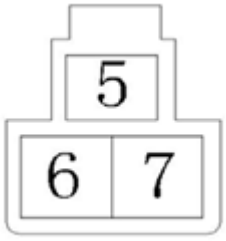
External Dimension Diagram Form



Install trepanning diagram form

Remark：above marked units are all mm (mm).

Interface definition diagram form

Connector Description(Seen from the protective jacket)			
			
1	Evaporator Fan Speed 1	5	Cooling signal line
2	Evaporator Fan Speed 2	6	Cathode
3	Evaporator Fan Speed 3	7	Anode
4	Evaporator fan Cathode		

Controller Panel Picture

Air conditioning startup & shutdown operation procedure

- startup flow：

  （1） onset vehicle engine.

  （2） short-press control panel on-off key starting up, explain and operation follow-up according to this instruction book.

- shut down flow：

  （1） short press control panel on-off key shutdown.

  （2） wait panel display totally close, then turn off vehicle engine. Remark: If don't startup and shutdown according to this flow, the ac system will be damaged easily, we are not responsible for this.

Control Panel Key Function Specification

- Startup & shutdown key

  Start up operation：control panel is on the electrification state, short-press startup & shutdown key to open the AC system. It can enter into running status before shutdown last time if the system is normal . The air conditioning system is opened successively 2 seconds interval in the order of evaporator low, medium, high cooling order.

  Shutdown operation：on the start state, short press the panel or remote control startup & shutdown key, the system enters into the shutdown process, air conditioning system, in accordance with the cooling, evaporator high, medium and low order successively interval 2 seconds shut down.

- **A/C Key**

Short press A / C key, the system switches between cooling mode and ventilation mode. When the system into the cooling mode, the cooling indicator light into yellow or blue, indicate that it has entered the cooling mode. Cooling indicator light yellow indicates not open cooling mode at present; Blue indicates it open cooling mode at present.

When the system enters ventilated mode, the cooling indicator goes off, indicating access to ventilation mode. Long press A / C key for 3 seconds, the system into the strong cooling mode, then the display on the cooling light is lit, which has entered a strong cooling mode.

- **Increase Key**

  In the vehicle temperature display interface, press the increase key to enter the set temperature interface, the viewing screen will blinking display the temperature setting value.

  At this point press the increase key to up regulation the interior temperature , until to the maximum set value (40 ℃), support long press and continue increase. No operation after 5 seconds automatically take effect and switch to the vehicle temperature display.

  In the air volume adjustment interface, you can press the increase key to increase the air volume, the maximum setting air volume is the 3 grade.

- **Reduce Key**

  In the vehicle temperature display interface, press the reduce key to enter the set temperature interface, the viewing screen will blinking display the temperature setting value.

  At this point press the reduce key to down regulation the interior temperature , until to the minimum set value (15 ℃), support long press and continue reduce.

  No operation after 5 seconds automatically take effect and switch to the vehicle temperature display.

  In the air volume adjustment interface, you can press the reduce key to reduce the air volume, the minimum setting air volume is the 1 grade.

- **Air Volum Key**

Short press air volum key, enter into the evaporator blower adjust interface. Viewing screen display the setting air volum value in the form of “F1”“F2”“F3”.

At this time you can press the air volume key to set the air flow, set the range of the lowest 1 grade, up to 3 grade. No operation after 5 seconds automatically take effect and switch to the vehicle temperature display. The airflow icon behind the fan icon indicates the current actual operating air flow level.

Long press the air volume key for 3 seconds, enter the system voltage display interface.

No operation after 5 seconds automatically take effect and switch to the vehicle temperature display.

AC System Work Mode Instruction

If no specific instruction, following identifying implication :

Tse	AC panel setting temperature
t	Return airinlet temperature（inside temperature）
Tin	Defrost temperature
Tde	
f	

△T = Tin - Tset

■ **Cooling mode**

In the cooling mode, the cooling output automatic switch with the temperature changes

$T_{in} - T_{set}$	>= 1℃	Cooling start
$T_{in} - T_{set}$	<= -1℃	cooling stop

In addition, the necessary conditions for cooling open include:

1, the compressor minimum downtime is greater than 30 seconds

2, air conditioning pipeline pressure normal

3, the vehicle power supply voltage in the normal range

4, not in the defrost state

5, defrost sensor is not faulty (if there is failure, then start circulation cooling according to the period start 55 minutes and close 5 minutes)

■ **strong cooling mode（maintenance function)**

This mode is mainly used for maintenance and repair the compressor when the ambient temperature is too low. Press the mode key for 3 seconds, the cooling indicatorlight blinks quickly, expression into the strong cooling mode. After entering the strong cooling mode, whether cooling is no longer refer to the △T value, but still have to meet the other necessary conditions for cooling.

When there is a failure to affect the cooling conditions, the system automatically withdraw from the strong cooling mode, enter the manual cooling mode. It is recommended to proceed 1-2 times strong cooling in the season of not open cooling , each time around10 minutes is appropriate. It can be extended

Compressor life effectively.

Control panel function declaration

- **air volum setting function**

  In the vehicle temperature display interface, by pressing the air volume key, enter the air volume setting interface, the display with "F1" "F2" "F3" indicates the current set air volume. At this point you can press the increase key or reduce key to adjust the air volum of evaportor blower, you can also press the air volume key to circulation adjust,and the adjustment range is from 1 to 3. No operation after 5 seconds automatically take effect and switch to the vehicle temperature display.

- **temperature setting function**

  In the vehicle temperature display interface, by pressing the increase key or reduce key to enter the temperature setting interface, at the same time temperature set point blinking display on the display, can set the temperature by pressure the increase key or reduce key.Temperature set range 15℃~40℃。No operation after 5 seconds automatically take effect and switch to the vehicle temperature display.

- **system voltage check function**

  Long press air volum key 3 seconds,at this point viewing screen display vehicle power supply voltage （unit：volt). No operation after 5 seconds automatically take effect and switch to the vehicle temperature display.

- **compressor protection function**

  1、compressor 30 seconds min stop time

  Normal compressor shut keep 30 seconds min stop time in the compressor operational process, compressor only start after shut min 30 seconds.

  2、AC line pressure anomaly detaction protection

  The air conditioning system simultaneously detects abnormal pressure in the system piping and stops the compressor output in the event of an abnormality to protect the compressor.

- **pattern & parameter power down save function**

  This controller can keep work pattern, air volum, setting temperature etc. data,it will self-motion load above data,in order to keep users habitual operationg mode.

Vehicle voltage abnormal range

Use symbolU as vehicle voltage

1、to 24VDC voltage power supply vehicle：

U>=32VDC	Overtension fault	U <=29VDCrecover
U<=21VDC	Brownout fault	U >=23VDCrecover

2,To12VDC voltage power supply vehicle：

U >=16VDC	Overtension fault	U <= 15VDCrecover
U <=8VDC	Brownout fault	U >= 10VDCrecover

Fault code & treatment mechanism

Item	fault code	Controller Showing	Treatment measure
Indoor Temperature Sensor	Indoor temperature sensor broke Line: OPE1 Interior temperature sensor short circuit：**SHr1**		Interior temperature sensor fault, if other refrigeration/heat condition meet,then open refirgeration/heat.
Defrost Temperature Sensor	Defrost temperature sensor broke Line: OPE2 Defrost temperature sensor short circuit：**SHr2**		Defrost temperature sensor broke, and other cooling condition are OK, please operate as switch on cooling for 55’ and switch off cooling for 5’.
Hose Pressure	Pressure Fault: PER		No Cooling Air.
Power Voltage	Lower than DC21V/DC8V:LUER Higher than DC32V/DC16V		The system does not work.
Note: When the fault occurs, if there is only one fault, Fault code and Interior temperature alternately significant Show. If the number of faults is more than one, the total number of faults ("Ex" x is the number of faults) is displayed alternately with the fault code.			

Controller test standard declaration

Remark : test **LDCP1035G** controller according to **QC-T 413-2002** standard request.		
Project	Test Result	**Remark**
Vibration test	Size up	
Abnormal voltage test	Size up	
Sault spraytest	Size up	
Overvoltage test	Size up	
High temperature test	Size up	
Constant muggy test	Size up	
Waterproof test	Size up	
Electromagnetic interference test	Size up	