Version: 1.02

Solar powered irrigation controller with moisture sensor & pump

GG-005 MS&P

User Manual

www.anctech.com

Content

1.Installation

1.1. Introduction

This auto controller includes both a moisture sensor based control and timer based control, is for a garden with a rain tank.

This controller can control 12V/1A mini water pump(The pump must be used in water when it works, if not, it will be burned; and the pump can continuously work 3 hours with fully charged battery（test environment: Lift:3.2ft, flow:380 L / hr）) and can control 6-12V DC valve or latching valve, and also can control less than 250V/30A pump after connecting ANC another pump relay. This controller can control one pressure switch to check normal open/close pump.

Solar powered with LCD display, 12V/4500mAh lithium rechargeable batteries are included, it's very easy to operate. It is intelligent Controller with built moisture sensor and pump plus magnetic valve.

2. Specifications

Solar panels: 17.4V DC /220mA/3.8W

Back-up battery: 12V/4500mAh lithium rechargeable batteries

Quiescent current: 1mA

Working environment: Temperature [-30~60℃]; Humidity [<90%]

Lasting time of fully charged battery: 7 days

Battery charging time: 20 hours in standard illumination

Moisture sensor:

1, Output: digital data

2, Moisture Range: 0-99%

3, Precision: 1%

Pump:

1, DC12V

2,Current:1.05A±10%

3,Lift:12.46ft

4,Flow:600L/hr,at zero lift, without screen

5,Operating Temperature Range: 32-110°F

6,Thread : 1/2” BSP G male thread

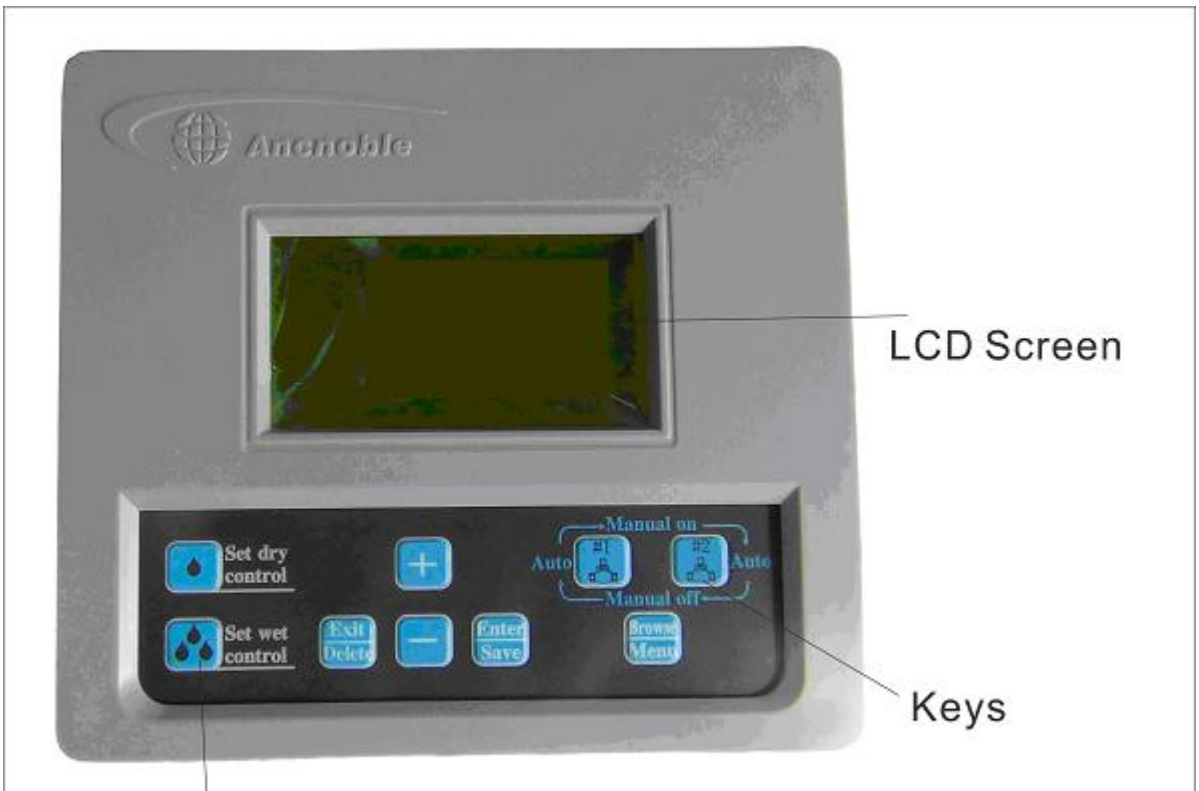
Copper screen:

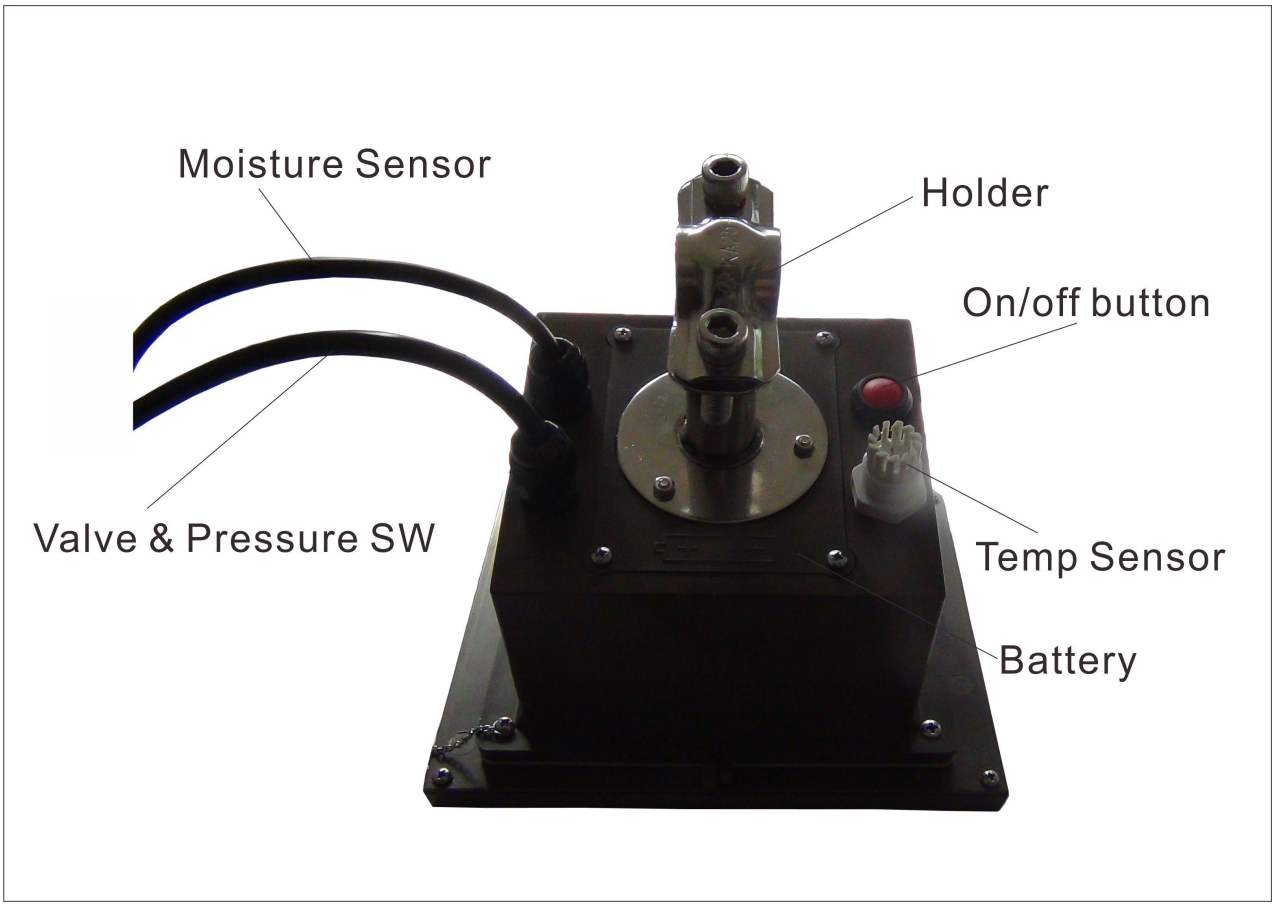
1/2” BSP G female thread in, PE 16 screen out

Pressure switch：

1,Pressure range：0.06Mpa-0.6Mpa;0.1Mpa-1.3Mpa

2,Interface：1/4“ NPT ; 1/4”G male thread





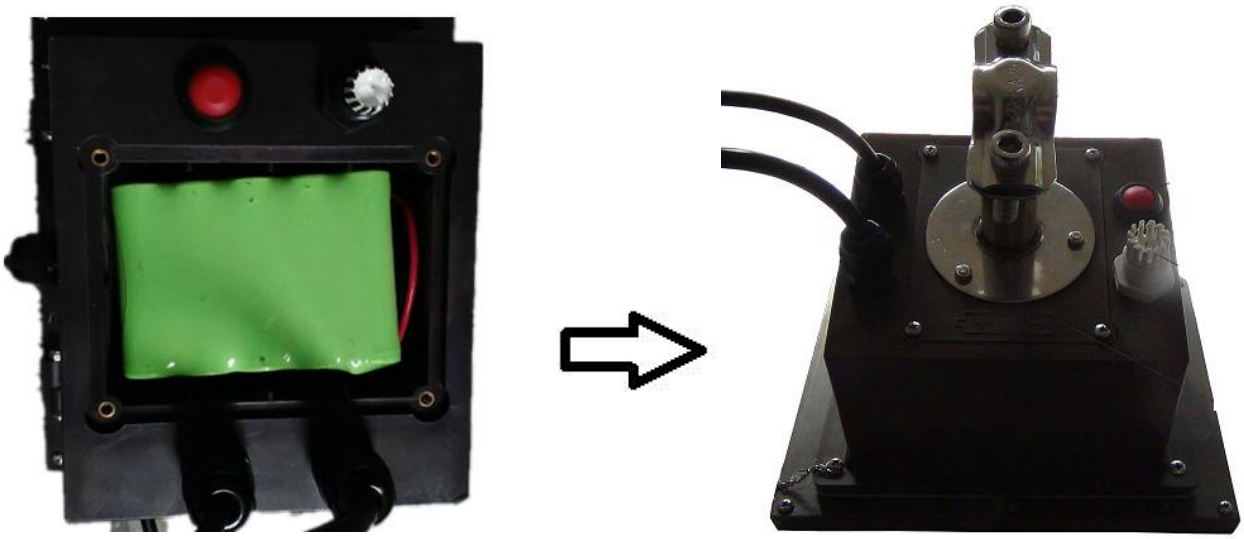
How to install battery pack

First Step: The battery pack in the bottom of the controller, find the battery pack cover, screwing the screws off, and open the battery cover, as following picture.

Second Step: Connect the batter to the battery interface, please pay attention to the

connector , as following picture.

Third Step: Put the battery into battery box, cover back the battery cover and fix it use screws, as following picture.

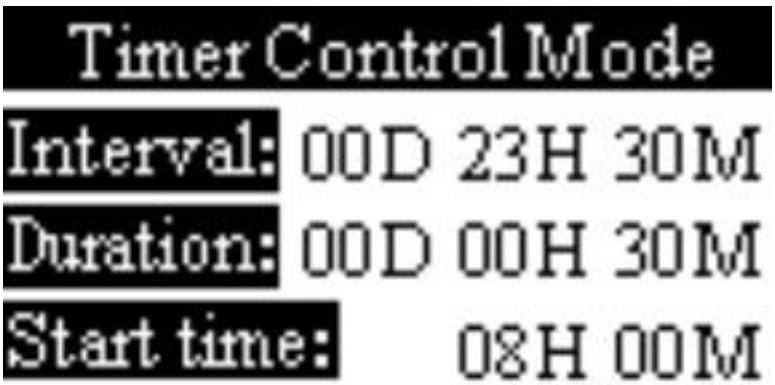


1.3. Power on

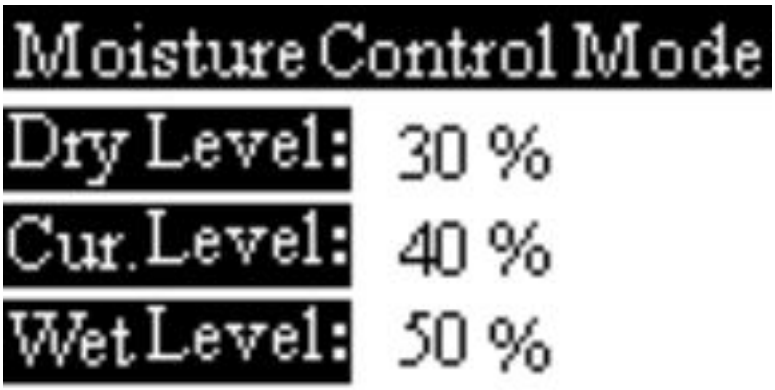
Push and auto-lock the red power switch (Just below the box) and , there will be two beeps, initialize, then into work interface as following

The controller will auto check/close magnetic valve after initialize, and then the controller into work status.

Timer based control



Moisture based control



1.3.1 Work status introduction

Push “+” / “-”key to switch display screen，the display shows current working status and setup information. The controller also turn off display when the backlight is off，user need to push any key to wake up display.

1.4 Basic setup

1.4.1 System setup

Push “+” / “-”key to browse clock menu, push “Enter” key to setup,push “Browse/menu” to set up Year/Month/Day and so on. The display font with shadow when be chosen, then push “+” / “-” to revise system information, then push “Enter” to save.

1.4.2 Working status choose

Push “brown/menu” to choose working status: timer control and moisture control, it is up to user, then push “Ent” to save, then controller work according to setup mode.

1.4.3 Setup low temperature protection

Push “+” / “-”to choose low temperature protection, the setup range is 0 to -30 degree. The controller will be into low temperature protection status when the current air temperature is low than setup temperature, the controller will not open magnetic valve until current air temperature is up to setup value.

1.4.4 Checking Pressure switch

User can disable/enable pressure switch function to check normal open/close water pump/magnetic valve. Push “brown/menu” to choose disable/enable. User must to connect pressure switch after choosing enable function, if not connect, the controller will do wrong alarm. Reference 1.9 for how to install pressure switch.

1.4.5 Setup valve type

User must choose the valve type according to the application. Make sure the setup of valve type matches the valves and correct polarity is used. The controller will shows if to continue after user choose valve type and push “Ent”, then push “brows/menu” to choose and to save.

Note: This function is easy to user to choose pump/valve type according to the application.

General user can directly use the controller, not to change any setup, if user change, must make sure the setup of valve type matches the valves and correct polarity is used. There is warning for this function, be careful to operate.

1.4.6 Pressure switch check period setup

User can setup wrong alarm warning delay time, the range is 01 to 99 minutes. The controller will check pressure switch if work normal after user setup delay function, and it will be effect after user enable and install pressure switch.

1.5 Timer control setup

1.5.1 How to set up

Reference “basic setup”

1.5.2 Timer function introduction

User can set up interval time of watering duration and length of watering duration under time control; and also can set up start time as a reference; and also can set up MAX moisture to prevent flooding irrigation.

1. Interval time: Interval time between irrigation finish time of last event to next

irrigation start time.

2.Duration: Length of time for each Irrigation event

3. Start time: As a calibration time, equal first irrigation time.It's easy to user to proof irrigation cycle.

4. **Maximum Moisture %:** Irrigation will end when the moisture level reaches this %. Although meet irrigation time, it is forbidden to irrigation when the moisture sensor collect the moisture reach MAX.

Note: Each irrigation cycle =Interval time+watering duration

1.5.3 Timer model example

1: A daily 30-minutes irrigation at 8:00 and maximum moisture is 60%:

A: Set interval time is 00 day 23 hours 30 minutes.

B: Set duration time is 00 day 00 hours 30 minutes.

C: Set the start time to 08:00.

D: Set the maximum irrigation moisture of 60%.

After this setting, the controller will be in time for the first time at 8:00 to open valve when proofreading, irrigation after 30 minutes and then stop, if the humidity is over 60%, would immediately stop irrigation, until the humidity is below the set value, the next reincarnation is allowed to open the valve.

2： If the user wants to irrigation in one day each week 8:00, water for 1 hour at a time, soil moisture should not exceed 55%, the largest can be set as follows:

A: Set the interval time is 06 days 23 hours and 00 minutes.

B: Set the duration time is 00 days 01 hours and 00 minutes.

C: Set the start time to 08:00.

D: Set the maximum irrigation moisture of 55%.

After this setting, the controller will be in time for the first time at 8:00 to open valve when proofreading, irrigation 1 hour then stop, if the moisture is over 55%, would immediately stop irrigation, until the moisture is below the set value, the next cycle is allowed to open the valve, if the moisture is no more than set value, at the same time of the next week will again irrigation cycles

3: If the user wants to irrigation 3 times a day, water for 10 minutes at a time, for the first time irrigation time is 8:00, maximum moisture no more than 70%, can be set as follows:

A: Set the interval time is 00 days 07 hours and 50 minutes.

B: Set the duration time is 00 days 00 hours and 10 minutes.

C: Set the start time to 08:00.

D: Set the maximum irrigation moisture of 70%.

After the completion of the user Settings, controller will at 8:00. 16:00; 24:00, irrigation for 10 minutes at a time

1.6 Moisture model set up

1.6.1 How to set up

Reference “basic setup”

1.6.2 Moisture model introduction

In moisture mode, the controller according to the user Settings of wet/dry control points for irrigation, when the moisture is lower than or equal to the dry point of control, the controller open pump/valve, for irrigation, when the current

moisture is greater than or equal to the wet control point, controller will close the pump/ valve, stop the irrigation.

Can set the maximum irrigation time length, prevent conduit blowout or users to install is not correct lead to the phenomenon of water does not stop, when the maximum length of irrigation time still not reached wet control, the controller will close the pump/valve, stop irrigation and buzzer alarm, until the user press any button to exit the alarm or no button controller alarm automatic recovery and back to work after 2 hours.

Can set the allowed irrigation period, to prevent some plants some time do not allow the irrigation condition, such as the plants would die if irrigation in bright sunshine.

1.6.3 Moisture model example

1: If the user wants to the current soil moisture control in 30% to 50% range, and irrigation time does not allow more than 1 hour at a time, also need not in the middle of the 11:00-13:00 between cannot irrigation to avoid bright sunshine, can set the following:

A: Set dry control points to 30%.

B: Set wet control points to 50%.

C: Set allows irrigation start time is 13：00，finish time is 11:00(Be careful not to set backwards if set to start 11:00, end 13:00, the controller will just only in this period of time will be watered).

D: Set the maximum irrigation time is 01:00.

2: If the user wants to the current soil moisture control in 40% to 60% range, and irrigation time does not allow more than 2 hours at a time, also need to can only allowed irrigation of 8:00-9:00 a.m. every day, can set are as follows:

A: Set dry control points to 30%.

B: Set wet control points to 50%.

C: Set allows irrigation start time is 08:00, finish time is 09:00.

D: Set the maximum irrigation time is 02:00.

1.7 Manually open/close Pump/valve

On control panel, choose and push "#1  ", LCD will display "Manual on"，push again, LCD will display "Auto off"， push again, LCD will display "Manual off"；Push again, LCD will display "Auto off".

If user did manual open/close, the valve will keep open/close until main controller or wireless field controller change the status back to "Auto".

1.8 Power off

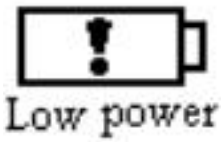
Press the power switch and power controller to turn it off

1.9 Controller sleep

If controller works normally, when the backlights go out, the LCD do not display any content, and user can push any key to make backlight and LCD on again.

During working period, controller will check the voltage of the battery time to time. When the backup battery voltage is lower voltage, the controller will turn off all the pump/valve, then put self into sleep, waiting for the solar panel to recharge the battery. When the battery voltage is back to high voltage, the controller will automatically back to normal working status. During sleep period, if the solar panel still can't charge up the battery, if the backup battery voltage drops to Alarm voltage, for protecting the battery from over discharge, the controller will automatically turn from sleep status to total turn off.

After been total turn off, the solar panel will still charge the battery as long as there is sun. The controller will automatically boot back to work.



2.0 How to install Pressure Switch

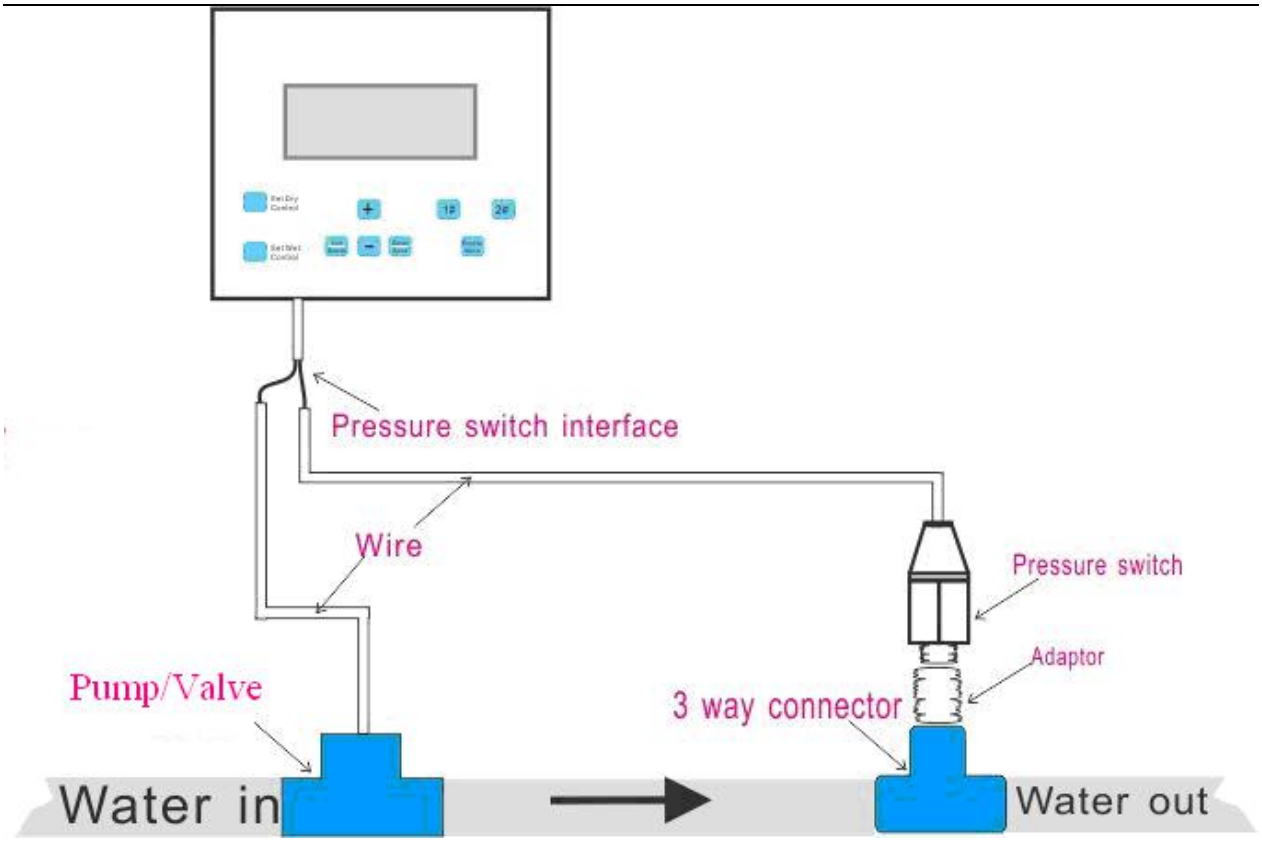
1. If install water pressure switch for pump/valve, pull out the related pressure switch connector from GG-005 MS&P. Unscrew the screws.

2. Connect the wire from the pressure switch to the connector, tight up the screw.

3. There is pressure switch input beside each valve connector for GG-005 MS&P. Each only work for this valve to check if open/close is normal for this valve.

4. Please enable the pressure switch, details see 1.4.4

5. Manual open 1# valve to check the pressure switch available or not, no leaking, no open/close valve failure alarm, means installation OK.



Note: a. Make sure the 3 way connector thread match with pipe and water pressure switch.

b. The water proof protection wrap of the pressure switch needs to be installed as straight up, to reduce water damage.

c. If the water pipe is straight up, please install a non-return flap valve to avoid water return and leads to the pressure switch not available.

d. After installed #1 water pressure switch to the water out pipe of the #1 valve, then plug the pressure switch connector to the #1 pressure detection input right beside #1 valve.

2 Packing list

1. GG-005 MS&P 1 pcs

2. 12V/1A mini pump 1 pcs

3. One moisture sensor 1 pcs

4. User Manual 1 pcs

5. Warranty card 1 pcs

ANC Technology Limited Warranty card

Dear Customer：

Thank you very much for choosing ANC products.

1. This product has FCC verification and BV certification.

2. Warranty period is one year. Beginning on day of receipt.

3. Please keep your receipt and this warrantee card.

4. Please verify contents are correct, see included items listed in the manual.

5. For warranty repair, customer is responsible for shipping to ANC; ANC pays shipping to customer.

6. Beyond the warranty period, or for damage caused by customer or for other than defects in material or workmanship, ANC offers repair service at customer's expense.

7. Service phone: 021 5974-3993, in China; 1 805 530-3958, or toll free 1 877 822 3958 in North America.

Product			**Type**	
User name			**Ship date**	
Address			**Serial #**	
Tele			**Purchasing date**	
Fax			**Zip code**	
Repairing Record	**Check date**	**Problem**	**What been done**	**Repairer**

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