

L4-EA Controller Manual

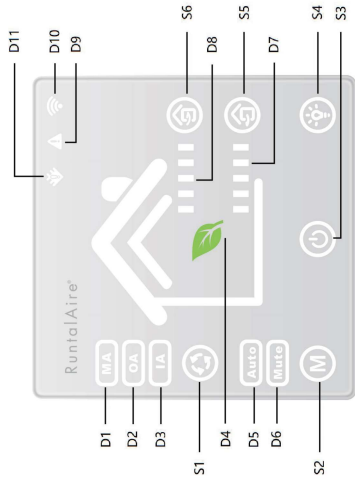
1 Introduction

L4-EA is a controller for remote , manual and automatic control of the RuntalAire® ERVD series units. It can connect to RuntalAire® PM2.5 (A1-EA-PM2.5) or CO₂ wireless sensor (A1-EA-CO₂). The automatic control is according to the unit settings and adjustable time period. If connected to APP on the phone, you could control the unit remotely.

2 Technical Parameters

Power supply	Dimensions	Temperature	Storage temperature
DC12V (Supplied by the PCB board)	86mm*96mm	-20℃ ~-60℃	-30℃ ~ 85℃
Wiring connection	Material	Relative humidity	Installation size
By terminals	Tempered glass+ PC alloy	30 ~ 95%RH	Standard 86 type bottom box

3 Overview of the Display



Button	Meaning	Display	Meaning
S1	Shift circulation mode to MA, OA, and IA. Only available as circulation1 device is connected to the unit. I will be active by pressing S4+S6 for 3 seconds.	D1 Mixed Air circulation mode Icon D2 Outdoor Air circulation mode Icon D3 Indoor Air circulation mode Icon	It is on when the unit running as MA circulation mode.Both outside air and recirculated indoor air supply to the room in proportion. (Only available as the circulation device was equipped.) It is on when the unit running as OA circulation mode. 100% outside air supply to the room. (Only available as the circulation device was equipped.) It is on when the unit work as IA circulation mode. 100% inner circulation and no fresh air supply to the room. (Only can work as the circulation device was equipped.)
S2	Shift the Operation mode to Auto, Mute or Manual. Manual mode is only available as both Auto and Mute icons are off.	D5 Auto Mode Icon D6 Mute Mode Icon D10 Wi-Fi Icon	The air flow is set by the default scheduler, the sensor data or time scheduler in APP. (If no sensor or APP connected, this mode will be not available.) Both supply and exhaust air flow are minimum. It is on as Wi-Fi is connected.
S3	Press S3 for 3 seconds to turn on or off the unit. As the unit is off, S3 button's light will be flashing at slight light.		
S4	There are 3 types of Brightness for screen display: slight light, half light and full light.		
S5	It is not displayed at balance airflow condition.	D7 Current exhaust Airflow Icon	It is not displayed at balance airflow mode, and only displayed when you deactivate the separate airflow control mode.
S6	Supply airflow control	D8 Current supply Airflow Icon	The default setting is balance airflow mode.
S2+S6		D11 Filter Warning Icon	It is flashing to remind that the filters need to be changed. Press S2+S6 for 3 seconds to restore the filter using time.
S2+S4	Press S2+S4 for 3 seconds to activate or deactivate the separate control of the fans. The default setting is balance airflow mode.		
S4+S6	Press S4+S6 for 3 seconds will activate or deactivate the circulation mode.		
S3+S4	Press S3+S4 for 3 seconds to connect the sensors to the controller.	D4 Air quality display Icon	Air quality display according to the sensor data. Green=Air quality is good. Blue=Air quality is not very good. Red=Air quality is bad.
S2+S3+S4	Press S2+S3+S4 for 3 seconds to restore to the factory default value.		
D9			It is on as the communication is failed. When it is flashing, the unit will shut off.

* Note: If there is no operation within 30 seconds at normal Operation condition, the controller will hide the display, Press any key to re-light the screen.

4 Setting and Operation

4.1 Operation mode

4.1.1 Auto mode

- A. If the controller is not connected to the wireless sensor or bounded to the APP, the Auto mode will be invalid, you can only set the controller to manual mode or mute mode;
- B. If the controller is not connected to the wireless sensor but bounded to the APP, the controller will work as the time periods set on the APP, default time periods are as following:

Time period	1st period	2nd period	3rd period	4th period
Fan speed on Weekdays	6:00~8:00	8:00~18:00	18:00~22:00	22:00~6:00
Fan speed on Weekends	Low	Mid	Mid	Low

- C. If the controller is connected to the wireless sensor module (only one sensor can be connected at one time), the controller will change the fan speed automatically according to the PM2.5 or CO₂ value. And also the PM2.5 or CO₂ value will be displayed on the APP with different colored backgrounds showing different air quality.

PM2.5 value	Air quality	Display color	Fan speed level
0 ~ 35ug/m³	A	Green	Low
36 ~ 75ug/m³	B	Blue	Mid
76 ~ 150ug/m³	C	Red	High
>150ug/m³	C	Red	Ultra high

CO ₂ value	Air quality	Display color	Fan speed level
< 600ppm	A	Green	Low
600 ~ 1000ppm	B	Blue	Mid
>1000ppm	C	Red	High

* **Note:** If the controller is connected to both the wireless sensor module and the APP, the controller will take the data collected from the wireless sensor module as a priority.

4.1.2 Manual mode

You can set the fan speed manually only at Manual mode. The default setting is balance airflow for supply and exhaust fans. S5 button and D7 will be not displayed. Press S6 button to change the fan's speed among Mute - Low - Mid - High - Full - Off.

Pres S2 + S4 for 3 seconds to activate or deactivate the separate control of the fans. You can adjust the supply airflow by pressing S6 button and adjust the exhaust airflow by pressing S5 button among Mute - Low - Mid - High - Full – Off mode.

4.1.3 Mute mode

At mute mode, the fans run at a very low speed so as to avoid making more noises. The fan speed can not be adjusted manually at mute mode until switched to manual mode.

4.2 Circulation mode

* **Note:** Circulate mode is deactivated as default. Pressing S4+S6 for 3 seconds will activate or deactivate the circulation mode. To avoid potential damage or communication error, please active circulation mode only as circulation device is equipped. On the contrary, do not deactivate the circulation mode when the circulation device is equipped in case the unit will not run properly.

There are 3 states at circulation mode: Outside Air (OA) mode, Mixed Air (MA) mode, and Indoor Air (IA) mode.

4.2.1 Running at Auto mode or Mute mode

The outside air valve and recirculated indoor air valve will open as following:

- A. OA mode: when the outside temperature is among 0℃ ~ 35℃, OA mode will run automatically. The outside air valve will be full open, and recirculated indoor air valve will be closed.
- B. MA mode: when the outside temperature is among -15℃ ~ 0℃, MA mode will run automatically. The valves open proportion is according to the outside temperature.
- C. IA mode: when the outside temperature is below -15℃ or above 35℃, IA mode will run automatically. The outside air valve will be closed, and recirculated indoor air valve will be full open.

In order to keep indoor oxygen content, after IA mode running for 60 minutes, outside air valve will be full open for 5 minutes to inlet fresh air.

4.2.2 Running at Manual mode

When the outdoor temperature is among 0℃ ~ 35℃, you can set the circulation mode manually by pressing S1 button by OA mode - MA mode- IA mode.

In order to protect the unit from being damaged by frozen:

- A. When the outside temperature is among -15℃ ~ 0℃, MA mode will start automatically. You can not set to OA mode manually but can set to IA mode.
- B. when the outside temperature is below -15℃ or above 35℃, IA mode will start automatically. You can not set to OA mode or MA mode.

4.2.3 Failure

If there is any failure in the communication with circulation function, IA mode will start automatically. The warning icon D9 will start to flash when IA mode has run for 15 seconds. Both outside air valves and recirculated indoor air valve will be closed. And both supply and exhaust fans will stop. Please contact your supplier immediately.

5 Replacing the filters

Please replace the filters every 90 days at least. This will insure a comfortable and healthy air quality and also will protect the unit from pollution.

5.1 Filter warning icon

When the filters need replacing, the filter warning icon alarm (D11)  icon will flash.

5.2 Filter replacement period

The default filter replacement period is 90days, you can set the filter replacement period on the APP but not on the controller.

5.3 Restart the filter using time

After the filter replacement, press S2+S6 at the same time for 3 seconds to restart the filter using time, the filter warning icon will flash 3 times.

6 Connect to wireless sensor

Two optional wireless sensors PM2.5(A1-EA-PM2.5) or CO₂(A1-EA-CO₂) can be connected to the controller, but only one sensor can be connected at a time. The wireless sensor has a battery inside and is movable anywhere at home. You can use a USB 5V adapter to charge the sensor.

While connecting or disconnecting to the sensor, take the sensor down from the charger, and make sure the sensor is turned on.

6.1 Connect the sensor

Press S3+S4 for 3 seconds to connect the sensors to the controller. The air quality icon (D4 green leaf) will be blinking, and then press the connecting button at the back of the sensor for 3 times. When the sensor is connected to the controller, the air quality icon (green leaf) will be lighted all the time, and the leaf color will change according to the air quality. You can check the air quality value on the APP. If the APP displays "- ", it means that the sensor is out of order.

6.2 Disconnect the sensor

As the sensor is connected to the controller properly, press S3+S4 for 3 seconds to disconnect the sensor to the controller, and the air quality icon (red leaf) will be blinking and the air quality icon will be off after 5 seconds.

Please refer to the sensor operation instruction for detailed information.

Note: If there is no sensor connected to the controller, the air quality icon will not be on. **The controller is NOT connected to any sensors by default.**

7 Wi-Fi Configuration

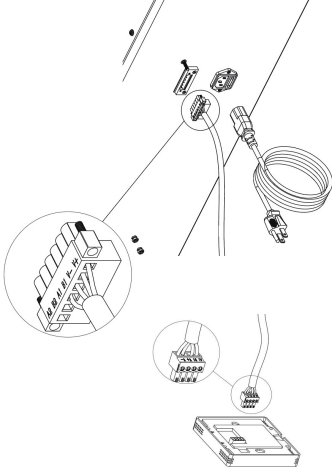
Press S2 to connect the Wi-Fi. For more detail, please refer to "APP operation instruction".

8 Reset to factory default values

When the controller is OFF, press S2+S3+S4 for 3 seconds, it will restore to the factory default values. (Eg.: filter warning time, fan motor running time, and schedule setting, etc.)

9 Connect to the Unit

The L4-EA controller is connected to the unit by a connector cable. One side of the cable terminal has 6 ports which is connected to the unit, and the other side has 4 ports which is connected to the controller.



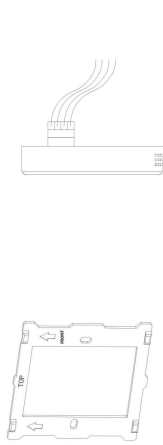
4 ports terminal controller

6 ports terminal to unit

Please connect the V+, V-, A1, B1 ports at the unit connector terminal strictly corresponds to the same ones at controller. Any disordered wiring will cause damage to the controller or PCB main board of the unit.

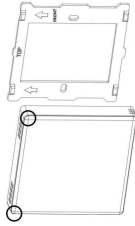
Notice: Only qualified electrician with the understanding of wiring diagrams and knowledge of electrical safety could implement installation.

10 Installation



1 Fix the back plate on the wall's bottom box with 2 screws.

2.Turn off the power, connect the cable to the terminal correctly and tightly. Connect the terminal to the controller.



3. Fasten the front plate onto the back plate, and make sure all the installation and connection are tight.



4.Turn on the power and operate the controller.

Notice:

- A qualified electrician with the understanding of wiring diagrams and knowledge of electrical safety should implement installation according to the instructions completely.
 - Before installation, please confirm the real voltage complying with the device's specification. Cut off any power supply to secure the safety of people and device.
 - During installation, protect the device from any physical damage by dropping or bumping. If happens, please contact the supplier for maintenance.
 - Keep the device away from acid-base and other corrosive solids, liquids, gases, to avoid damage.
 - Avoid overexertion during operation, to protect device from mechanical damage.
- The product is subject to continuous development and improvement. The product may be slightly different from the given descriptions.

The product Contains FCC ID:2A3VE-TCM-F401-W4S

Contains IC:28014-TCMF401W4S

FCC Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Important Note:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

ISED Statement

This device complies with Industry Canada license - exempt RSS standard(s).

Operation is subject to the following two conditions:(1)This device may not cause interference, and(2)This device must accept any interference, including interference that may cause undesired operation of the device. The digital apparatus complies with Canadian CAN ICES - 3(B)/NMB - 3(B).

Radiation Exposure Statement

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation de cet appareil ne doit pas produire de brouillage et (2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement. Déclaration d'exposition aux radiations

Cet équipement est conforme aux limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à une distance minimum de 20cm entre le radiateur et votre corps.

This radio transmitter (ISED certification number: 28014-L4EA) has been approved by Industry Canada to operate with the antenna types listed with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (ISED certification number: 28014-L4EA) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.