



Owner's Manual

Original Instructions

Linkage Controller LE60-24/H1

To Users

Thank you for selecting C&H product. Please read this instruction manual carefully before installing and using the product, so as to master and correctly use the product. In order to guide you to correctly install and use our product and achieve expected operating effect, we hereby instruct as below:

- (1) This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
- (2) This instruction manual is a universal manual; some functions are only applicable to particular product. All the illustrations and information in the instruction manual are only for reference, and control interface should be subject to actual operation.
- (3) In order to make the product better, we will continuously conduct improvement and innovation. If there is adjustment in the product, please subject to actual product.
- (4) If the product needs to be installed, moved or maintained, please contact our designated dealer or local service

center for professional support. Users should not disassemble or maintain the unit by themselves, otherwise it may cause relative damage, and our company will bear no responsibilities.



This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

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1 Safety Notices (Please be sure to abide them)



WARNING: If not abide them strictly, it may cause severe damage to the unit or the people.



NOTE: If not abide them strictly, it may cause slight or medium damage to the unit or the people.



This sign indicates that the items must be prohibited. Improper operation may cause severe damage or death to people.




This sign indicates that the items must be observed. Improper operation may cause damage to people or property.



WARNING!

This product can't be installed at corrosive, inflammable or explosive environment or the place with special requirements, such as kitchen. Otherwise, it will affect the normal operation or shorten the service life of the unit, or even cause fire hazard or serious injury. As for the above special places, please adopt special air conditioner with anti-corrosive or anti-explosion function.

2 Operation Notices

 NOTICE!	
(1)	Please strictly abide by the interface specifications to connect the power source to this appliance, otherwise it may damage the appliance and cause fire hazard.
(2)	Before touching the electric components, please be sure the appliance is disconnected to power.
(3)	Never install the appliance in a damp place or allow it to be exposed to direct sunlight.
(4)	Never install the appliance near heat source or a place that may easily get splashes of water.
(5)	Please install the appliance in a place without electromagnetic interference or dusty particles.
(6)	Make sure that the communication wires are connected to the correct ports, otherwise communication failure will occur and may damage the appliance.
(7)	Once wires are connected, use insulative tape to protect the wires from oxidation and short circuit.
(8)	Working conditions for the appliance: ① Temperature: -20 ~ +60°C; ② Relative humidity: ≤85%; ③ Install it indoors (better to install it in an electric control cabinet), avoid direct sunlight, rain and snow.
(9)	All the graphics in the instruction manual are for reference only.

3 Functions Introduction

The linkage controller can detect the strong current and weak current gate control signals and passive dry contact signals (window switch, fire alarm, etc.) to achieve linkage control of switching indoor unit on/off by gate control system, window, fire alarm and other signals.

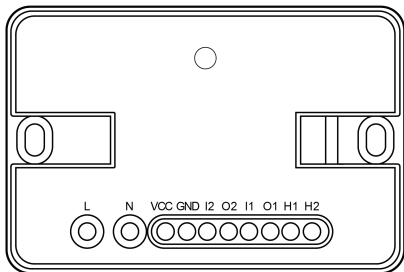


Fig.3.1 Exterior Sketch of Linkage Controller

4 Detailed Introduction

4.1 Description of Ports

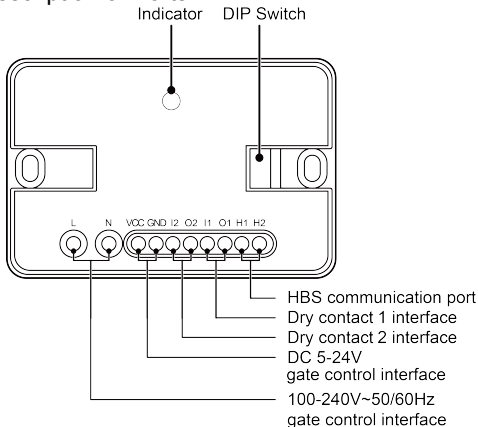


Fig.4.1 Diagram of Ports

HBS communication port (H1, H2): It is connected to the indoor unit of air conditioner through a 2-core communication wire. It is used for the indoor unit to supply power to linkage controller and communicate with linkage controller. The linkage controller can be

connected to indoor units alone or with a wired controller. It can be set as Master/Slave HBS device through DIP Switch setting. Please refer to Section 4.3.1 for detailed setting method of DIP Switch and refer to Section 5.3 for wire connection of the interface.

Dry contact interface (I1 and O1, I2 and O2): Connect the terminal of dry contact signals to the I1 and O1 port or the I2 and O2 port, which can achieve linkage control of switching unit on/off by detecting opening and closing of the window, fire alarm or other passive signals. Attention to the following items:

- 1) When any dry contact detects the following signal changes, linkage controller switches unit off.
 - ① When the DIP switch function corresponding to the dry contact is set to “Dry contact disconnected for switching unit off”, the dry contact signal is changed from connection to disconnection and lasts for 5 seconds.
 - ② When the DIP switch function corresponding to the dry contact is set to “Dry contact connected for switching unit off”, the dry contact signal is changed from disconnection to connection and lasts for 5 seconds.
- 2) After the unit is switched off in above way, it can be turned on by other devices (such as a wired controller).
- 3) After the signal recovers, the original startup or shutdown state of the unit will restore. However, if manual operation for unit startup is done before the signal recovers, the original startup or shutdown state of the unit will not restore after the signal recovers.

- 4) Please refer to Section 4.3.2 for the DIP Switch setting method corresponding to dry contact function.

Gate control interface (N and L, VCC and GND): The linkage controller has gate control interface, which can be connected with gate control system to switch unit on/off by inserting or removing a card. If you want to control indoor unit's functions through gate control, make sure the 4th lever of the DIP switch is turned to the "1" side, then connect the gate-control terminal to the N and L port or the VCC and GND port. Attention to the following items:

- ① The N and L port is the power supply interface of the 100-240V~50/60Hz gate control.
- ② The VCC and GND port is the power supply interface of the DC 5-24V gate control.
- ③ Only one power input can be chosen between the 100-240V~50/60Hz and the DC 5-24V.
- ④ Please refer to Section 4.3.3 for the detailed setting method of DIP Switch and refer to Section 5.4 for wire connection of the specific interface.

4.2 LED Indicator

The following table is a detailed description about the LED indicated in Fig.4.1:

The LED indicator lights up	The linkage controller works.
The LED indicator blinks	The communication between the indoor unit and the linkage controller has malfunction.
The LED indicator lights off	The power supply of linkage controller is cut off.

4.3 DIP Switch

NOTE:

If the setting is changed, it will take effect after the linkage controller is re-energized.

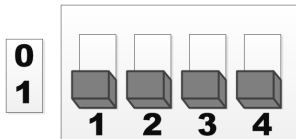


Fig.4.2 Diagram of DIP Switch

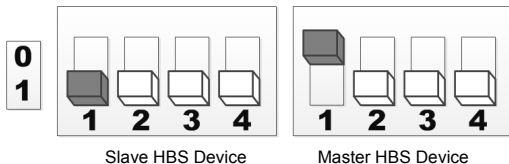
4.3.1 The 1st Lever of DIP Switch –Master/Slave HBS Device Setting

The 1st lever of DIP switch is used for the setting of master/slave HBS device. The factory default setting is slave HBS device.

In an HBS network, if the linkage controller is the only device that is connected to indoor units, it should be set as the master HBS device. Turn the 1st lever of DIP switch to 0.

In an HBS network, if both the wired controller and linkage controller are connected to indoor units, the wired controller should be set as the master HBS device (i.e. master wired controller, please refer to the instruction manual of wired controller for the setting method). So the linkage controller should be set as the slave HBS device. Turn the 1st lever of DIP switch to 1.

Diagram of DIP Switch Setting for Master/Slave HBS Device:



4.3.2 The 2nd/3rd Lever of DIP Switch –Dry Contact 1/2 Signal Change Detection Setting

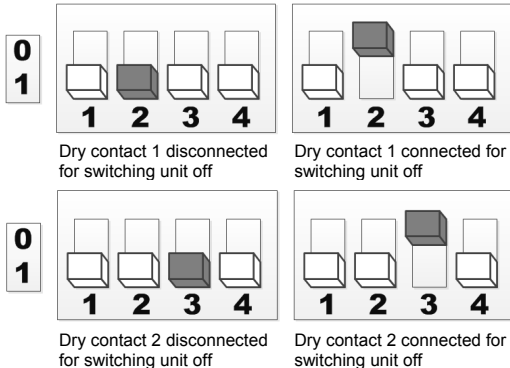
The 2nd/3rd lever of DIP switch is used for the setting of dry contact 1/2 signal change detection respectively. The factory default setting is “dry contact 1/2 disconnected for switching unit off”.

When dry contact 1(I1, O1) signal change detection shall be set to “Dry contact disconnected for switching unit off”, turn the 2nd lever of DIP switch to 1.

When dry contact 1 signal change detection shall be set to “Dry contact connected for switching unit off”, turn the 2nd lever of DIP switch to 0.

Similarly, the 3rd lever of DIP switch corresponds to dry contact 2 (I2, O2) signal change detection. The setting method of dry contact 2 signal change detection is the same as that of dry contact 1 signal change detection.

Diagram of DIP Switch Setting for dry contact 1/2 signal change detection:



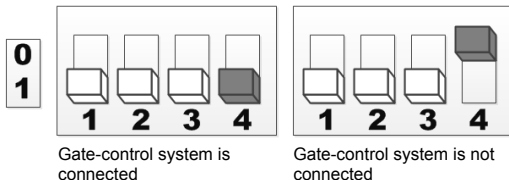
4.3.3 The 4th Lever of DIP Switch –Gate Control System Setting

The 4th lever of DIP switch is used for the setting of Gate Control System. Factory default provided with Gate-control function.

If the gate-control system is involved, turn the 4th lever of DIP switch to 1.

If the gate-control system is not involved, turn the 4th lever of DIP switch to 0.

Diagram of DIP Switch Setting for Gate Control System:



5 Installation

5.1 Dimension

Unit: mm

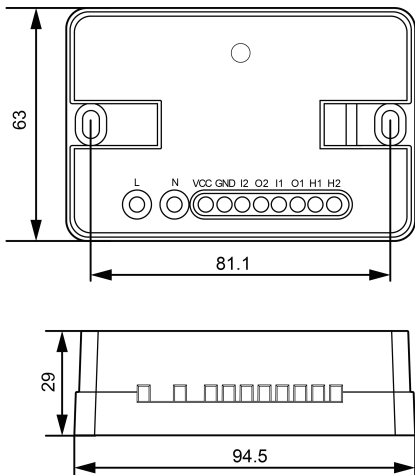


Fig.5.1 Dimensions of Product

5.2 Installation Method

According to actual condition, install the linkage controller in an appropriate place indoors, and secure it with 2 screws. If necessary, push plastic expansion tubes into the wall before secure it with screws.

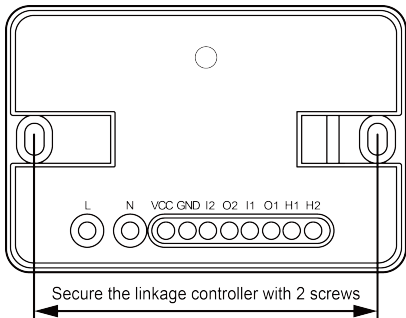


Fig.5.2 Installation Means

5.3 Communication between Linkage Controller and Indoor Units

5.3.1 Selection of Communication Wire

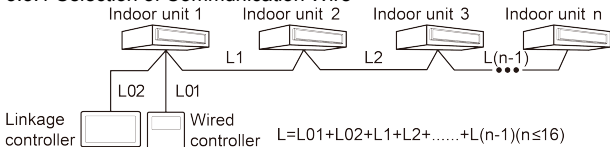


Fig.5.3 Length of communication wire

Wire material type	Total length L (m/feet)	Wire size (mm ² /AWG)	Material standard	Remarks
Light/ Ordinary Polyvinyl chloride sheathed cord. (60227 IEC 52 /60227 IEC 53)	$L \leq 250\text{m}$ ($L \leq 820\text{-}1/5\text{f}$ eet)	2×0.75 $\text{mm}^2 \sim 2 \times$ 1.25 mm^2 ($2 \times \text{AWG}18 \sim$ $2 \times \text{AWG}16$)	IEC 60227-5:20 07	(1) Total length of communication line can't exceed 250m (820-1/5feet). (2) The cord shall be Circular cord (the cores shall be twisted together). (3) If unit is installed in places with intense magnetic field or strong interference, it is necessary to use shielded wire.

NOTES:

- ① If the air conditioner is installed at the strong electromagnetic interference place, communication line of the wired controller and linkage controller must use shielding twisted pair.
- ② Materials of communication line for wired controller and linkage controller must be selected according to this instruction manual strictly.

5.3.2 Requirements for Wired Connection

Network connecting methods between linkage controller and indoor unit are as below:

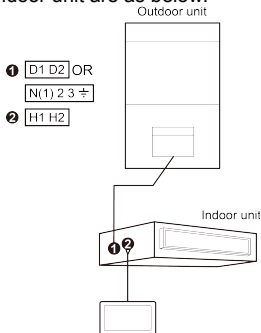


Fig. 5.4 one linkage controller controls one indoor unit

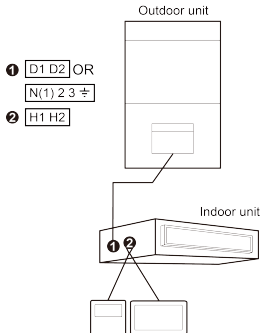


Fig. 5.5 one linkage controller and one wired controller control one indoor unit

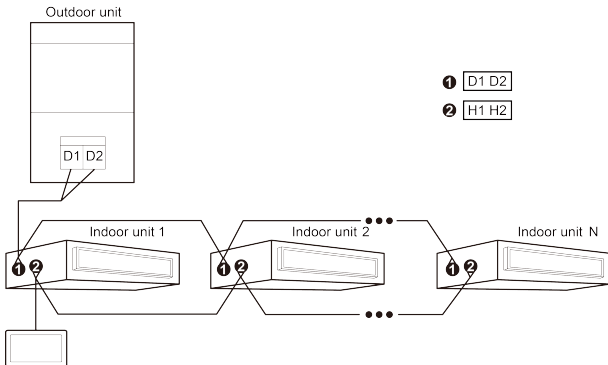


Fig. 5.6 one linkage controller controls multi VRF indoor units simultaneously

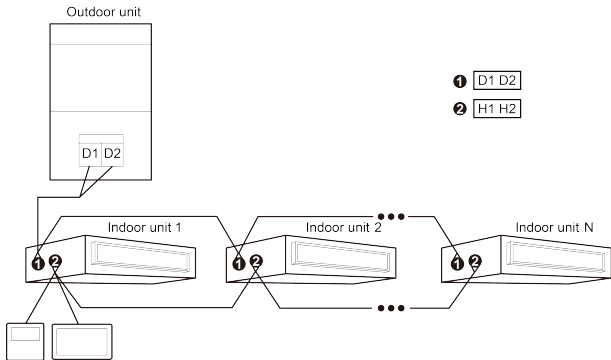


Fig. 5.7 one linkage controller and one wired controller control multiple multi VRF indoor units simultaneously

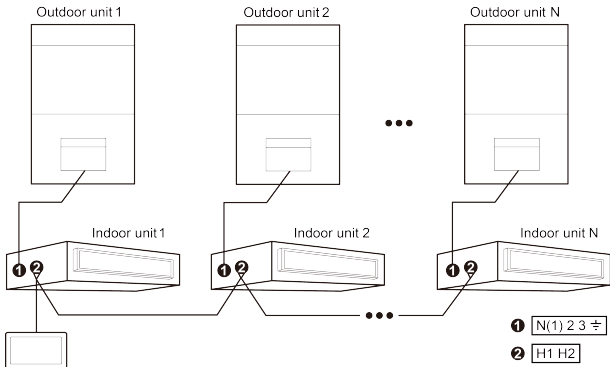


Fig. 5.8 one linkage controller controls multiple U-match series indoor units simultaneously

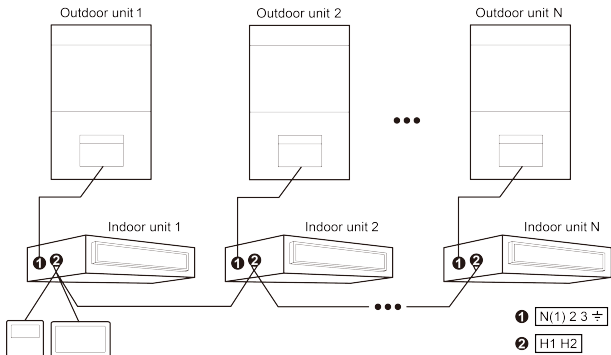


Fig. 5.9 one linkage controller and one wired controller control multiple U-match series indoor units simultaneously

Instruction for wire connection:

- (1) The wiring methods in fig.5.4, fig.5.5, fig.5.8 and fig.5.9 can be adopted for the linkage controller connecting the U-Match series unit whose indoor unit has HBS communication port.
- (2) The wiring methods in fig.5.4~fig.5.7 can be adopted for the linkage controller connecting the multi VRF unit.
- (3) When one wired controller controls multiple indoor units simultaneously, the linkage controller (or wired controller)

can connect to HBS port (H1、H2) of any one indoor unit, but the connected indoor unit must be the same series indoor unit. The total quantity of indoor unit controlled by the linkage controller (or wired controller) can't exceed 16 sets, and the connected indoor unit must be within the same indoor unit's network.

- (4) When one linkage controller and one wired controller control one indoor unit, the addresses of those two controllers should be different. Please refer to Section 4.3.1 for Master/Slave HBS Device Setting.
- (5) When one linkage controller (or wired controller) controls multiple indoor units simultaneously, all the indoor units will be running in the same status.
- (6) The HBS port of linkage controller is non-polarized and cannot be connected to strong electric.

5.4 Wiring between Linkage Controller and Gate Control System

If you want to control indoor unit's functions through gate control, please make sure the 4th lever of the DIP switch is turned to the "1" side and pay attention to the wire connection between linkage controller and gate control system (gate-control device):

- (1) Never connect the power cord of outdoor or indoor units directly to the gate-control device in order to realize gate control function by connecting or disconnecting power of indoor and outdoor units with a card. The following two

figures demonstrate the wrong connection of wires between units and gate control system:

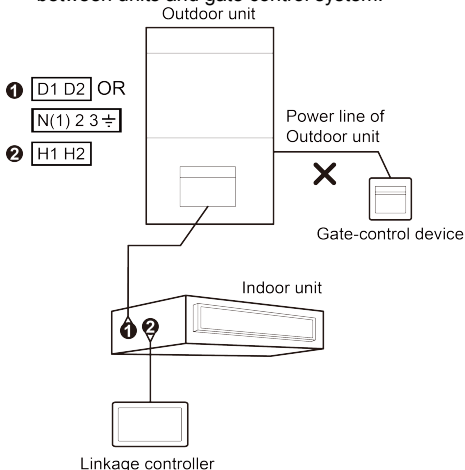


Fig.5.10 Wrong Connection 1 of Units and Gate Control

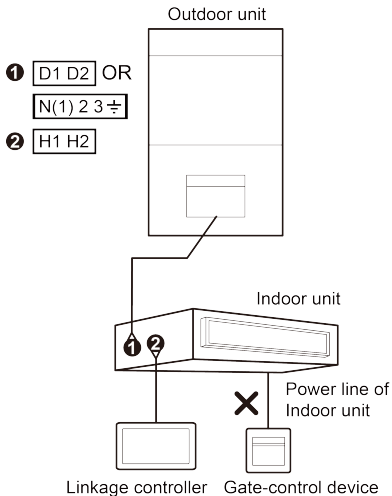


Fig.5.11 Wrong Connection 2 of Units and Gate Control

- (2) After the linkage controller is connected with gate-control device, indoor unit's on and off can be controlled with a card: remove the card to turn unit off; insert the card to restore unit to the condition prior to card removal. The gate control card can control all indoor units that are linked with the linkage controller.

Connection of linkage controller and gate control system is as follow:

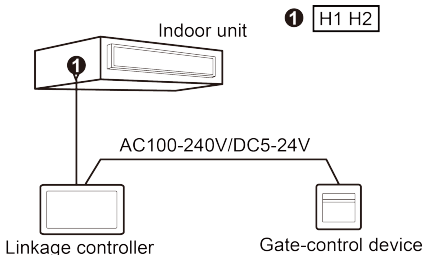


Fig.5.12 Connection fashion 1 of Wired Controller and Gate Control

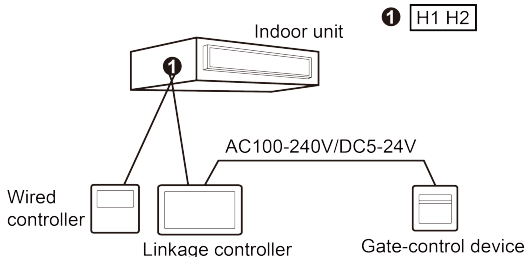


Fig.5.13 Connection fashion 2 of Wired Controller and Gate Control

NOTES:

- ① The linkage controller in figure 5.12 should be set as master HBS device.
- ② The linkage controller in figure 5.13 should be set as slave HBS device.
- (3) Power input of gate control card insertion/removal device supported by linkage controller: AC 100-240V~50/60Hz, DC 5~24V. In practice, connect the gate control output power cord with the corresponding power supply interface of linkage controller according to the type of output power of gate-control device (Please refer to Section 4.1 for wire connection of specific interface). The linkage controller will judge the placing and absence of card by detecting the power supply of gate-control

device. The detecting process is as follow:

Inserting or removing the gate control card is like connecting or disconnecting power of the gate control device. When the card is inserted, the device supplies power AC100-240V/DC5-24V to linkage controller which identifies card insertion. When the card is removed, the device stops supplying power AC100-240V/DC5-24V to linkage controller which identifies card removal. Figure 5.14 and figure 5.15 demonstrate linkage controller connecting gate control power of AC100-240V or DC5-24V:

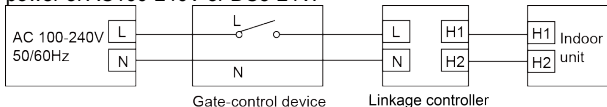


Fig.5.14 Linkage Controller Connecting to Gate Control AC100-240V

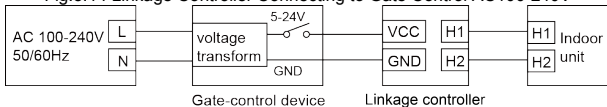


Fig.5.15 Linkage Controller Connecting to Gate Control DC5-24V

NOTE: Users shall prepare the gate-control device by themselves.

6 Packing List

No.	Name	QTY
1	Linkage controller	1
2	Plastic expansion tube	2
3	Self-tapping screw ST3.5×25 PA	2
4	Owner's Manual	1