

# MANUAL & INSTALLATION GUIDE

Smart Box Air Controller Model : HLG-SMART-AC-QWL

## General Information

Designed for single-phase and three-phase split-type air conditioners, this controller operates on 220VAC, 50Hz (±10%), with a maximum output current of 5A per channel. Outputs connect to the Fan Coil Unit (FCU) circuitry, while the Condensing Unit (CDU) receives power directly from the main supply. An external magnetic contactor can be used for loads exceeding 5A.

## Operating Principles

The controller has two operating modes : Auto and Bypass, selectable via the front panel switch.



**1. Mode Auto** Automatically controls air conditioners using high-sensitivity sensors to monitor temperature and humidity in real time, starting or stopping units based on preset values. Once conditions stabilize, the Timer function alternates operation to maintain temperature. The Cloud Controller features Smart Analyzer, which acts like an Auto Pilot to automatically adapt operation to changing heat loads in server rooms, plus Notification for status and fault alerts and 90-day operating logs. Basic control remains operational offline, with settings adjustable via front panel buttons.

**2. Mode Bypass** Activates the bypass system to supply power directly to the air conditioning units, bypassing the controller.

## Technical Specifications

| Features                              | HLG-SMART-AC-QWL                                                                                                                                    |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Supported Air Conditioners            | 4 Units                                                                                                                                             |
| Supported AC Capacity                 | up to 192,000 BTU                                                                                                                                   |
| Dimensions ( Width x Height x Depth ) | 22.5 x 30 x 10 cm                                                                                                                                   |
| Processor                             | Microcontroller                                                                                                                                     |
| Power Input                           | 220VAC 50Hz ( ±10% )                                                                                                                                |
| Power / Current Output                | Socket 1 : 5A      Socket 3 : 5A<br>Socket 2 : 5A      Socket 4 : 5A                                                                                |
| Display                               | TFT LCD                                                                                                                                             |
| Temperature & Humidity Sensor         | DHT22                                                                                                                                               |
| Dry Contact                           | 7 Channels                                                                                                                                          |
| Network & Interface Selection         | 2.4 GHz WiFi Module ( Standard )<br>Internet Sim Card Module ( Optional )<br>10/100 Base Ethernet Module ( Optional )<br>Modbus Module ( Optional ) |
| Controller Mode                       | Bypass / Automatic                                                                                                                                  |
| Controller Management                 | Front Panel / Cloud Management                                                                                                                      |
| Fire Suppression System Support       | Yes                                                                                                                                                 |
| Notifications                         | Yes                                                                                                                                                 |

## Control Panel Components

1. **OFF / BYPASS / AUTO Switch** : Selects the controller's operating mode.
2. **Function Switches** : Allow manual configuration of controller settings.
3. **LED Indicators** : Display system fault and abnormal condition alerts.
4. **TFT LCD Display** : Shows temperature, humidity, date, time, and individual air conditioner operation countdown timers.



## System Operation Settings (Front Panel / Offline Setup)

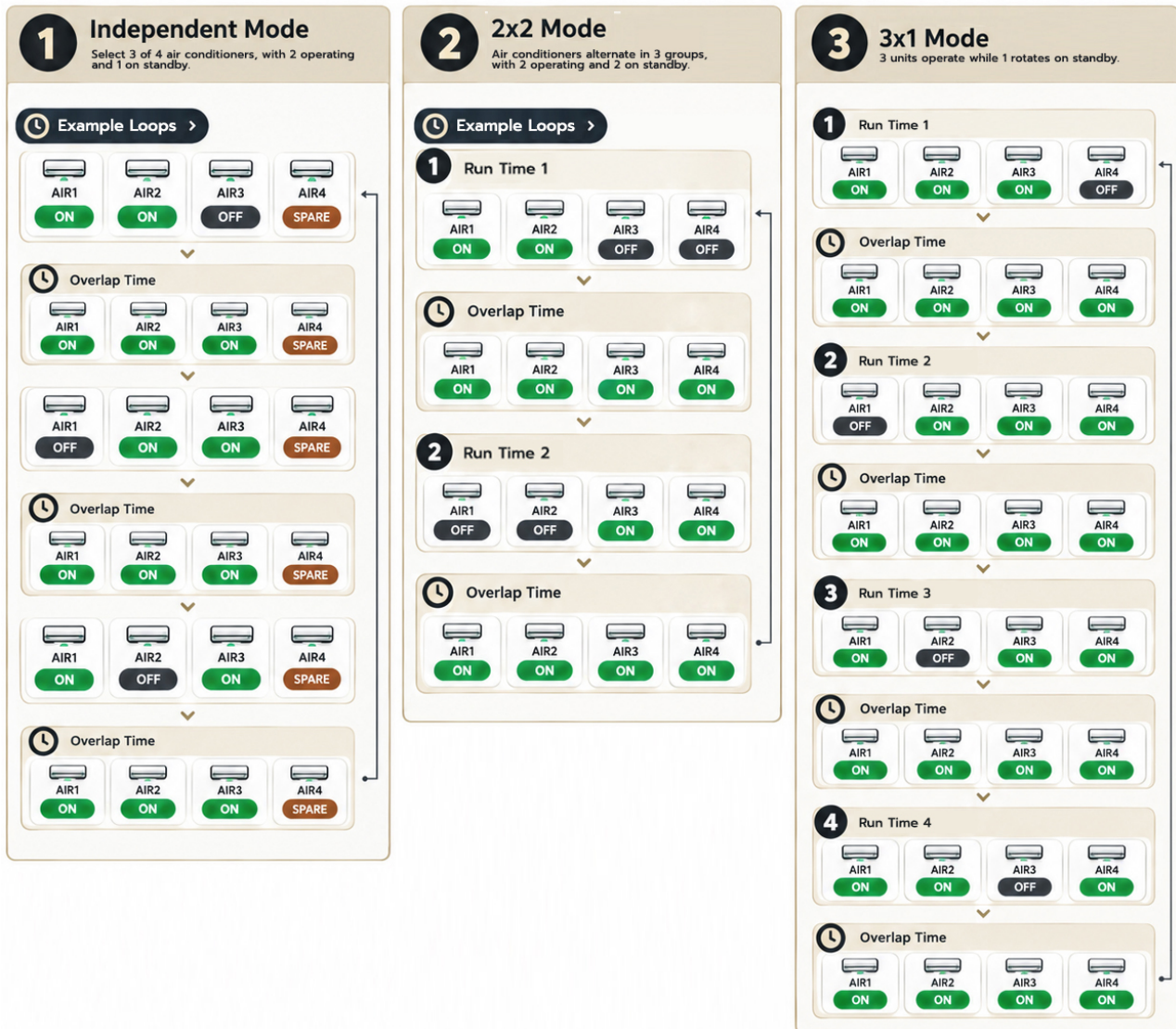
Press and hold the SET button for approximately 3 seconds, then release it to enter SETUP MODE.

1. **UP/DOWN Buttons** : Used to select menus or navigate up and down.
2. **LEFT/RIGHT Buttons** : Used to increase or decrease values or navigate left and right.
3. **ENTER Button** : Used to enter a menu or save settings.
4. **SET Button** : Used to enter setup mode or exit a menu.

### System Configuration Menu Guide (BIOS)

Some settings can only be configured through the front panel, while others can be managed through both the front panel and Cloud Controller to ensure secure access to facility systems.

1. **DATE TIME Menu** : Used to configure the Real Time Clock (RTC), including day, month, year, and time.
2. **TIME CONTROL Menu** : Used to configure TIME AIR GROUP, DELAY START, and OVERLAP TIME settings.
3. **TEMP CONTROL Menu** : Used to configure temperature and humidity control settings.
4. **CONTACT INPUT Menu** : Used to configure NC / NO contacts, such as OVERLOAD, SMOKE / HEAT DETECTOR, and SOUND ALARM.
5. **MODE OF CONTROL AIR Menu** : Used to configure air conditioning operating modes, such as selecting active units, grouping air conditioners, and setting three units to operate while one remains on standby.



6. **WIFI CONFIGURATION Menu** : Used to enable or disable Wi-Fi and view connection status.

### Safety Warning

Please read and understand this manual carefully before installation. Installation must be performed by qualified electricians or experienced professionals only, as improper handling of electrical systems may result in serious injury, death, or property damage.

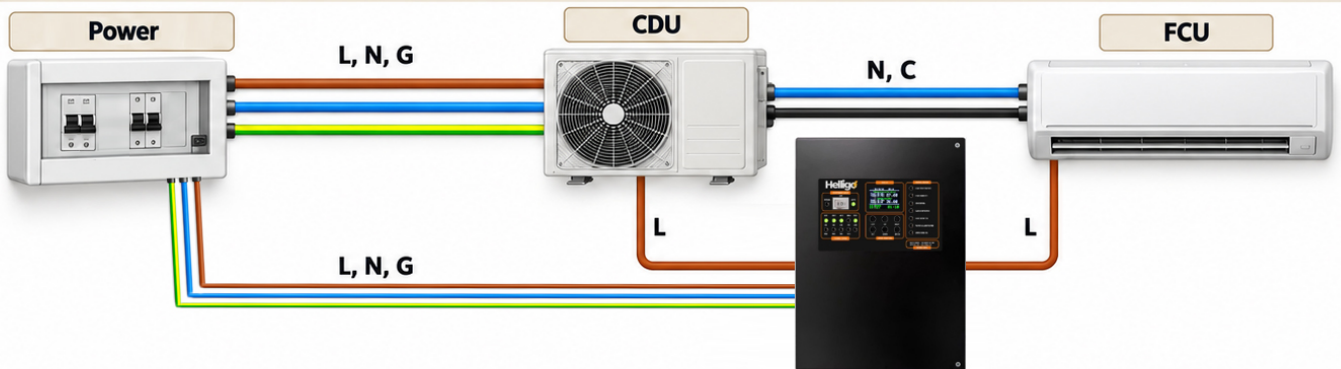
### Control Panel Wiring Connections to Air Conditioning Systems

The system consists of one air conditioning controller and four air conditioning units of equal BTU capacity. All four units are connected to the controller using the same wiring configuration.

**1. 220–230VAC (Single Phase) :** For the controller power supply, use a 16A (1P) circuit breaker or a UPS output, ensuring proper cable sizing and circuit protection. For the control circuit, connect the Line (L) conductor from the CDU to the control panel's Terminal Input, then connect the Terminal Output to the FCU. The current through each output must not exceed 5A. Use a suitably rated magnetic contactor for higher loads. Always verify the air conditioner's wiring diagram and manufacturer requirements before installation.

**2. 380–400VAC (Three Phase) :** For the controller power supply, use a 16A (1P) circuit breaker or a UPS output, supplying 220–230VAC only. For the control circuit, connect the Line (L) conductor from the CDU to the control panel's Terminal Input, then connect the Terminal Output to the FCU. The current through each output must not exceed 5A. Use a suitably rated magnetic contactor for higher loads. Always verify the air conditioner's wiring diagram and manufacturer requirements before installation.

#### 1 Single Phase



#### 2 Three Phase

