HDL-MAC01.431

Air Conditioning Control Module

Datasheet

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Figure 1. Air Conditioning Control Module

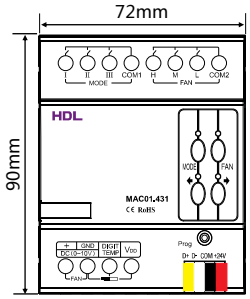


Figure 2. Dimensions - Front View

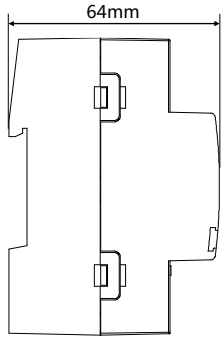


Figure 3. Dimensions - Side View

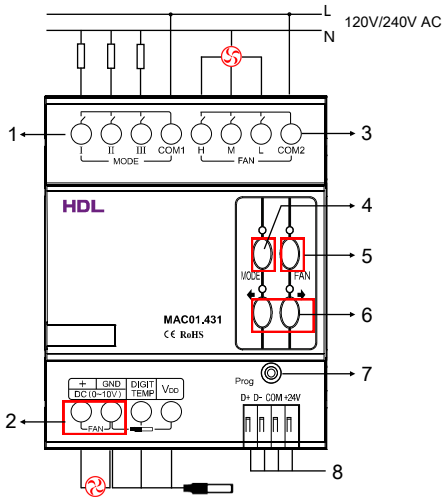


Figure 4. Wiring

Overview

Air Conditioning Control Module (See Figure 1) is designed to control centralized HVAC systems in conjunction with air conditioner panel. The Module accepts environmental temperature data and optimize fan speed, mode, and temperature settings. Master-slave mode is supported in order to control multiple HVAC modules.

Functions

- Fan speed: High, Medium, and Low
- Modes: cooling, heating, ventilation, auto and dehumidification
- Smart control of fan speed and modes in conjunction with AC control panel
- 3 working modes: normal mode, complex mode, forced cooling mode
- Up to 4 digital temperature sensor DS18B20 supported for temperature measurement, with lead wire length up to 100m
- Master - slave mode supported, one 'master' module can control 8 'slave' modules
- 0-10V DC output for fan speed control
- Supports easy programming
- HDL Buspro communication

Important Notes

- Buspro cable **-** CAT5E or dedicated HDL Buspro cable.
- Buspro connection **-** Series connection (hand-in-hand recommended)
- FAN Type and valve type **-** Check the valve on working voltage, make sure the output voltage is 0-10V DC and check the type of FAN make sure the type is AC or 0-10V, ensure correct connection.
- Output channel **-** The load on each relay circuit must not exceed the specified capacity of 5A.
- The temperature probe adopts digital temperature sensor DS18B20. Its lead wire should be a shielded wire, and the data wire and ground wire should be twisted wire, otherwise the probe may not be detected.
- Check connections – Check all connections after installation and ensure all connections are securely tightened.

Product Information

Dimensions - See Figure 2 - 3

Wiring - See Figure 4

1. Relay I, II and III are used to control the working modes of air conditioner and can be configured via HDL Buspro Setup Tool.
   Normal mode: connects with heating, cooling or dehumidification valves of AC controller.
   Complex mode: connects with heating, cooling or dehumidification of AC controller. The running time and status of each switch can be set by users.
   Forced cooling mode: The relays are each connected to different cooling AC controllers. When the temperature is 3 degrees above the set temperature, Relays I and II will activate simultaneously. If the temperature is less than 3 degrees above the
   set temperature, Relay I will be activated cooling, whereas II will be inactivated.
2. Additional fan control via a 0-10V DC output. (The fan functions and associated voltages must be configured through the HDL Buspro Setup Tool.) The voltages for high/medium/low fan speed should be specified in HDL Buspro Setup Tool.
3. Fan motor connection
4. Mode button: Mode setting
5. Fan speed button: Fan speed relay
6. Previous/next button: For switching mode relay or fan speed relay
7. Programming button & LED indicator button: When the module works fine, the LED indicator will flash for every 2 seconds. Press the programming button for 3 seconds until the indicator turns red, then the module ID can be read and modified via the HDL Buspro Setup Tool.
8. HDL Buspro interface: ensure correct connection
9. Temperature sensor: The temperature probe adopts digital temperature sensor DS18B20. Its lead wire should be a shielded wire, and the data wire and ground wire should be twisted wire, otherwise the probe may not be detected.

Installation - See Figure 5 - 7

Step 1. Fix the DIN rail with screws.
Step 2. Buckle the bottom cap of the Air Conditioning Control Module on the edge of the DIN rail.
Step 3. Press the device on the DIN rail, slide it and fix it up until an appropriate position is adjusted.

Safety Precautions

- The installation and commissioning of the device must be carried out by HDL or the organization designated by HDL. For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered.
- The device should be installed with DIN rail in DB box. HDL does not take responsibility for all the consequences caused by installation and wire connection that are not in accordance with this document.
- Please do not privately disassemble the device or change components, otherwise it may cause mechanical failure, electric shock, fire or body injury.
- Please resort to our customer service department or designated agencies for maintenance service. The warranty is not applicable for the product fault caused by private disassembly.
- It is not allowed to exceed the range.
- CAUTION - Risk of Electric Shock - More than one disconnect switch may be required to de-energize the equipment before servicing.
- The marking appears on the device, shown below shall be used to indicate that the device is for use with copper wire. The marking shall be legible with letters at least 2.4 mm high. "Use copper wire only", "Cu wire only" or equivalent wording, or a marking containing both the symbols as the illustrations.



Package Contents

HDL-MAC01.431*1 / Buspro connector*1 / Label*5 / Datasheet*1



Figure 5

1

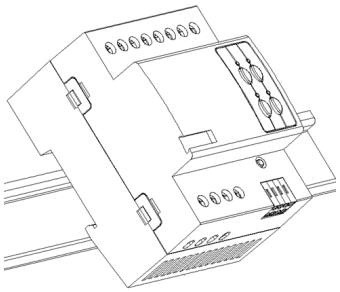


Figure 6

2

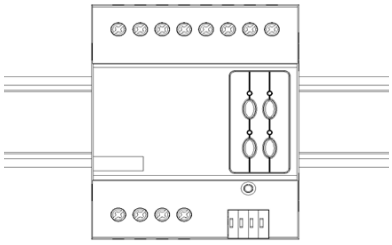


Figure 7

Figure 5 – 7. Installation

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Specifications subject to change without notice.

Technical Data

Basic Parameters	
Working voltage	15~30V DC Class 2
Working current	95mA/24V DC
Input voltage	120V/240V AC (50/60Hz)
Maximum current of each channel	5A
Electronic life time of relay	>60000 (Resistance load)
External Environment	
Working temperature	-5℃~45℃
Working relative humidity	≤90%
Storage temperature	-20℃~60℃
Storage relative humidity	≤93%
Specifications	
Dimensions	72mm×90mm×64mm
Net weight	241g
Housing material	Nylon, PC
Installation	35mm DIN rail installation (See Figure 5 - 7)
Protection rating (Compliant with EN 60529)	IP20

Recommended Load Types and Power

240V, 5A, General Use, 30,000 cycles, 40°C;

240V, 1.6FLA/9.6LRA, Motor (PF≥0.6), 30,000 cycles, 40°C;

120V, 5A, General Use, 30,000 cycles, 40°C;

120V, 1.6FLA/9.6LRA, Motor (PF≥0.6), 30,000 cycles, 40°C;

Name and Content of Hazardous Substances in Products

Components	Hazardous substances					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Chromium VI (Cr (VI))	Poly-brominated biphenyls (PBB)	Poly-brominated diphenyl ethers (PBDE)
Plastic	o	o	o	o	o	o
Hardware	o	o	o	o	-	-
Screw	o	o	o	×	-	-
Solder	×	o	o	o	-	-
PCB	×	o	o	o	o	o
IC	o	o	o	o	×	×

The symbol “-” indicates that the hazardous substance is not contained.

The symbol "o" indicates that the content of the hazardous substances in all the homogeneous materials of the component is below the limit requirement specified in the Standard IEC62321-2015.

The symbol “×” indicates that the content of the hazardous substance in at least one of the homogeneous materials of the part exceeds the limit requirement specified in the Standard IEC62321-2015.

HDL Buspro Cable Guide

HDL Buspro	HDL Buspro Cable	CAT5/CAT5E
DATA+	Yellow	Blue/Green
DATA-	White	Blue white/Green white
COM	Black	Brown white/Orange white
24V DC	Red	Brown/Orange