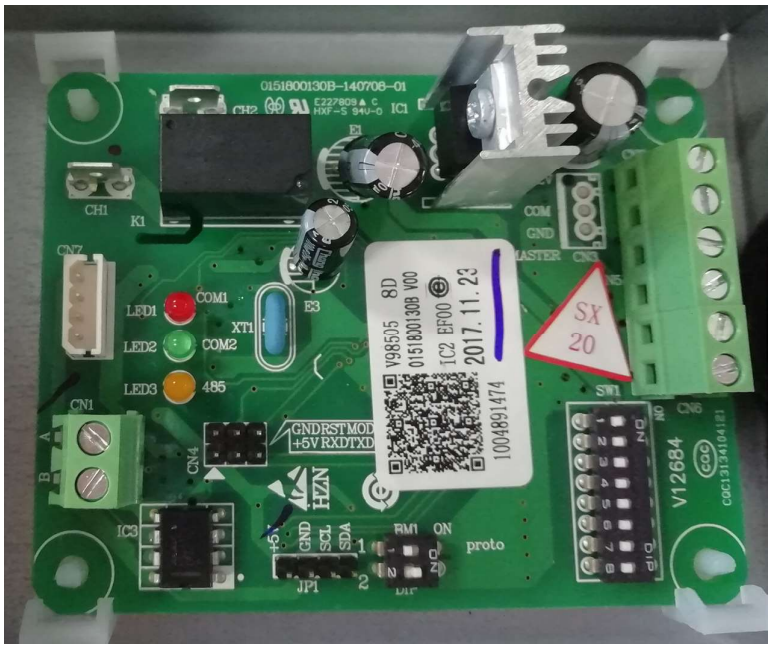
7. Adapter

7.1 YCJ-A002



MRV	LCAC			
	Smart Power	Super Match	R410A ON/OFF	R22 ON/OFF
	√	√	√	√

- RS-485 protocol
- Double switch function
- Communicate with centralized controller or BMS
- Communicate with remote devices

• Functions Introduction

Remote control detector (short form: Detector) is a essential equipment of remote monitor system of Haier commercial A/C . By connecting the interface in indoor units or outdoor units, this detector can reach functions of remote and central control.

Communication function

1. With air conditioning communication:
- YCZ-A002 can at most connect two same model units by six-pin fixed screw. It can realize double switching function. It can control air conditioning to work in different ways according to the requirement of detector, at the same time query the air conditioner's operation information and fault information.

2. Communication with Haier Wi-Fi module, with U-home port, it can realize IOS remote control by WIFI- module.
3. Communication with rs-485:
- Communication with the central controller (Haier commercial air conditioning remote monitoring system for another option, control components, select the single unit model)

BM1 dip switch as (1: OFF, 2: OFF)

Communicate with the central controller via RS-485 interface bus (A, B). It receives commands from central controller according to the units address what is set by detector dip switch. And to realize internal control or query request, and answer the reception status and air conditioning operation information and fault information.

- Communication with the central controller (Haier commercial air conditioning remote monitoring system for another option, control components, select VRF mode),

BM1 dip switch as (1: ON, 2: OFF)

Communicate with the central controller by RS-485 bus port. According to the detector within the dip switch setting address, Receive commands from the central controller. Have internal control or query request, and answer the reception status and air conditioning operation informationand fault information.

- Communicate with remote devices. Detector has RS-485 port, and the protocol is Modbus RTU, users can use the private network and open protocol to create remote control program, no need other accessories.

The BM1 dip switch as (1: OFF, 2: ON).

- Communication with the central control system (for Haier commercial air conditioning remote monitoring system, another option, control components, dip switch BM1 (1: ON,2: ON)

Communicate with the central control system by RS-485 bus port (A, B). it receives commands from central controller according to the units address what is set by detector dip switch. And to realize internal control or query request, and answer the reception status and air conditioning operation information and fault information.

[1]	[2]	BM1	
0:OFF	1:ON	Number	485communication mode details
0	0	①	YCZ-G001/HC-SA164DBT/A004 single unit
1	0	②	YCZ-G001/ HC-SA164DBT/A004 VRF model
0	1	③	Modbus rtu standard protocol
1	1	④	BMS system

Double switch function

In order to improve the reliability of air conditioning, the detector has double switching function, set SW1 to single unit mode, detector controls the A unit according to the command from the host equipment. Set SW1 to double switching mode, it can realize double switching function.

Double switching function realization: under normal condition, the detector control one unit ON and another unit OFF, when reach the switch time, detector wake up the OFF state unit and the ON state unit will still work half an hour and then OFF.

If any air conditioner has failure, switch time will stop, the detector automatically wake up another unit, and let the failure unit OFF, then upload the failure information. After the failure restore, automatically change to the double switching function; if air-conditioner operate for some time and cannot reach setting temperature, switch time will stop, the detector automatically wake up another air conditioner, double units operate until reaching the setting temperature, then automatically turn off that air conditioner, and automatically restore the double switching function. Factory default switch time is 12 hours.

Address setting function

The detector with 8-bit dip switch (SW1), the highest bit D8 bit, for setting the single mode or double-switch mode, (D7, D6, D5, D4, D3, D2, D1) is used to set the number (central control network or double switch time when select the dual switch mode)

Operation status display function

Detector has three lights, yellow light is for RS-485 communication, red and green lights are for the air conditioner communication, When the communication is normal, lights in accordance with the frequency of 0.5s flashing, when have failure, lights in according with the frequency of 1s flashing, stop 2s flashing

Delay control function

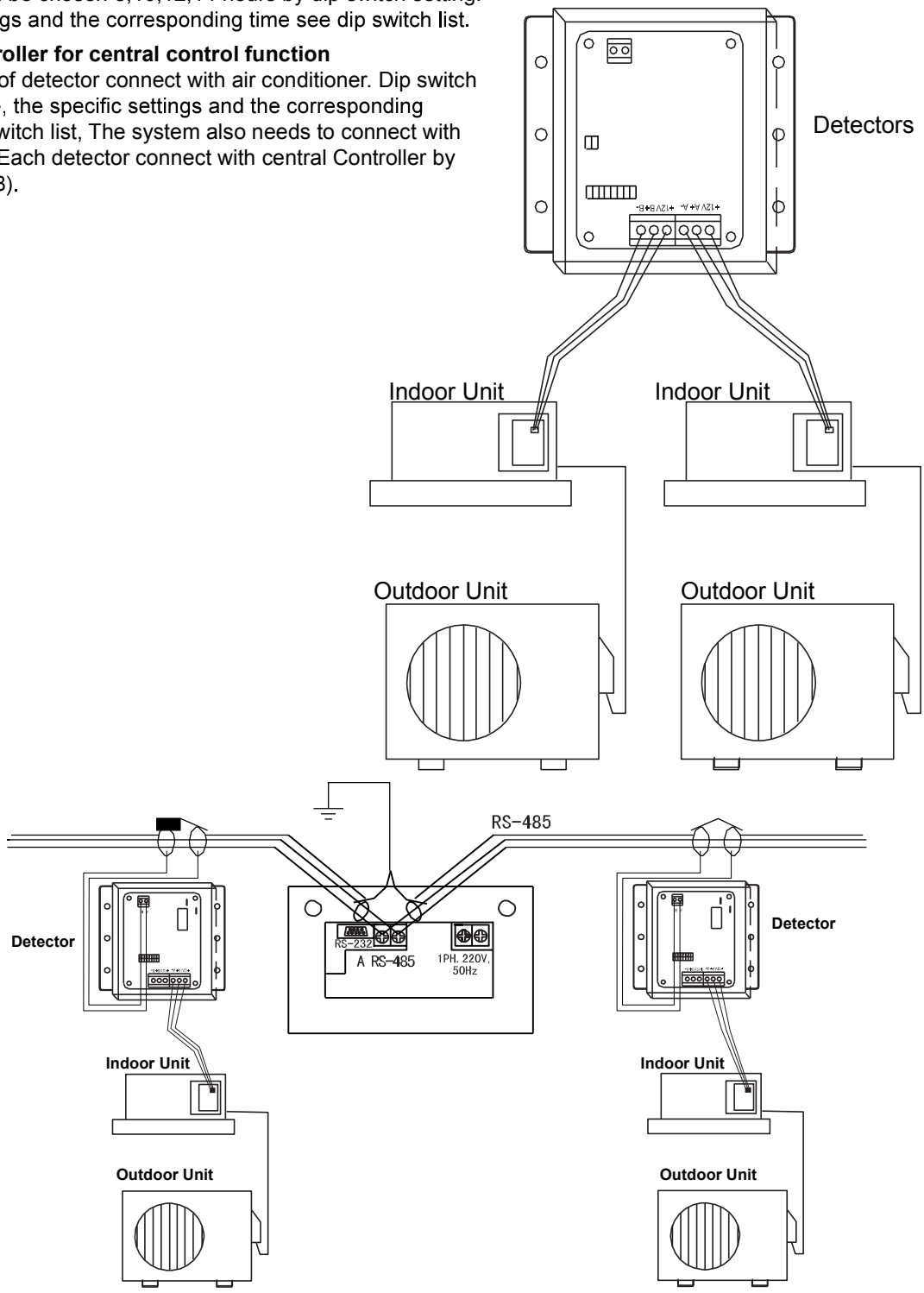
Through the RS-485 bus to build a central control network, In order to reduce the impact of unified operation of air conditioning on the power grid, the detector set the delay start function, the delay time is automatically generated by the detector

Double switching function instructions

Detector connects with the two same model units through six-pin fixed screw. Set the dip switch to double switching model. Only use the double switching function, the system does not need connect the other components; double switching time can be chosen 8,10,12,14 hours by dip switch setting.
The specific settings and the corresponding time see dip switch list.

Use central controller for central control function

12V, A +, A- ports of detector connect with air conditioner. Dip switch set to single mode, the specific settings and the corresponding address see dip switch list, The system also needs to connect with central controller, Each detector connect with central Controller by 2-pin fix screw(A,B).



• Maintenance

Status check

- When select the single unit mode and control A unit, when A unit failure occurs, the detector will query fault information and upload it, when select double switch mode ,detectorcontrolA unit and B unit, if one of air conditioner is faulty, the detector will query the fault information and upload it
- Detector operating status and running lamp display: When operation properly, running lamp for 0.5 seconds off 0.5 secondsfor a cycle to indicate,When have the fault to flash 1 second, stop 2 seconds to cycle to indicate, yellow lamp for the central control of communication status indication, red light for the air conditioner A unit communication Status indication, green lamp for air conditioning B unit communication status indication

When servicing, be sure to power off the power supply

- Wipe clean with a soft cloth and be careful not to touch the electrical parts.
- Do not use gasoline, thinner, decontamination powder, chemical wipes, etc. to avoid damage to electrical parts.
- Check whether the wiring with the central control and air conditioning is normal, there is no broken wire or the existence of loosening of the connection.

• Dimension drawing

Air conditioning A communication port, three-core shielded communication wire Connection, wirelength requirements of not more than 10meter

Interface Description:

1-air conditioning A communication port, three-core shielded communication wire connection, wire length is not more than 10meter

2-air conditioning B communication port, three-core shielded communication wire connection, wire length is not more than 10meter

3 - dial switch is used for centralized control interface of detector detector Communication Association

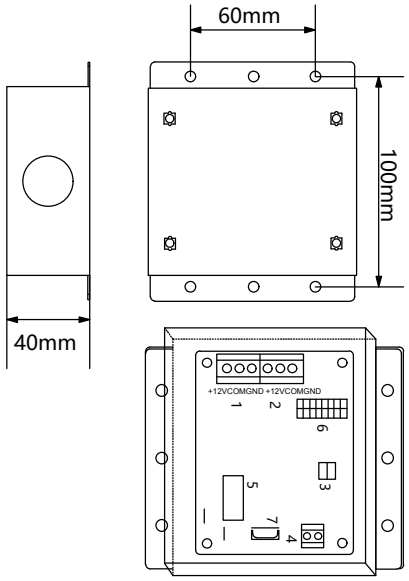
4-central control interfaces, providing 485 communications

5 - Fault output port, faulty disconnect, normal connect

6-Dip switch for selecting the addressfor centralcontrol and dual switching function

7-wifi module interface, you can connect home kit module, IOS device to achieve remote control.

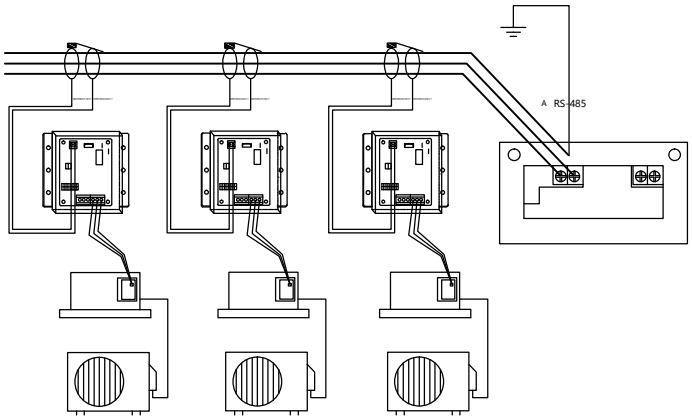
Installation and commissioning



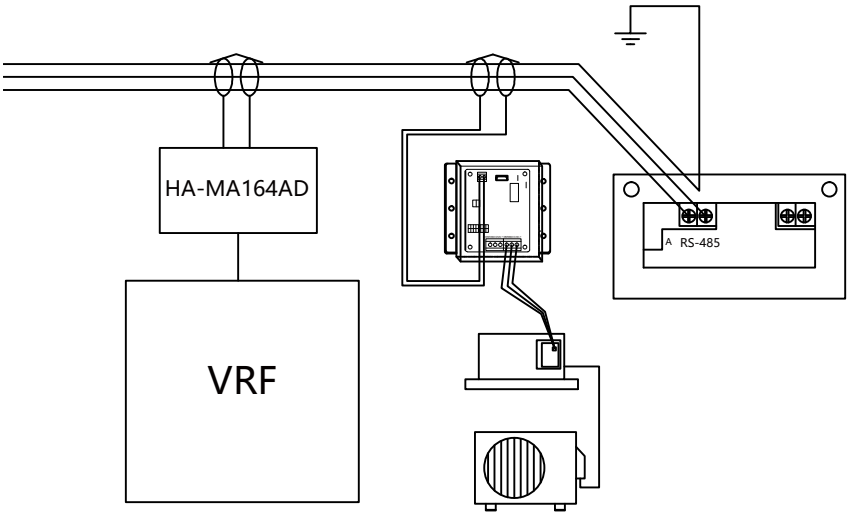
• Installation and wiring of the basic requirements:

Use a screw driver to install detector, screw spacing see the right figure.
Keep the detector on a wall or other reliable location to ensure that there is no water and other creatures that may cause failure to enter.
1. Central control network design planning principles:
(1) Detector, in order to maintain the appropriate response speed and communication reliability, the number of detectors in one central system should not exceed 64 pieces
(2) A/C should be ready for network ,bu sure to be installed and us according to instructions
(3) Detector installation position does not leave the air conditioner too far; do not exceed the wiring length
(4) Detector address number in strict accordance with the order from small to large allocation
(5) Detector power from the indoor unit, 12V, need have distance with the high voltage cable .and the shieldlayer needs earth one side
(6) Central control bus wire length limit less than 1000 meters
(7) Both ends of the bus in the A bus and B bus were connected between the 100 ohm metal film precision resistance (depending on the scene to match)
(8) Bus shielded wire single point grounding, the proposed layout in the middle of the communication bus location, and centralized controller similar
(9) Central controller installation location in principle arranged in the middle of the communication bus position, and the communication bus shield ground similar
2. Detector and air conditioning connection: Detector through the air conditioning interface six screws fixed terminal (12V, A +, A-, 12V, B +, B-) ,and up to two air-conditioning (A, B) for wired communication; detector and air conditioning connection with the uniform wiring, one end of the wiring terminal with plug connect to air conditioning indoor PCB remote control terminal. If the detector does not operation properly during commissioning, it can be check by change the wiring polarity + - . Also can be based on the running lamp show the operation status of the air conditioning and communication interface to determine whether the normal.
3. After the communication bus wiring is completed, connect the detector and the communication bus: the connection method of hand by hand type, all A ports in the same Bus, all B ports on another bus, the communication bus shielding line in the communication bus in a single point of grounding, communication bus total length Limited to less than 1000 meters.

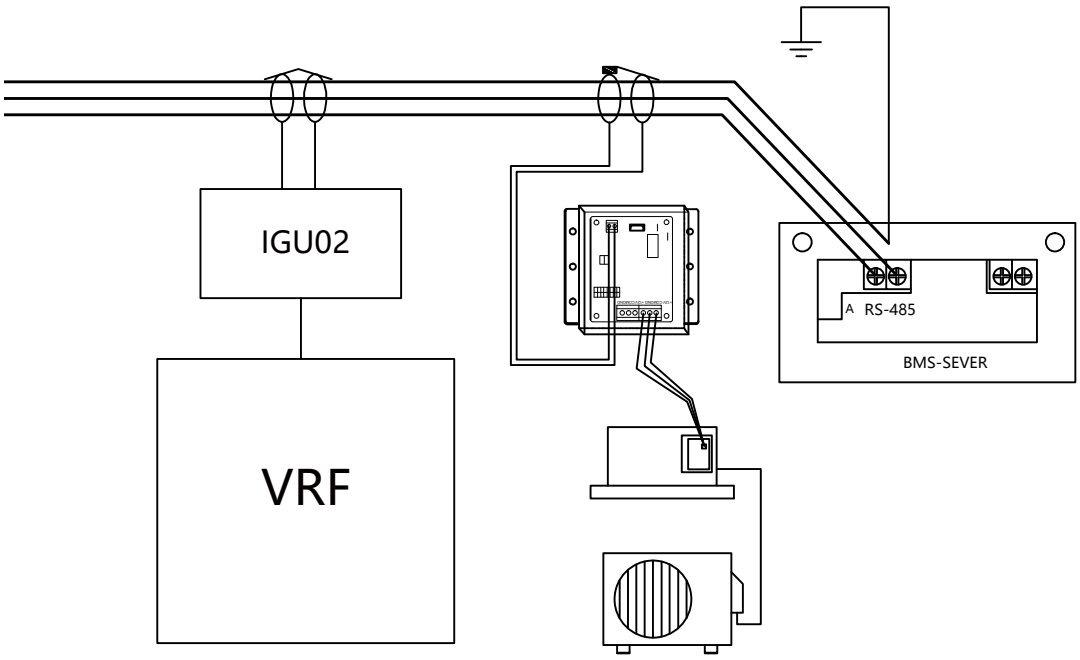
According to the host equipment to select RS-485 interface protocol by dip switch BM1:
Detector built a variety of different protocols to correspond to different host equipment, the use of four different protocols corresponding to four different conditions:
1. The host equipment is a centralcontroller, central controller can choose to select the device type for the VRF or single unit, in order to be able to deal with different system structure, the detector has two built-in protocols that communicate with the central controller.
① Central controller, select the communication mode for the single unit, then dip switch: BM1: 1: OFF; 2: OFF.
The system diagram is as follows:



② Central controller, select communication mode for the VRF, then dip switch is: BM1: 1: ON; 2:OFF.
System diagram is as follows:
Detector via 485 line with central control hand by hand type,A-A,B-B.



③ Central controller, select the communication mode for the central control system (BMS), dip switch: BM1: 1: ON; 2: ON. The system diagram is as follows: Detector through the 485 line with central controller hand by hand type,A-A,B-B.



④ The host equipment for the third party communication equipment, the detector provides the standard Modbusrtu protocol, BM1 dip switch: 1: ON; 2: OFF, The communication between the detector and the air conditioner is consistent with the other 3. When the detector is used as a third-party protocol converter, it should be specificAccess to the requirements of third-party host device connection; the basic functions are as follows: The address of the address set by SW1 changes to the slave address in the Modbus RTU communication

Serial port		9600, 8, n, 2		
130B modbusrtu			Query01 control 05/15	
Word	Name	Unit	Range	Remarks
01 function code				
0	Indoor units on/off		Read operation to obtain the current switchunit status 0: off 1: on	
			Write operation to change the switch state 0: off 1: on	
03 function code			Query 03 control 06/16	
0	Internal setting temperature	°C	16-30	Read operation Get current setting temperature, write operation Change set temperature
1	Within the machine running mode		1-5	Read operation to obtain the current operating mode: 1 - cooling 2 - heating 3 - dehumidification4 – Fan only 5 - automatic
				Write operation to change the operating mode: 1 - cooling 2 - heating 3 - dehumidification 4 – Fan only 5 - automatic
2	Fan speed		1-4	Read operation to obtain the current fan speed: 1 - low speed 2 – middle speed 3 - high speed4 – Automatic speed
				Write operation to change the fan speed: 1 - low speed 2 – middle speed 3 - high speed 4 -Automatic speed
3	Indoor control mode		1-4	1 is not locked; 2 empty - query back to 1, issued to write 1; 3 query back to 1,Issued to write 1; 4 - lock
04 function code			Read only	
0	Indoor temp	°C	30	1°C
1	Fault code		0-256	Within the indoor fault code 0-256 value of 0 that no error
2	Machine number			The number of internal indoor This address exists in order to keep in line with the VRF, query back 0

• Power test:

RS485 interface dip switch instructions

1. Power test: After the equipment is connected, the power test

① first verify the detector and air conditioner communication status, the red light should be light 0.5 seconds off 0.5 seconds as a cycle to indicate, If the indicator does not light or flashes for 1 second and stops for 2 seconds, it should check whether the communication wire of the air conditioner and detector are the connection is correct and the air conditioner is powered up until the indicator flashes normally.

② check 485 communication indicator (yellow lamp), should be light 0.5 seconds off 0.5 seconds as a cycle to indicate, if the instructions If the lamp does not light or flashes for 1 second and stops for 2 seconds, it should check whether the BM1 protocol is correct; the communication wire is connectedWhether it is correct; whether there is a device with a repeated address, etc., until the indicator flashes normally

2. The detector and the host equipment communication, if the host equipment to normal monitoring and control of air conditioners, the completion of debugging.

Performance parameters and accessories

• Performance parameter

Performance parameter	DC12v
Power consumption	Power consumption is less than 3w
Detector code number	0151800130B
Accessories	Air conditioning communication 3 core shielded wire, special number 0010452854, color white, yellow, and red

• RS485 interface dip switch instructions

Detector built a variety of different protocols to correspond to different equipment, the use of four different protocols corresponding to four different conditions:

1. The host equipment is a centralcontroller, central controller can choose to select the device type for single unit or VRF, in order to be able to deal with different the system structure, the detector has two built-in protocols that communicate with the central controller.

① Central controller, select the communication mode for the unit, then dip switch BM1 :1: OFF; 2: OFF.

SW1 (1mean ON, 0 mean OFF)								BM1 code				
								1:OFF;2:OFF	1:ON;2:OFF	1:OFF;2:ON	1:0N;2:ON	
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	Definition: Unitary air conditione	Definition: VRF	Definition: Modbus RTU	Definition:BMS Gate addr	Unitaddr
1	-	-	-	0	0	0	0	Dual modeaddr=1	Dual modeaddr=1-1	Dual modeslaveID=1	Dual mode31	0
1	-	-	-	0	0	0	1	Dual modeaddr=2	Dual modeaddr=2-2	Dual modeslaveID=2	Dual mode31	1
——								——	——	——	——	
1	-	-	-	1	1	1	0	Dual modeaddr=15	Dual modeaddr=15-15	Dual modeslaveID=15	Dual mode31	14
1	-	-	-	1	1	1	1	Dual modeaddr=16	Dual modeaddr=16-16	Dual modeslaveID=16	Dual mode31	15
-	0	0	0	0	0	0	0	Single modeaddr=1	Single modeaddr=1-1	Single modeslaveID=1	Single mode31	0
-	0	0	0	0	0	0	1	Single modeaddr=2	Single modeaddr=2-2	Single modeslaveID=2	Single mode31	1
——								——	——	——	——	
-	0	1	0	0	1	1	0	Single modeaddr=39	Single modeaddr=39-39	Single modeslaveID=39	Single mode31	38
-	0	1	0	0	1	1	1	Single modeaddr=40	Single modeaddr=40-40	Single modeslaveID=40	Single mode31	39
-	0	1	0	1	0	0	0	Single modeaddr=41	Single modeaddr=41-41	Single modeslaveID=41	Single mode30	0
-	0	1	0	1	0	0	1	Single modeaddr=42	Single modeaddr=42-42	Single modeslaveID=42	Single mode30	1
——								——	——	——	——	
-	1	0	0	1	1	1	0	Single modeaddr=79	Single modeaddr=79-79	Single modeslaveID=79	Single mode30	38
-	1	0	0	1	1	1	1	Single modeaddr=80	Single modeaddr=80-80	Single modeslaveID=80	Single mode30	39
-	1	0	1	0	0	0	0	Single modeaddr=81	Single modeaddr=81-81	Single modeslaveID=81	Single mode29	0
-	1	0	1	0	0	0	1	Single modeaddr=82	Single modeaddr=82-82	Single modeslaveID=82	Single mode29	1
——								——	——	——	——	
-	1	1	1	0	1	1	0	Single modeaddr=119	Single modeaddr=119-119	Single modeslaveID=119	Single mode29	38
-	1	1	1	0	1	1	1	Single modeaddr=120	Single modeaddr=120-120	Single modeslaveID=120	Single mode29	39
-	1	1	1	1	0	0	0	Single modeaddr=121	Single modeaddr=121-121	Single modeslaveID=121	Single mode28	0
-	1	1	1	1	0	0	1	Single modeaddr=122	Single modeaddr=122-122	Single modeslaveID=122	Single mode28	1
——								——	——	——	——	
-	1	1	1	1	1	1	0	Single modeaddr=127	Single modeaddr=127-127	Single modeslaveID=127	Single mode28	6
-	1	1	1	1	1	1	1	Single modeaddr=128	Single modeaddr=128-128	Single modeslaveID=128	Single mode28	7