VRF Control System

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Midea VRF control system

Complete control solutions - Various controllers and software

Individual  Centralized  BMS Gateway  Intelligent Control
PC/Network
1 Individual control

1.1 Wireless controllers
1.2 Wired controllers

2 Centralized control

3 BMS Gateways

4 Intelligent control

5 Accessory kits
1.1 Individual control - Wireless controller

- Mode selection: Auto/Cool/Dry/Heat/Fan Only
- Temp. setting range: 17-30°C
- Daily timer setting
- Louver swing
- Fan speed control: H/M/L/Auto
- **Set address**
- Background light
1.1 Individual control - Wireless controller

- Mode selection: Auto/Cool/Dry/Heat/Fan Only
- Temp. setting range: 17-30°C
- One-key 26°C (26°C cooling mode)
- Lock keys (MODE + TIMER for 5s)
- Set address (FAN SPEED + ECO for 5s)
- **Follow me**
- **Auto mode for 3-pipe system (RM02A/BGE(T)-A)**
- Background light

* RM02 should be pointed at the IDU when using follow me.
** This function is available with V4+R 3-pipe system.
1.1 Individual control - Wireless controller

Follow me function

- The unit responds to the temperature measured by the controller’s sensor, giving precise control of the temperature in the user's immediate environment

- Controller needs to be within signal range of the unit
1.1 Individual control - Wireless controller

**RM12**

**RM12A/BGEF**

- **Mode selection**: Auto/Cool/ Dry/Heat/Fan Only
- **Temp. setting range**: 17-30°C
- **Daily timer setting**
- **Louver swing**: vertical and horizontal, set air direction
- **Fan speed control**: Auto/LO/ME-LO/ME/ME-HI/HI
- **Healthy running, Mute, Follow me**
- **Set address** *(T. on + Air direction + OK for 5s)*
- **Background light**
1.2 Individual control - Wired controller

- All basic control functions
- Follow me
- LCD display
- Timer function
- Lock keys
- Louver swing

KJR-12B
1.2 Individual control - Wired controller

- Touch key wired controller
- All basic control functions
- Silent mode
- Clean filter reminder
- Built-in remote control receiver
- Lock keys
- Set address
- Follow me
- Temperatures in °F/°C
- Auto restart
1.2 Individual control - Wired controller

KJR-120B
3-pipe touch key wired controller

- All basic functions
- Clock display
- Bidirectional communication
- Check unit status (parameters T1,T2,T2B, error codes)
- Auto mode for 3-pipe system
- Clean filter reminder
- Auto restart
1.2 Individual control - Wired controller

- All basic control functions
- One key 26°C
- **Mode button hidden to avoid mode conflict**
- Auto restart
- Room temperature display
- **Press UP and DOWN for 3s to select mode**
1.2 Individual control - Wired controller

- Same size as electric sockets
- Specially designed for hotels, hospitals
- Background
1.2 Individual control - Wired controller

- All basic control functions
- **Weekly timer**
- 4 periods can be set for each day
- Delay shutdown for 1 or 2 hours
- **Bidirectional communication**
- **Error code display**
- Temperatures in °F/°C
- Auto restart
1 Individual control

2 Centralized control

2.1 Indoor unit controllers

2.2 Outdoor unit controller

3 BMS Gateways

4 Intelligent control

5 Accessory kits
2.1 Centralized control - Indoor unit controllers

- Up to 64 indoor units - group or individual control
- Clear and bright screen with LCD backlight
- Parameter querying, error code display
- Lock mode, lock keys, lock remote controller
- Auto restart
- (T) means for 3-pipe system, (A) means controller with cover

CCM03
MD-CCM03/E(T)
MD-CCM03(A)
2.1 Centralized control - Indoor unit controllers

- Touch key centralized controller
- Up to 64 indoor units – group or individual control
- Clear and bright screen with LCD backlight
- Parameter querying, error code display
- Lock mode, lock keys, lock remote controller
- **Clean filter reminder**
- **Change DIP switch setting for 3-pipe systems**
2.1 Centralized control - Indoor unit controllers

Two casing options

CCM30/BKE-A

CCM30/BKE-B
2.1 Centralized control - Indoor unit controllers

- **Weekly timer**
- Up to 64 indoor units - group or individual control
- Clear and bright screen with LCD backlight
- Parameter querying, error code display
- Lock mode, lock keys, lock remote controller
- Permanent schedule setting storage

**CCM09**
Weekly schedule controller
2.1 Centralized control - Indoor unit controllers

- **KJR-90B**
  - Up to 16 units

- Centralized Control
- Short press: Turn on/off most recently operated indoor units
- Long press (3s): Turn on/off all indoor units
- Operation mode selection switch (C/H)
- Unified or single unit control
- Energy saving indicator
- 25s after operation, all LEDs dim - press any key to re-activate
2.2 Centralized control - Outdoor unit controller

- RS485 communication
- Up to 8 systems (32 outdoor units) can be centrally monitored
- Outdoor unit operating parameters display
- Error/protection code display
- Electric energy consumption query

**CCM02**
Up to 8 systems
1 Individual control
2 Centralized control
3 BMS Gateways
   3.1 BACnet Gateway
   3.2 LonWorks Gateway
   3.3 Modbus Gateway
   3.4 KNX Gateway
4 Intelligent control
5 Accessory kits
3 Complete control solutions - BMS Gateways

- BMS Gateways are compatible with multiple communication protocols
- Connectable to BMSs and smart home systems
3.1 BACnet Gateway - CCM08

- Fully compatible with BACnet BMSs
- Built-in web browser access function

**Control**
- Operating mode
- Temperature setting
- Fan speed
- Swing
- Remote controller lock

**Monitor**
- Operation mode status report
- Set temperature status report
- Fan speed status report
- RC locking status
- Online quantity
- Timer status
- Error status
- Room temperature display
3.1 BACnet Gateway - CCM08

- Up to 128 ODU or 256 IDU
- Up to 64
- Up to 32
3.2 LonWorks Gateway - LonGW64

- Up to 64 indoor units can be connected with each gateway

**Control**
- Operating mode
- Temperature setting
- Fan speed

**Monitor**
- Operation mode status report
- Set temperature status report
- Fan speed status report
- Online/offline status
- Online quantity
- Error status
- Room temperature display

LonWorks® Gateway

Open network integration of VRF Monitoring and control functions into LonWorks networks
3.2 LonWorks Gateway - LonGW64

- Connection method 1: Connects to indoor unit’s XYE ports

- Connection method 2: Connects to outdoor unit’s XYE ports
3.3 Modbus Gateway - CCM18

- Built-in web browser access
- Connect to the BMS system through TCP/IP or RTU
- Connect up to 16 or 64 indoor units and 4 outdoor units
  * 4 outdoor units must be in the same refrigerant system

<table>
<thead>
<tr>
<th>Control</th>
<th>Monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Operation mode</td>
<td>- Online/offline status</td>
</tr>
<tr>
<td>- Temperature setting</td>
<td>- Operation mode</td>
</tr>
<tr>
<td>- Fan speed</td>
<td>- Temperature setting</td>
</tr>
<tr>
<td></td>
<td>- Room temperature</td>
</tr>
<tr>
<td></td>
<td>- Fan speed</td>
</tr>
<tr>
<td></td>
<td>- Remote control lock status</td>
</tr>
<tr>
<td></td>
<td>- Timer status</td>
</tr>
<tr>
<td></td>
<td>- Error status</td>
</tr>
</tbody>
</table>
3.4 KNX Gateway- MD-KNX-01

- Compatible with all Midea VRF products
- One KNX Gateway required per indoor unit
- Conforms to smart home integration standard
3.4 KNX Gateway - MD-KNX-01

- Completely compatible with KNX/EIB standard
- Can be integrated into control systems alongside the wide range of KNX compatible products that are available
1 Individual control
2 Centralized control
3 BMS Gateways
4 Intelligent control
   4.1 Cloud server CCM15
   4.2 Powerful IMM
   4.3 New controllers
5 Accessory kits
4.1 Intelligent control - cloud server CCM15

- Enables long-distance remote control of VRF systems over the internet
- Smart phones, tablet PCs, laptops and desktop PCs can act as a controller
4.1 Intelligent control - cloud server CCM15

- Allows single or group control using phone app or web browser
- Weekly schedule function offers multi-period control for each day, either as unified or single unit control
4.1 Intelligent control - cloud server CCM15

New version will be available in November 2016

- Newly designed, user-friendly interface
- Multi-language support: English, Chinese, French and Spanish
- User permission management
- Flexible interface for OEM brands

* Draft interface designs - final versions may differ.
4.2 Intelligent control - powerful IMM

- Enables long-distance remote control of VRF systems over the internet
- Up to 4 M-interface gateways, 64 refrigerant systems, 1,024 indoor units, and 256 outdoor units can be controlled by one PC (IMM software)
4.2 Intelligent control - powerful IMM

- Powerful functionality

Web Access function
Energy Saving Management
Schedule management
Visual Navigation

Warning Message
Data Backup
Multiple Languages
Electricity Charge Distribution
4.2 Intelligent control - powerful IMM

Updated version will be available in December 2016

- Easy installation: only need to click <next>
- Setting IP address not necessary
4.3 Intelligent control - new 10.1” controller

* Draft interface designs - final versions may differ
4.3 Intelligent control - new 10.1” controller

Will be available in June 2017

- Compatible with Midea next generation VRF products
- Large touch screen, 10.1”
- Device monitor in icon display or list display
- Group management, supporting 3-class management
- Visual schematic, monitoring and control of each unit's status and parameters through a clear visual representation of the system layout
- Schedule management / operating statistics / log management / warning messages / permission management
- Multi-language support: English, Chinese, French and Spanish
4.3 Intelligent control - new 6.2” controller

* Draft interface designs - final versions may differ
4.3 Intelligent control - new 6.2” controller

Will be available in October 2017

- Compatible with Midea next generation VRF products
- Large touch screen, 6.2”
- Device monitor in icon display or list display
- Group management, supporting 3-class management
- Schedule management
- Supports running parameters and error code saving and output
- Multi-language support: English, Chinese, French and Spanish
5.1 Accessory kits - Hotel key card module

- A smart way to save energy and money
- Specially design for hotel guest rooms, works with hotel key card system
- When the key card is in place, the air conditioner is activated
- When the key card is removed, the air conditioner switches off to avoid cooling an unoccupied room and save energy
5.1 Accessory kits - Hotel key card module

- Simpler installation. New kit uses a built-in a high voltage relay and can connect to the hotel card system directly
- Improves product safety and reliability
5.1 Accessory kits - Hotel key card module

Electric Wiring

MD-NIM05/E

MD-NIM05B/E
5.2 Accessory kits - Group controller

KJR-150A/M-E

- Enables simultaneous control of a group of up to 16 indoor units from single wired or remote controller
- Each unit’s operating parameters can also be individually controlled using its own remote controller
5.3 Accessory kits - Infrared sensor controller

- Suitable for hotels, offices, conference rooms and residences
- Automatically turns indoor units on/off upon sensing that the room is occupied or unoccupied
- Ensures climate control whilst minimizing energy consumption
5.3 Accessory kits - Infrared sensor controller
5.4 Accessory kits - DX AHU connection kit

- Making VRF outdoor unit compatible with other-brand DX AHU coil
- Select Midea controller and AHU controller via DIP switch
- Up to 4 pcs AHU kit can be parallel combined for one DX AHU coil, set as master/slave unit
5.4 Accessory kits - DX AHU connection kit

AHU Kit
(5/10/20 HP)

VRF Outdoor Unit

Other-brand DX AHU coil

<table>
<thead>
<tr>
<th>AHU Kit</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHUKZ-01B</td>
<td>9-20 kW</td>
</tr>
<tr>
<td>AHUKZ-02B</td>
<td>20-36 kW</td>
</tr>
<tr>
<td>AHUKZ-03B</td>
<td>36-56 kW</td>
</tr>
</tbody>
</table>
5.5 Accessory kits - Network module

- Provides K1K2E and OAE ports for Mini VRF to connect with the IMM network control system and realize network electricity distribution
- OAE ports: connect to digital energy meter OAE port
- PQE ports: connect to outdoor unit PQE port
- Each port of M-interface gateway can only be connected to one MD-NIM10 through K1K2E ports

MD-NIM10
Network electricity distribution module
5.6 Accessory kits - Digital energy meter

- Calculates outdoor unit electricity charge

Note: one digital energy meter per outdoor unit

- Power supply: 380V-3N-50Hz
  - 380V-3N-60Hz
  - 220V-3N-60Hz

* Digital energy meters are power supply specific
5.7 Accessory kits - VRF diagnosis software

System Status

System

Indoor

Running Curve

Chart A

System Curve Chart A

Outdoor Data

Indoor Data

No.Net
0000 0000 0000 0000 0000 0000 0000 0000 0000
KIND
0000 0000 0000 0000 0000 0000 0000 0000 0000
TYPE
0000 0000 0000 0000 0000 0000 0000 0000 0000
HP
0000 0000 0000 0000 0000 0000 0000 0000 0000
Ope. Mode
0000 0000 0000 0000 0000 0000 0000 0000 0000

System Data

TD 1: Discharge Temp
0000 0000 0000 0000 0000
TD 2: Discharge Temp
0000 0000 0000 0000 0000
TD 3: Discharge Temp
0000 0000 0000 0000 0000
TE: Heat Exchanger Temp
0000 0000 0000 0000 0000

* Draft interface designs - final versions may differ
Updated version will be available in December 2016

- Newly designed operation interface, more user-friendly
- Diagnosis function: easily check refrigerant piping diagram, and indoor/outdoor unit real-time running states and running status history charts
- Can monitor one refrigerant system, up to 4 outdoor units
- Multi-language support: English, Chinese, French and Spanish
- Compatible with Windows 7 and Windows 10 operating systems
Q&A

Questions?
Quiz

1. Which of the following has a bidirectional communication (2-way communication) function?
   - A. KJR-29B
   - B. KJR-90D
   - C. KJR-120B
   - D. KJR-120C

2. Which of the following is not a touch key controller?
   - A. KJR-29B
   - B. KJR-90D
   - C. CCM30
   - D. KJR-12B
THANK YOU