

Variable Refrigerant Flow

# VRF MADE SIMPLE



Mammoth VRF is the easy-to-install, easy-to-maintain solution for a wide range of applications – from residential to commercial.



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### Energy Saving

- Case studies show as much as 50% savings in HVAC energy consumption

### True Zoning

- Simultaneous heating, cooling and independent control in every indoor zone means superior comfort

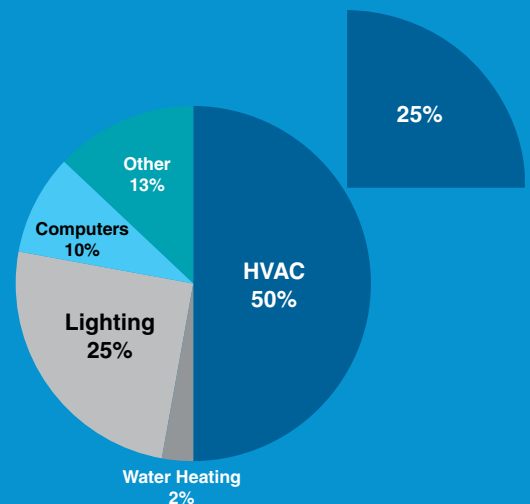
### Easy Installation

- VRF systems are easy to design, layout and install compared to conventional systems



**Mammoth has a complete line of commercial Variable Refrigerant Flow (VRF) multi-zone systems with design features to make installations easier than competitive systems:**

- Industry-leading -22°F (-30°C) heating performance
- Long piping lengths provide more flexibility for each job
- Communication wiring is simple and easy to install using non-polarity-sensitive 18 AWG stranded 2 conductor wiring
- Selection software that is user friendly
- Auto-addressing of indoor units eliminates setting dipswitches manually
- Simple debugging/commissioning software



# Mammoth® VRF Systems

## Outdoor Condensers

3 to 30 Ton



*V5 Mini Heat Pump*



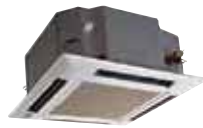
*V5 Modular Heat Pump*



*V5 Modular Heat Recovery*

## Indoor Units

7K to 96K BTU



*Cassettes*



*Ducted*



*Wall Mount*



*Console*



*Floor/Ceiling Mount*



*Fresh Air and DOAS*

## Mode Exchange Units



*1-Port*



*2-Port*



*4-Port*



*8-Port*

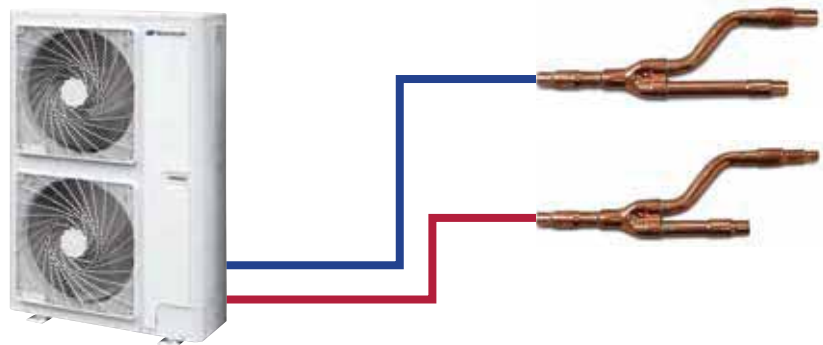
# Highly Compatible Equipment Options

Mammoth's complete VRF line consists of mini heat pumps, modular heat pumps, and heat recovery systems. Many compatible equipment options with simple connections make them the perfect start to a highly flexible, complete system for any building and application.

## Mini VRF

V5 mini VRF systems are designed for light commercial or residential applications. Their compact design and thinner profile make them adaptable to tight spaces. Up to 984 feet (300 meters) of total pipe length simplifies installation. They feature an energy-efficient, ultra-quiet DC inverter compressor and powerful heating capacity in low ambient temperatures.

- **3, 4, and 5 Ton**
- **7, 9 and 10 Zones**
- **208/230 1-Ph**
- **-22°F Heating**

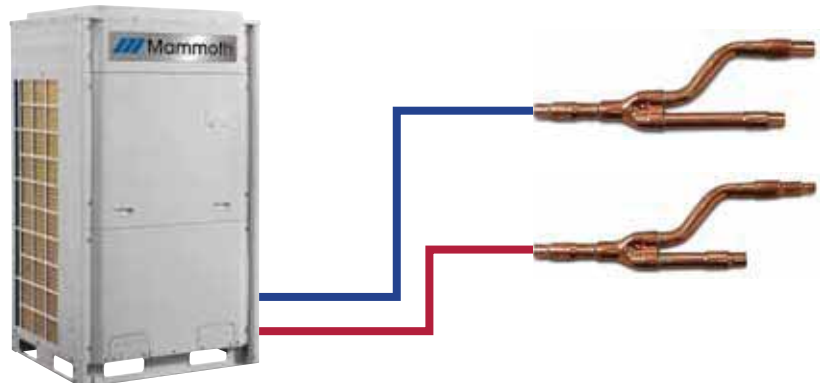


*Heat Pumps do not require branch boxes, only simple Y-branch connectors.*

## Modular Heat Pump

V5 VRF Heat Pump systems feature DC inverter driven compressors for precise temperature control. Up to 3,280 feet (1,000 meters) of total piping length and up to 61 indoor zones make them easy to install, network and maintain.

- **6, 8, and 10 Ton**
- **13, 16, and 20 Zones**
- **208/230 3-Ph**
- **460V. 3-Ph**
- **Y-Branch Connections**

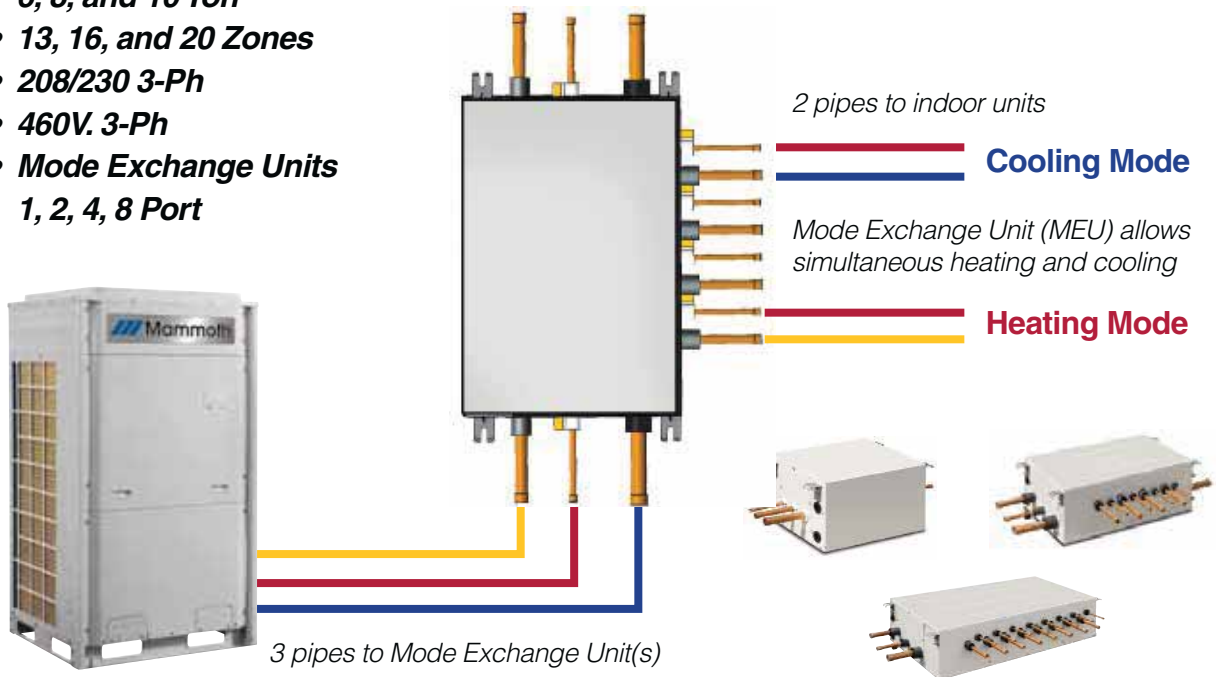


*Heat Pumps do not require branch boxes, only simple Y-branch connectors.*

## Modular Heat Recovery 3-Pipe

V5 VRF Heat Recovery systems feature DC inverter driven compressors to maximize efficiency and system life. The Mode Exchange Unit completes the heat recovery to save energy while maximizing comfort.

- **6, 8, and 10 Ton**
- **13, 16, and 20 Zones**
- **208/230 3-Ph**
- **460V. 3-Ph**
- **Mode Exchange Units**  
**1, 2, 4, 8 Port**



**All Mammoth VRF indoor units** (wall-mounted, ceiling cassettes, universal floor/ceiling, ducted, fresh air and DOAS) work with all VRF systems: Mini, Modular Heat Pump, and Modular Heat Recovery.



# Integrated System Design

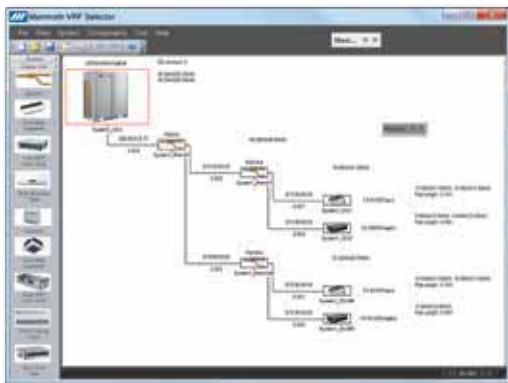
**Flexibility in design is the heart of the Mammoth VRF system. Multiple control options and accessories make it easily customizable for any building and application.**

## Easy to Design

1. Determine the number of indoor zones
2. Do a load calculation for each zone
3. Determine the style of indoor units for each zone
4. Determine the type of system desired, heat pump or heat recovery
5. Plug system into Selection Software

## VRF Selection Software

- Using Selection Software assures proper system match and ability to commission
- Software will output in Excel or AutoCAD



## VRF Inventory

- VRF products may have a 90 to 120 day lead time.
- Replacement parts and warranty parts are in stock in Poplar Bluff, Missouri
- Specialty items or new items may require longer lead-time.

## VRF Warranty

- Products are covered by a 5-year parts, 7-year compressor warranty.



# Easy Identification

## VRF System Identification

**Main LED Display**



**Programming Buttons**



**Dip Switches**



**Power Terminals**



**Communication Terminals**



**Indoor Unit Power**



**Indoor Unit Communication**



# Step-By-Step Installation

There are only 4 system connections to make:

- Piping
- Power
- Communication
- Drain

## VRF System Installation Steps

### Step 1

Set condenser outdoor unit (ODU) and power with dedicated breaker. Outdoor units are 208/230 3-Ph or 460 V. 3-Ph.



### Step 2

Mount indoor units (IDUs) and tie multiple IDUs to a common breaker. Daisy chain power to indoor units. Indoor units are 208/230 1-Ph.



### Step 3

Braze connection piping from ODU to IDUs for heat pump. ODU to Mode Exchange units for heat recovery. Connection at IDU is flare fitting.

*Y-branch for heat pump  
Mode exchange units for heat recovery*



### Step 4

Run communication wire (18 gauge stranded wire). Connection is non polar and does not require shielded cable. Daisy chain from outdoor unit to each indoor unit.

*Outdoor*



*Indoor*



### Step 5

Run drain lines, gravity or pump to common drain. Cassettes and ducted units contain factory condensate pump.

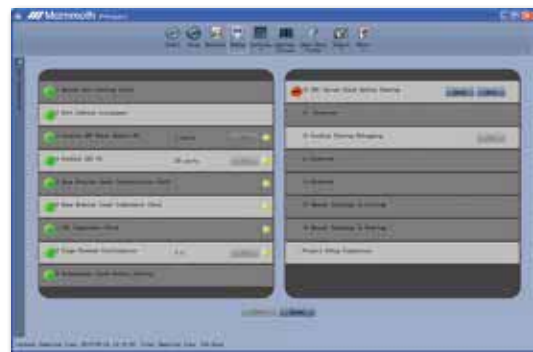
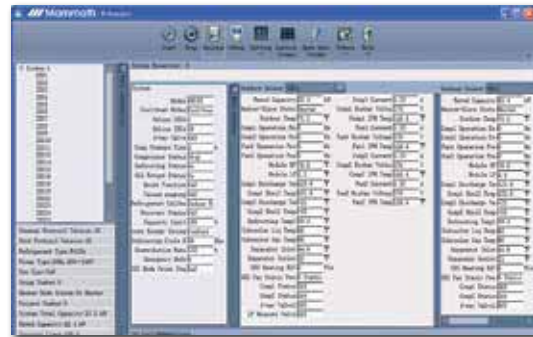




# Simple Debugging and Commissioning

## Commissioning with software

- Data converter connects to D1/D2 communication terminals at any point in system
- USB connection to computer



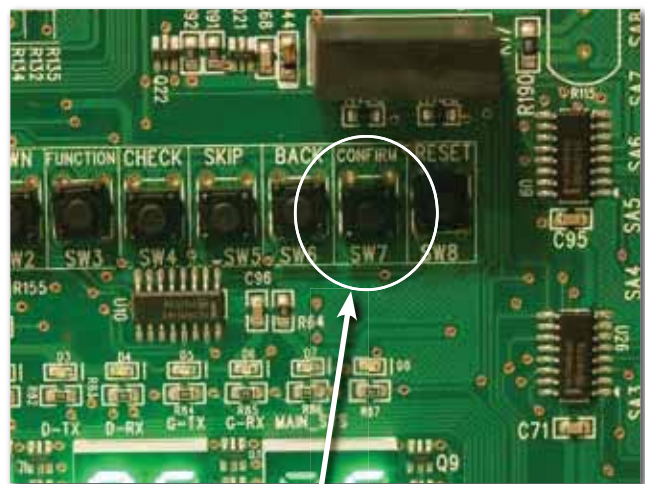
*Debugging/Commissioning software output to computer, shows real time information*

## Manual Debugging/Commissioning

**Start commissioning with the press of a button!**

- Press SW7 for 5 seconds
- Display will read: db 01 ac (Debug, Step 01, AC mode)
- When prompted push SW7 to move to the next step
- Debugging takes only minutes (if system installed correctly)
- System automatically initiates test run in heat or cool mode based on outdoor ambient
- System runs for 40 to 60 minutes to check pressures, temperatures, voltages, etc.

### Main Board



**SW7**

# VRF System Controls

## Wired Controllers



Hotel Key Card Activated



16 zones



Centralized Controller  
(32 zones & 255 zones)

## Remote Monitoring



BACnet Gateway



Modbus Gateway



Long Distance Monitoring Software

## Remote Controls



Standard



Optional

# VRF Installation Training

## VRF Training Lab

Our VRF Training Lab in O'Fallon, Missouri, features two 6-ton working systems: One heat pump system, and one heat recovery system. It's your chance to get detailed training from our resident VRF training manager.

- *Hands-on training and troubleshooting*
- *Upon completion you will be commissioning certified*
- *Opportunity to learn about this exciting, new product*



## What You Will Learn

- *Equipment options*
- *Product selection and job layout*
- *Use of selection software*
- *Installation and troubleshooting*
- *Controls*
- *Debugging and commissioning*





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