

# Installation Instructions

Part Number 40VM900051

**For Commercial Use Only**

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## SAFETY CONSIDERATIONS

Read and follow manufacturer instructions carefully. Follow all local electrical codes during installation. All wiring must conform to local and national electrical codes. Improper wiring or installation may damage thermostat.

Understand the signal words — **DANGER**, **WARNING**, and **CAUTION**. **DANGER** identifies the most serious hazards which will result in severe personal injury or death. **WARNING** signifies hazards that could result in personal injury or death. **CAUTION** is used to identify unsafe practices, which would result in minor personal injury or product and property damage.

Recognize safety information. This is the safety-alert symbol (⚠). When this symbol is displayed on the unit and in instructions or manuals, be alert to the potential for personal injury. Installing, starting up, and servicing equipment can be hazardous due to system pressure, electrical components, and equipment location.

## GENERAL

The VRF (variable refrigerant flow) Energy Monitoring Module is a low-voltage central controller that monitors VRF system energy consumption and generates custom reports on connected zones' portions of energy consumption. The EMM (Energy Monitoring Module) works in conjunction with field-provided electric meters installed at each outdoor unit.

**Table 1 —EMM Accessory Usage**

| UNIT                       | SIZES   |
|----------------------------|---|
| 38VMR Heat Recovery System | 072, 096, 120, 144, 168, 192, 216, 240, 264, 288, 312, 336                                    |
| 38VMH Heat Pump System     | 036, 048, 060, 072, 096, 120, 144, 168, 192, 216, 240, 264, 288, 312, 336, 360, 384, 408, 432 |

**Table 2 — Specification**

|  |        |        |
|--|--------|--------|
| Power Supply (field provided)            | 24VAC  |        |
| Power Consumption                        | 15 W   |        |
| Dimensions                               | H      | 2-3/4  |
|  | W      | 9-7/8  |
|  | D      | 12-1/2 |
| Net Weight                               | 10 lbs |        |
| Number of XYE Bus Lines                  | 4      |        |
| Max. Refrigerant Systems / IDUs Per Line | 8/64   |        |

## INSTALLATION CONSIDERATIONS

The EMM should be mounted:

- at a location that allows easy access
- on a section of wall without water or drainage pipes

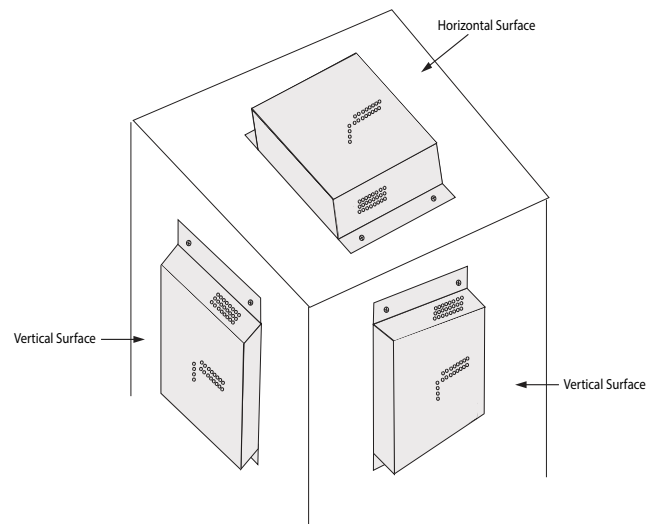
The EMM should **NOT** be mounted:

- near heat sources such as direct sunlight, heaters, dimmer switches, and other electrical devices.

## INSTALLATION

Use the installation methods below. Do not install the unit in any other orientation.



**NOTE:** Screws are not included. The contractor must purchase screws for installation.



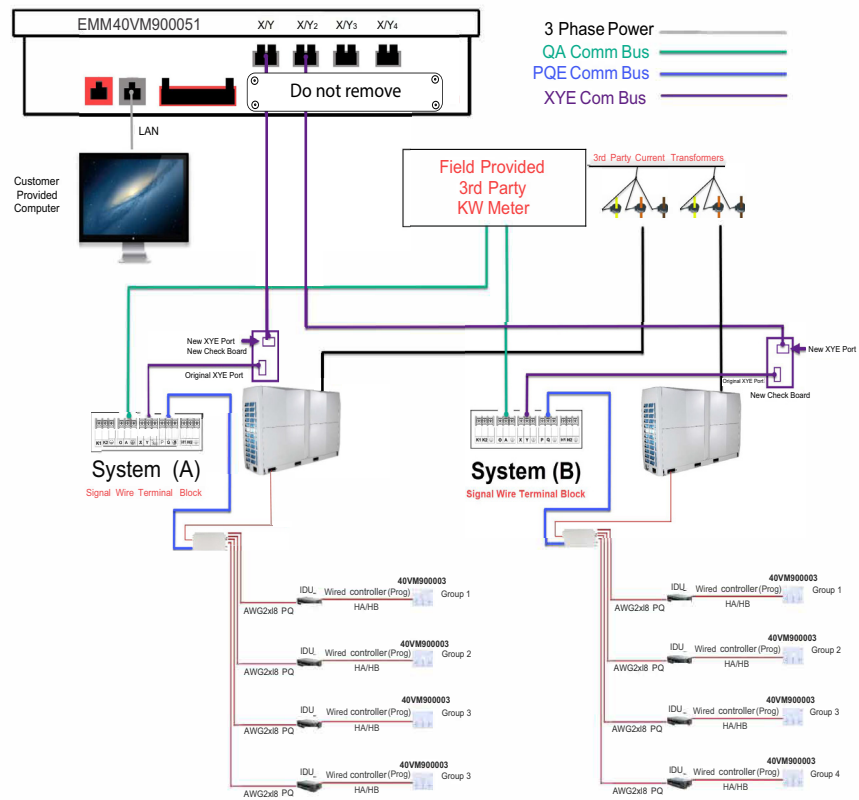
**Fig. 1 — Installation Layout**

# COMPONENTS SHIPPED WITH UNIT

**Table 3 —Components**

| NAME                             | DESCRIPTION | IMAGE  | QUANTITY |
|----------------------------------|-------------|--|----------|
| 3V Lithium Coin Battery (CR1220) |             |  | 1        |
| USB Token Key                    |             |  | 1        |

## DIMENSIONAL DRAWINGS



NOTE: All dimensions are shown in inches.

**Fig. 2 — EMM Dimensions**

## CONNECTION DESCRIPTIONS

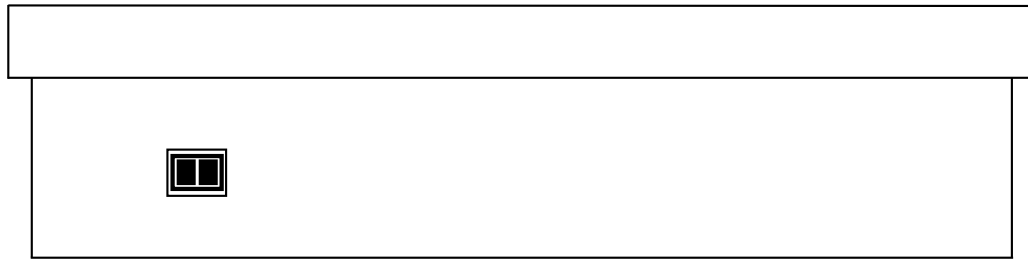


Fig. 3 — EMM Bottom View

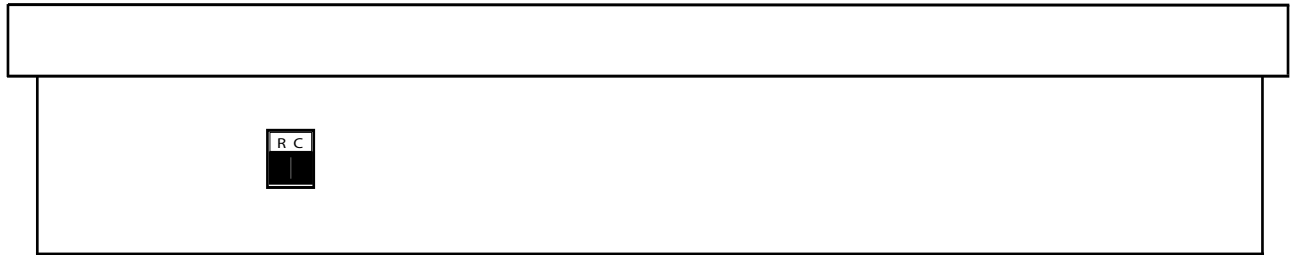


Fig. 4 — EMM Left Side View

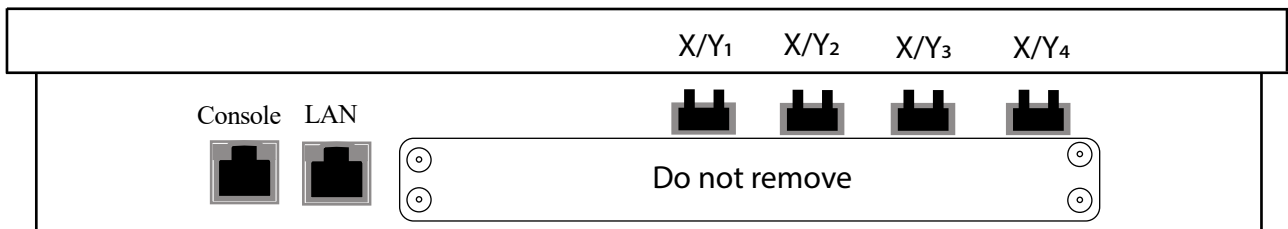


Fig. 5 — EMM Right Side View

Table 4 — EMM Connectors

| NAME | FUNCTION                                   |
|------|--|
| R    | 24VAC power                                |
| C    | 24VAC common                               |
| X    | X conductor, X/Y bus                       |
| Y    | Y conductor, X/Y bus                       |
| LAN  | Connection to PC/Server Console - Not used |

## INSTALLATION OF EMM

### Field Provided Electric Meter Requirements —

- Electric meter must read "true" kW and kWh consisting of current transformers (CTs) and potential transformers (PTs) for each phase powering outdoor unit.
- Meter and CTs must be rated for voltage, phase, and current requirements for outdoor unit.
- Meter must send a contact closure "pulse" signal with 1 pulse = 1 kWh.
- Pulse width range must be 50-400ms.

Perform the following procedure to install EMM:

1. Turn off all power to the outdoor units, indoor units, and MDC.

#### **⚠ WARNING**

Electrical shock can cause personal injury and death. Before installing thermostat, shut off all power to this equipment during installation. There may be more than one power disconnect. Tag all disconnect locations to alert others not to restore power until work is completed.

#### **⚠ CAUTION**

Failure to follow this caution may result in equipment damage or improper operation. Improper wiring or installation may damage the thermostat. Check to make sure wiring is correct before proceeding with installation or turning on unit.

2. Mount the Interface to the surface according to allowed orientations shown in Figure 1.

3. Install Lithium Coin Battery:

With no power or communication wiring connected to the EMM, carefully remove the 4 screws holding the cover on the unit. Remove cover, and install coin battery as shown in Figure 6. Re-install cover.



**Fig. 6 —Coin Battery**

4. Wire EMM:

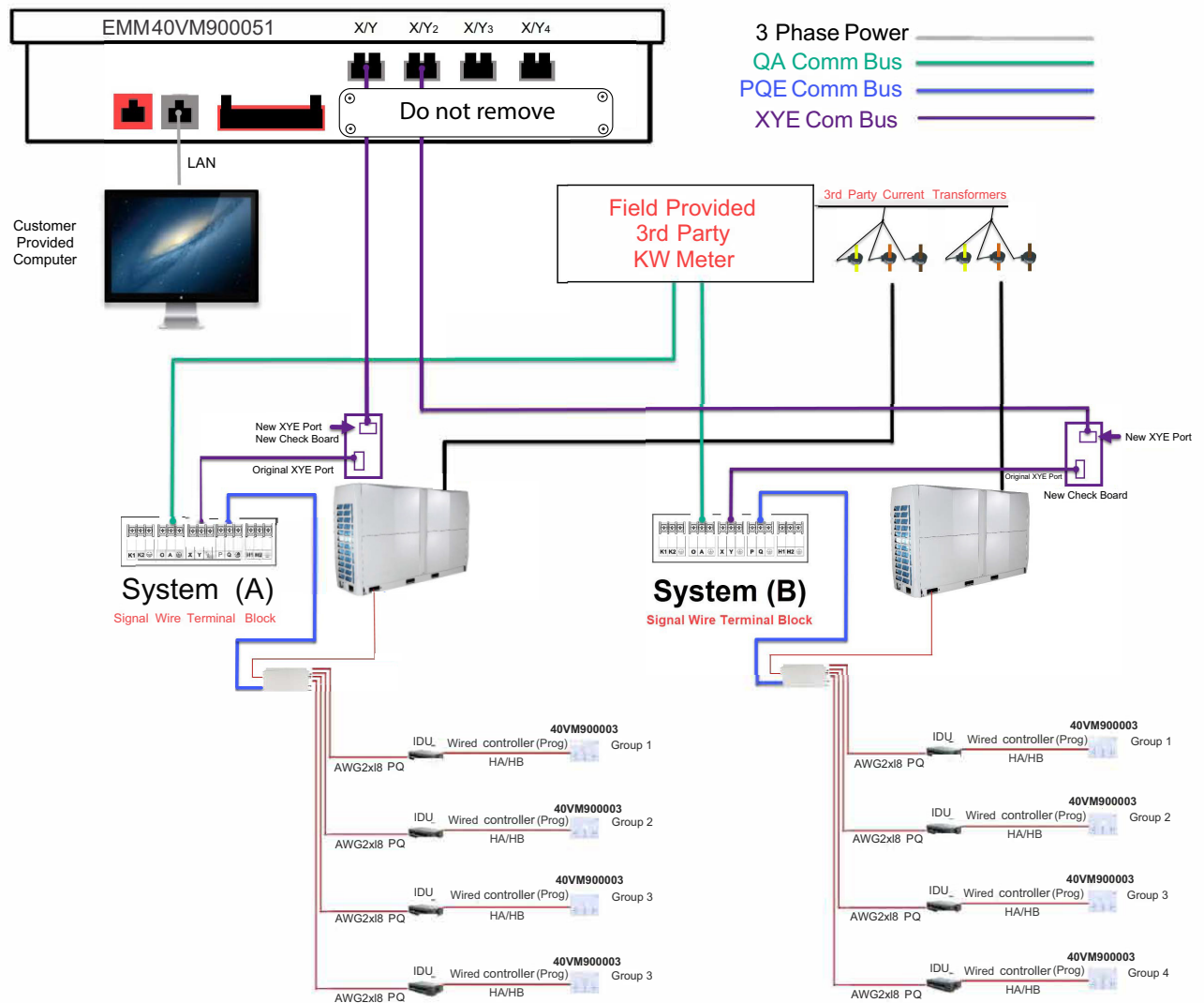
**Control Wire:** Use 16 to 20 AWG (American Wire Gage), stranded twisted pair shielded 2-core wiring (copper wire). Be sure the distance between the controller and the furthest outdoor units is not more than 3937 ft.

**Field-Provided 24VAC Power Wire:** Use copper wire rated for at least 1A.

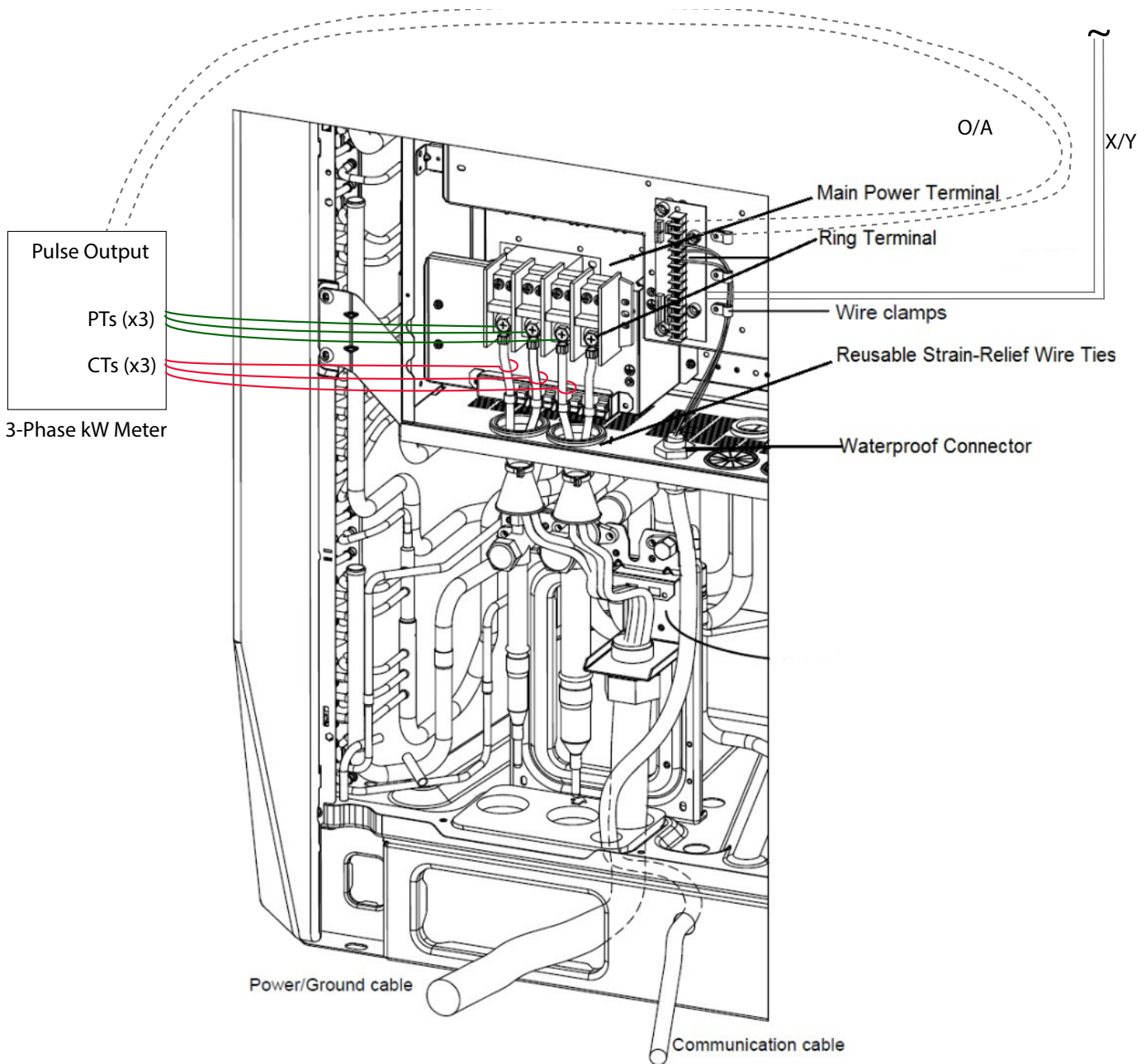
**NOTE:** Follow all applicable electrical codes.

The EMM has 4 central control bus (X/Y) lines. Each line can support up to 8 refrigerant systems and 64 indoor units. There are two X/YE ports on the check board in the outdoor unit. The new X/YE port at the top of the check board is specific to the EMM.

1. Using control wire, connect outdoor units' X/Y central control bus terminals in a "daisy chain" configuration.
2. Connect terminating end to the EMMs designated X/Y line (1 through 4). For larger Heat Pump systems with dual or triple modules on a refrigerant system, wire X/Y daisy chain only to the Header outdoor unit of each refrigerant system.
3. Install field-provided electric watt meter(s) at each outdoor unit / refrigerant system. Follow electric watt meter(s) manufacturer's installation instructions and safety considerations. Coordinate with applicable electrical codes.
4. Connect pulse outputs from field-provided electric watt meter(s) to OA terminals on respective VRF outdoor unit control board. See Figures 7 and 8.



**Fig. 7 —Network Diagram**



**Fig. 8 — Meter Details / ODU**

Refer to Operational Manual for further details on software configuration.