Installation Instructions for Field Installing the Marvair Coil Cop
Table of Contents

Important Safety Information ........................................................................................................... 3
Material in the Coil Cop Package ....................................................................................................... 4
Installation tools and supplies to be provided by the Installer .......................................................... 4

Chapter 1 General Description ........................................................................................................ 5

Chapter 2 AVPA72 & HVEA 49/60
2.1 Installation of the Components in the Condenser Compartment ............................................. 6
2.2 Loss of Charge Switch .................................................................................................................. 8
2.3 Cat 6 Cable .................................................................................................................................. 9
2.4 Tamper Resistant screws in Side and Front Panels ................................................................. 9
2.5 Stainless Steel Channels ............................................................................................................ 11
2.6 Labels ....................................................................................................................................... 13

Chapter 3 AVPA42/48/60 & HVEA30/36/42
3.1 Installation of the Components in the Condenser Compartment ............................................. 14
3.2 Loss of Charge Switch ................................................................................................................ 17
3.3 Cat 6 Cable .................................................................................................................................. 18
3.4 Tamper Resistant screws in Side and Front Panels ................................................................. 18
3.5 Stainless Steel Channels ............................................................................................................ 20
3.6 Labels ....................................................................................................................................... 20

Chapter 4 AVPA24/30/36 & HVEA24
4.1 Installation of the Components in the Condenser Compartment ............................................. 21
4.2 Loss of Charge Switch ................................................................................................................ 24
4.3 Cat 6 Cable .................................................................................................................................. 25
4.4 Tamper Resistant screws in Side and Front Panels ................................................................. 25
4.5 Stainless Steel Channels ............................................................................................................ 27
4.6 Labels ....................................................................................................................................... 27

Chapter 5 Installation of the Operator Panel ................................................................................... 28

Chapter 6 Operation, Specifications & Configuration
6.1 Operation ...................................................................................................................................... 29
6.2 Technical Specifications .............................................................................................................. 30
6.3 Electrical Connections ................................................................................................................ 31
6.4 Coil Cop Configuration Options ............................................................................................... 32
6.5 Dimensional Drawing .................................................................................................................. 34
Important Safety Information

1. Turn Electrical Power OFF at the breaker or fuse box BEFORE installing or working on the operator panel. LINE VOLTAGES ARE HAZARDOUS or LETHAL.
2. OBSERVE and COMPLY with ALL applicable ELECTRICAL AND BUILDING CODES and ORDINANCES.
3. INSTALLATION and SERVICE should be performed ONLY by QUALIFIED and EXPERIENCED PEOPLE.
4. USE COMMON SENSE and BE SAFETY CONSCIOUS.

This is the safety alert symbol ▶. When you see this symbol in the manual, be alert to the potential for personnel injury or equipment damage. Understand the signal word DANGER, WARNING and CAUTION. These words are used to identify levels of the seriousness of the hazard.

⚠ **DANGER**
Failure to comply will result in death or severe personal injury and/or property damage.

⚠ **WARNING**
Failure to comply could result in death or severe personal injury and/or property damage.

⚠ **CAUTION**
Failure to comply could result in minor personal injury and/or property damage.

**IMPORTANT** is used to point out helpful suggestions that will result in improved installation, reliability or operation.

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The Marvair Coil Cop is a multi-layered theft prevention system designed for use in Marvair wall mounted air conditioners and heat pumps. It provides visual and audio warnings and remote notification in the event of an attempted theft or vandalism of the unit.

The following materials are provided in the Coil Cop® Operator panel package:

- Installation and Operations Manual (these instructions)
- Stainless steel channel - The AVPA72 & the HVEA49 & 60 have two condenser coils and require 2 sets of channel (4 pieces). All other units have one condenser coil and have 1 set (2 pieces)
- Speaker box and 75 ft. (22.8 m) of prewired cable (connects the operator panel to the microcontroller in the HVAC unit) and grey wire to connect to Loss of Charge switch (Figure 1)
- Mounting bracket for the speaker box. A bracket is not required for the AVPA72 & the HVEA49/60 and the AVPA24/30/36 & the HVEA24/30/36/42/49.
- Sheet metal template for installing the speaker mounting bracket. Note: the AVPA42/48/60 and the HVEA30/36/42 does not require a mounting bracket. The speaker box on these models is attached directly to the air conditioner.
- Loss of charge switch installed on the swivel tee (not used in all units)
- Cable ties
- 5/16” sheet metal screws
- Tamper resistant screws
- Cam locks
- Coil Cop labels

For installations requiring the Operator panel inside the shelter, instructions for the Coil Cop® Operator Panel begin in Chapter 3.

![Figure 1: Speaker Box & Cable](image)

The following materials should be provided by the installer:

- TelcoFlex®III or KS24194®L3 wire for power from DC plant to Coil Cop® operator panel
- DC plant breaker, 2A
- Cat3, Cat5e, or Cat6 cable for alarms from Coil Cop® Operator panel to Shelter alarm block
- Electrical conduit (3/4”), conduit fittings, mounting straps
- Mechanical and electrical installation hand tools (wire cutters & strippers, drill, drill bits)
- 1/8” titanium drill bit
- T25 Torx Pin-Head Tamper resistant driver bit
1.1 General Description

The Marvair® Coil Cop® system consists of the Coil Cop® operator panel installed inside the shelter and a micro-controller and speaker box installed in each Marvair HVAC unit. The speaker and microcontroller are mounted in a heavy-duty aluminum enclosure. A 16-gauge galvanized speaker grille prevents physical damage and isolates the electronics from rain and snow. An accelerometer on the microcontroller panel measures force impact in three dimensions and triggers an alarm if the value in any axis exceeds a threshold. Activation of the alarm requires three blows within 10 seconds. Four selectable sensitivity levels are available to suit local conditions. The intelligent sensing algorithm continuously measures and adapts to ambient noise to suppress false alarms from external sources, for example, trains or aircraft. The microcontroller also monitors refrigerant pressure through a Loss of Charge switch (LoC) and triggers an alarm if the pressure drops below a preset threshold.

If an alarm is triggered on the Coil Cop®, a pre-recorded message announces in English and Spanish that authorities have been notified to investigate a potential theft. This message repeats for three minutes. The alarm additionally provides a set of normally closed dry contacts to the Coil Cop® operator panel, which can then be used to notify the Network Operations Center (NOC) or a monitoring service. Cutting the cable between the speaker enclosure inside the HVAC unit and the operator panel in the shelter will also trigger the alarm to the NOC. Although the audible message stops after three minutes, the alarm indication to the NOC remains active until reset locally from operator panel inside shelter.

Figure 2. Marvair® Coil Cop® System Overview
Failure to follow safety warnings exactly could result in serious injury, death, and/or property damage.

Turn OFF electric power at service panel or fuse box BEFORE making any electrical connections and ensure a proper ground connection is made.

Chapter 2 AVPA72 & HVEA 49/60

2.1 Installation of the Components in the Condenser Compartment

The speaker, the loss of charge switch (if used), the stainless straps for the condenser coil are all installed in the condenser compartment.

1. Turn OFF power to the air conditioner at the disconnect in the shelter.
2. Remove the four screws along the bottom of the top panel. Do not remove this panel.
3. Remove the middle panel by removing the 6 screws that hold this panel in position.
4. Remove the bottom panel by removing the 17 screws.

5. Carefully cut the cable ties that hold the condenser motor wires to the bracket.
6. Slide and rotate the venturi panel and the fan, and fan motor 90° to provide access to the condenser compartment as shown in Figure 4.

Figure 3. Panel Identification

TOP PANEL

MIDDLE PANEL

BOTTOM PANEL
7. Place the sheet metal template for drilling the mounting holes for the speaker bracket into position on the base. Template should be against the coil and the front angle should hang over the base.
8. Using a 1/8” drill bit, drill 4 holes in the base and remove the template.

9. Mount the bracket in the base using four 5/16” sheet metal screws.

10. Mount the speaker box to the bracket with four 5/16” sheet metal screws. IMPORTANT. Be sure to use all four screws to hold the bracket to the speaker box. Excess vibration of a poorly secured box may cause nuisance alarms.

### 2.2 Loss of Charge Switch (LoC)

Various models of the air conditioner are not compatible with the installation of the loss of charge switch. If the air conditioner has CoreMax refrigerant fittings as shown below, the loss of charge switch cannot be installed. The loss of charge alarm is a normally closed circuit that breaks when the charge is lost. To prevent a constant loss of charge alarm, the two conductors in the gray cable must be tied together using a wire nut or a cam lock connector.

If the loss of charge switch can be installed,

1. Locate the low pressure refrigerant access port, which is in the condenser compartment.

2. Remove the cap on the port and screw the swivel tee on to the port. (The LoC switch is factory installed on the swivel tee). Be sure to hold the nut on the valve stem with a wrench to prevent twisting and rupturing the copper tube. IMPORTANT: THE LoC switch must be installed vertically as shown in Figure 7.

3. Connect the two wires from the switch to the two grey wires from the speaker box using the provided cam locks. It does not make any difference with wires are connected. Secure with cable ties.
2.3 Cat 6 Cable

1. Run the Cat 6 cable from the speaker box into the shelter. This cable may be installed in the low voltage conduit from the shelter. Any excess cable must be tie wrapped so as not to be cut by the fan blade. The connection to the operator panel will be described in Chapter 5.

2. Reinstall the venturi panel using 5/16” screws.
   IMPORTANT: Place the condenser fan wires on the motor support bracket and secure with cable ties. Loose wires can be cut by the condenser fan blade.

![Figure 8. Secure Wire Using Cable Ties](image)

2.4 Tamper Resistant Screws in Side and Front Panels (See Figure 9)

1. Replace the bottom panel using the tamper resistant screws. Stars on the drawing indicate a tamper resistant screw.

2. Replace the control box cover using 5/16” screws.

3. Replace the middle panel and bottom of the upper panel using 5/16” screws.

4. Remove the 5/16” sheet metal screws from the side panels as shown and replace with tamper resistant screws.
Figure 9. Tamper Resistant Screw Locations
2.5 **Stainless Steel Channel** *(See Fig. 10)*

The stainless steel channels deter theft of the condenser coils.

1. Remove a coil guard on either side of the air conditioner.
2. A channel is mounted on the left and right sides of the coil as shown in Figure 10. Align with the holes in the channel with the holes that held the coil guard.
3. Using tamper resistant screws, secure the channel and the coil guard to the cabinet.
4. Repeat steps 1-3 above for the other side.
Figure 10. Stainless Steel Channel Locations
2.6 Labels

Labels warn a potential thief that the air conditioner is protected and is the first level of deterrence. Place labels on the air conditioner as shown below.

![Figure 11. Label Locations](image)

If more than one air conditioner is to have the Coil Cop system, repeat procedure for 2nd air conditioner. See Chapter 5 for installing the Operator panel inside the shelter and connecting the CAT 5 cable to the Operator's panel.
### 3.1 Installation of the Components in the Condenser Compartment

The speaker, the loss of charge switch (if used), the stainless straps for the condenser coil are all installed in the condenser compartment.

1. Turn OFF power to the air conditioner at the disconnect in the shelter.
2. Remove the 2 screws along the bottom of the top panel. Do not remove this panel.
3. Remove the middle panel by removing the 4 screws that hold this panel in position.

4. Remove the right side condenser side screen. (Orientation is from outside the building and facing the unit.) See Figure 13.

5. Place the sheet metal template for drilling the mounting holes for the speaker bracket into position on the venturi. The flange on the template should be on the back of the venturi and against the divider panel. See Figure TBD

6. Mark the 4 hole locations and remove the template.

7. Using a 1/8” drill bit, drill 4 holes in the venturi.
8. Place the speaker mounting bracket on the condenser venturi as shown in Figure 13. IMPORTANT. Be sure that the Cat 6 cable and the grey wires exit the speaker box from the bottom of the box as shown.

9. Mount the bracket in the venturi using four tamper resistant screws.

10. Remove the knock out above the speaker box in the divider panel.

11. Insert a bushing into the knockout and run both the Cat 6 cable and the grey wire through the bushing
1. Place the stainless steel channels against the face of the coil.
2. Align each channel with the holes on the sides of the coil used to hold the coil guard. 
3. Note that the channels have a top and bottom. (See unit label "A".)
4. Hold the channel in place and drill a 1/8" hole through the hole at the top of the channel. 
5. Repeat for other sides.
6. Using the temper resistant screws, attach the coil guard and the channels to the air conditioner.
3.2 Loss of Charge Switch (LoC)

The loss of charge alarm is a normally closed circuit that breaks when the charge is lost. The LoC switch is located in the left side of the condenser compartment.

1. Remove the left side screen
2. Locate the low pressure refrigerant access port.
3. Remove the cap on the port and screw the swivel tee on to the port. (The LoC switch is factory installed on the swivel tee). Be sure to hold the nut on the valve stem with a wrench to prevent twisting and rupturing the copper tube. IMPORTANT: THE LoC switch must be installed vertically as shown in Figure 14.

![Switch must be vertical](image)

**Figure 14. LoC Switch Installation**

4. Route the grey wire from the switch into the return air section. Be sure an excess wire is secured so that it will not be cut by the fan blade.

5. Connect the two wires from the switch to the two grey wires from the speaker box using the provided cam locks. It does not make any difference which wires are connected. Secure with cable ties. See Figure 15.

![Secure Using Cable Ties](image)

**Figure 15. Secure Using Cable Ties**
3.3 Cat 6 Cable

1. Run the CAT 6 cable from the speaker box into the return air section. From the return air section, the Cat 6 can be run into the shelter through the 1½” opening on the left side of the return air section, into the condenser compartment and into the shelter. This cable may be installed in the low voltage conduit from the shelter. Any excess cable must be tie wrapped and placed in the return air section as shown. See Figure 16. Make certain that any cable in the condenser compartment is properly secured as to not to be cut by the fan blade.

The connection to the operator panel will be described in Chapter 5.

![Figure 16. Secure Using Cable Ties](image)

3.4 Tamper Resistant Screws in Side and Front Panels (See Figure 17)

1. Replace the middle panel and bottom of upper panel using 5/16” screws and tamper resistant screws. Stars on the drawing indicate a tamper proof screw.

2. Remove the 5/16” sheet metal screws in the side panels and replace with tamper resistant screws.
Figure 17. Tamper Resistant Screw Locations
3.5 Stainless Steel Channel (See Figure 13)

The stainless steel channels deter theft of the condenser coil.

1. Remove the coil guard on the front of the air conditioner.
2. The channels are mounted on the left and right sides of the coil. Note that the tabs on the channel must point away from the coil and that the top and bottom of the channels are different. See the detail in Figure 13 which shows the bottom of the channel. Place the channel on the side of the coil, aligning the holes in the channel with the holes that held the coil guard.
3. Drill a 1/8” hole in the divider at the top of the channel.
4. Repeat on the other side of the coil.
5. Using tamper resistant screws, secure the channels and the coil guard to the cabinet.

3.6 Labels (See Figure 18)

Labels warn a potential thief that the air conditioner is protected and is the first level of deterrence.

Place labels on the air conditioner as shown below

![Figure 18. Label Locations](image)

See Chapter 5 for installing the Operator panel inside the shelter and connecting the CAT 5 cable to the Operator's panel.
4.1 Installation of the Components in the Condenser Compartment

The speaker, the loss of charge switch (if used), the stainless straps for the condenser coil are all installed in the condenser compartment.

1. Turn OFF power to the air conditioner at the disconnect in the shelter.
2. Remove the 2 screws along the bottom of the top panel. Do not remove this panel.
3. Remove the middle panel by removing the 4 screws that hold this panel in position.

4. Remove the left side condenser side screen. (Orientation is from outside the building and facing the unit.) See Figure 21.

5. The sheet metal template locates the correct position of the holes for mounting the bracket for the speaker box. Place the template on the base of the air conditioner as shown in Figure 21. Make sure the slot in the template for the drain line is placed over the hole in the base for the condensate line.

6. Mark the 4 hole locations and remove the template.
7. Using a 1/8” drill bit, drill 4 holes in the base.
8. Place the speaker mounting bracket on the base.

9. Mount the bracket to the base using four tamper resistant screws.

10. Remove the knock out above the speaker box in the divider panel.

11. Insert the bushing into the knockout and run both the Cat 6 cable and the grey wire through the bushing.

12. Secure the black and grey wires as shown in Figure 20 using the provided cable ties.

![Figure 20. Speaker Box Cables](image)
1. REMOVE L.H. SIDE GRILLE FROM UNIT.
   NOTE: WHEN RE-ATTACHED USE TAMPER PROOF SCREWS THAT ARE SUPPLIED.

2. PLACE STAINLESS STEEL CHANNEL AGAINST COIL FACE, SLIDE TO EDGE OF COIL.
   ALIGNING TABS ON CHANNEL WITH HOLES USED TO ATTACH COIL GUARD USE.
   TOP & BOTTOM OF CHANNEL AS TEMPLATE TO DRILL 1/8" HOLE IN DIVIDER & BASE.
   ADD TAMPER PROOF SCREWS AND RE-ATTACH GRILLE USING TAMPER PROOF SCREWS THROUGH CHANNEL.
   NOTE: CHANNELS HAVE A TOP AND BOTTOM.

3. ATTACH SPEAKER BOX TO BRACKET USING TAMPER PROOF SCREWS.
   REMOVE KNOCK-OUT IN DIVIDER DIRECTLY ABOVE SPEAKER BOX.
   RUN WIRE INTO CONTROL BOX AND CONNECT USING SUPPLIED WIRING DIAGRAM.

4. REMOVE FRONT GRILLE FROM UNIT.
   NOTE: WHEN RE-ATTACHED USE TAMPER PROOF SCREWS THAT ARE SUPPLIED.
4.2 Loss of Charge Switch (LoC)

The loss of charge alarm is a normally closed circuit that breaks when the charge is lost. The LoC switch is located in the left side of the condenser compartment.

1. Remove the right side screen
2. Locate the low pressure refrigerant access port.
3. Remove the cap on the port and screw the swivel tee on to the port. (The LoC switch is factory installed on the swivel tee). Be sure to hold the nut on the valve stem with a wrench to prevent twisting and rupturing the copper tube. IMPORTANT: THE LoC switch must be installed vertically as shown in Figure 22.

4. Route the grey wire from the switch into the return air section. Be sure an excess wire is secured so that it will not be cut by the fan blade.
5. Connect the two wires from the switch to the two grey wires from the speaker box using the provided cam locks. It does not make any difference which wires are connected. Secure with cable ties. See Figure 23.
4.3 Cat 6 Cable

1. Run the CAT 6 cable from the speaker box into the return air section. From the return air section, the Cat 6 can be run into the shelter through the 1½” opening on the left side of the return air section, into the condenser compartment and into the shelter. This cable may be installed in the low voltage conduit from the shelter. Any excess cable must be tie wrapped and placed in the return air section as shown. See Figure 24. Make certain that any cable in the condenser compartment is properly secured as to not to be cut by the fan blade.

The connection to the operator panel will be described in Chapter 5.

![Figure 24. Secure Using Cable Ties](image)

4.4 Tamper Resistant Screws in Side and Front Panels  (See Figure 25)

1. Replace the middle panel and bottom of upper panel using 5/16” screws and tamper resistant screws. Stars on the drawing indicate a tamper proof screw.

2. Remove the 5/16” sheet metal screws in the side panels and replace with tamper resistant screws.
Figure 25. Tamper Resistant Screw Locations
4.5 Stainless Steel Channel (See Figure 21)

The stainless steel channels deter theft of the condenser coil.

1. Remove the coil guard on the front of the air conditioner.
2. The channels are mounted on the left and right sides of the coil. Note that the channels have a top and bottom. Place the channel on the side of the coil, aligning the holes in the channel with the holes that held the coil guard.
3. Drill a 1/8” hole in the divider at the top of the channel.
4. Repeat on the other side of the coil.
5. Using tamper resistant screws, secure the channels and the coil guard to the cabinet.

4.6 Labels (See Figure 26)

Labels warn a potential thief that the air conditioner is protected and is the first level of deterrence. Place labels on the air conditioner as shown below.

![Figure 26. Label Locations](image)

If more than one air conditioner is to have the Coil Cop system, repeat procedure for second air conditioner.

See Chapter 5 for installing the Operator panel inside the shelter and connecting the CAT 5 cable to the Operator's panel.
Chapter 5  Installation of the Operator Panel

5.1 Installation Of The Operator Panel

The Coil Cop® operator panel can be mounted directly on the wall in any suitable location on the inside of the shelter. The recommended location is on the wall midway between the two HVAC units at a height of 5 ft (1.5 m) above the floor provided that this location is not behind any equipment or a grounding bar. If another location is chosen verify that the pre-wired cable from each HVAC unit does not exceed 75 ft. (22.8 m) including all necessary conduit routing. The operator panel is installed as follows:

1. Remove the four screws holding the top cover to the box and place the cover to one side.

2. Position the box on the wall in the desired location with the cutout for the conduit entry facing downwards and screw the box to the wall with two screws through the flange at the top and bottom of the box.

3. Install the cable between the DC plant and the operator panel and terminate the cable on the appropriate terminals inside the DC plant. On the rear of the operator panel’s top cover, terminate the other end of the cable on the +24V or +48V and -24V or -48V terminals on terminal block TB1. Note that TB1-1 and TB1-2 are internally connected. Only connect to one terminal. This same is true for TB1-3 and TB1-4.

4. Run the Cat 6 cable from the air conditioner into the shelter. This cable may be run in the low voltage conduit. Be sure to wrap any excess cable with cable ties to prevent be cut by the condenser fan blade.

5. Plug the cable from the Marvair HVAC unit #1 into the RJ45 female connector J1 on the rear of the operator panel’s top cover. This cable can be installed in the low voltage conduit to the HVAC unit. **Note:** If the CoolLinks™ controller is used to operate the air conditioners, be careful NOT to connect the CoolLinks Ethernet cable to the Coil Cop® board.

6. Plug the cable from the Marvair HVAC unit #2 into the RJ45 female connector J3 on the rear of the operator panel’s top cover. This cable can be installed in the low voltage conduit to the HVAC unit.

7. Use two pairs from a standard Cat3, Cat5 or Cat6 Ethernet cable to connect the Coil Cop alarm signals from the Operator Panel to the shelter alarm punch down block. As indicated in Table 2, connect one pair to pins A1 on the terminal block (Coil Cop Alarm #1) and connect the other pair to pins A2 (Coil Cop Alarm #2). For example, with a blue and white/blue pair, the blue would connect to one of the A1 pins and the white/blue to the other A1 pin. The connection order is not important. The other ends of the pairs of cables would be punched down to the shelter alarm block.

8. Turn the breakers to the ON position to provide power to the air conditioners and the Coil Cop® system.

9. Install the 2A breaker in the DC plant with the breaker in the OFF position. Turn ON the breaker. Press the ARM push button for Unit 1 on the front of the operator panel top cover. If the System Active LED turns on the polarity is correct. If the LED does not turn on, turn the breaker off then swap the wires on terminal block TB1. Press the ARM push button for Unit 1 again and the System Active LED should now turn on. Press the ARM push button for Unit 1 to disarm the unit.

10. Screw the top cover of the operator panel back onto the box with the four screws.
Chapter 6  Operation, Specification & Configuration

6.1 Operation

The front cover of the Coil Cop® operator panel has two status LEDs and one push button for each HVAC unit. Each of the units is independently controlled and the operation of one unit has no effect on the other unit. The Coil Cop alarm on each unit can be individually disabled to allow a maintenance technician to work on one unit. The front cover controls are as follows:

- The green System Active LED indicates if the Coil Cop® is armed or disarmed. LED ON means the system is armed and LED OFF means the system is disarmed.
- The red Alarm LED indicates whether the alarm has been triggered on the Coil Cop®. LED ON means that either the accelerometer or the LOC (loss of charge switch) has been activated (alarm active) and LED OFF means that there is no alarm present.
- The push button arms and disarms the Coil Cop®. Press once to arm and press again to disarm. The System Active LED will turn ON/OFF to indicate the arm/disarm state. Disarming the system will also reset an alarm if it is active.

Note that if a technician forgets to arm the system after performing maintenance on the HVAC units, the system will automatically re-arm after a period of four hours. If the cable between the operator panel and the Coil Cop® anti-theft system in the HVAC unit is cut, the system will automatically trigger a remote alarm to the shelter alarm block.
6.2 Technical Specifications

Power Requirements: 24VDC, 1A or 48VDC, 1A
Power Supply Minimum: 24VDC
Power Supply Maximum: 60VDC
Polarity Protection: Yes

Connections: TB1, Terminal Block, Power Feed
J1, RJ45 Female, Coil Cop® #1
J3, RJ45 Female, Coil Cop #2
TB2, Terminal Block, Alarm Block

Dimensions: 6 1/8 inches x 4 5/8 inches x 2 1/2 inches (155 mm x 117 mm x 64 mm)
Weight: 1.5 lbs (.68 kg)
Conduit Cutout Size: 3/4 inches
Construction Material: ABS Thermoplastic (flammability rating UL94V-A)
6.3 Electrical Connections

J1 Marvair HVAC unit #1, J3 Marvair HVAC unit #2 RJ45 Female Connector Pin-Out:

Table 1: J1 and J3 RJ45 Pin-Out

<table>
<thead>
<tr>
<th>Pin</th>
<th>Wire Color</th>
<th>Signal</th>
<th>Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>White/Orange</td>
<td>+VDC</td>
<td>To Coil Cop®</td>
</tr>
<tr>
<td>2</td>
<td>Orange</td>
<td>+VDC</td>
<td>To Coil Cop®</td>
</tr>
<tr>
<td>3</td>
<td>White/Green</td>
<td>Alarm Enable</td>
<td>To Coil Cop®</td>
</tr>
<tr>
<td>4</td>
<td>Blue</td>
<td>-VDC</td>
<td>To Coil Cop®</td>
</tr>
<tr>
<td>5</td>
<td>White/Blue</td>
<td>-VDC</td>
<td>To Coil Cop®</td>
</tr>
<tr>
<td>6</td>
<td>Green</td>
<td>Enabled, N/C</td>
<td>From Coil Cop®</td>
</tr>
<tr>
<td>7</td>
<td>White/Brown</td>
<td>N/O</td>
<td>From Coil Cop®</td>
</tr>
<tr>
<td>8</td>
<td>Brown</td>
<td>N/C</td>
<td>From Coil Cop®</td>
</tr>
</tbody>
</table>

Table 2: TB2 Alarm Terminal Block Pin-Out

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Alarm Coil Cop #1, N/C</td>
<td>Shelter Alarm Block Pair 1 Base</td>
</tr>
<tr>
<td>A1</td>
<td>Alarm Coil Cop #1, N/C</td>
<td>Shelter Alarm Block Pair 1 Stripe</td>
</tr>
<tr>
<td>A2</td>
<td>Alarm Coil Cop #2, N/C</td>
<td>Shelter Alarm Block Pair 2 Base</td>
</tr>
<tr>
<td>A2</td>
<td>Alarm Coil Cop #2, N/C</td>
<td>Shelter Alarm Block Pair 2 Stripe</td>
</tr>
</tbody>
</table>

TB1 Terminal Block Power Input Connector Pin-Out:

Table 3: TB1 Terminal Block Pin-Out

<table>
<thead>
<tr>
<th>Pin</th>
<th>Functions</th>
<th>Signal</th>
<th>Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB1-1</td>
<td>+VDC</td>
<td>+24VDC or +48VDC</td>
<td>From DC Plant</td>
</tr>
<tr>
<td>TB1-2</td>
<td>+VDC</td>
<td>+24VDC or +48VDC</td>
<td>From DC Plant</td>
</tr>
<tr>
<td>TB1-3</td>
<td>-VDC</td>
<td>-24VDC or -48VDC</td>
<td>From DC Plant</td>
</tr>
<tr>
<td>TB1-4</td>
<td>-VDC</td>
<td>-24VDC or -48VDC</td>
<td>From DC Plant</td>
</tr>
</tbody>
</table>
LED Status Indicators:

<table>
<thead>
<tr>
<th>LED</th>
<th>State</th>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Active</td>
<td>On</td>
<td>Green</td>
<td>System is Armed</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td></td>
<td>System is Not Armed</td>
</tr>
<tr>
<td>Alarm</td>
<td>On</td>
<td>Red</td>
<td>Accelerometer or Loss of Charge Switch Triggered</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td></td>
<td>No Alarm Active</td>
</tr>
</tbody>
</table>

Table 4: LED Status Indicators

6.4 Coil Cop® Configuration Options:
Loss of Charge (LoC) Jumper JP1 (Note: See photo on next page for location of LoC jumper):
The Coil Cop® system includes a loss of charge switch which monitors the refrigerant pressure. If there is a loss of refrigerant, e.g., a refrigerant line is cut, the pressure will drop below the set point and the audio alarm will be activated and contact closure can be used to provide remote notification. To enable the LoC switch, place the jumper on 1 & 2. To disable the LoC switch, position the jumper between 2 & 3. Factory setting is with the LoC switch enabled.

Enable LoC

<table>
<thead>
<tr>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Disable LoC

<table>
<thead>
<tr>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5: Jumper JP1 Options

Sensitivity Switch S1:

<table>
<thead>
<tr>
<th>Switch</th>
<th>Sensitivity Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1-1</td>
<td>Least Sensitive</td>
</tr>
<tr>
<td>S1-2</td>
<td>Moderate Sensitive</td>
</tr>
<tr>
<td>S1-3</td>
<td>Default</td>
</tr>
<tr>
<td>S1-4</td>
<td>Most Sensitive</td>
</tr>
</tbody>
</table>

Table 6: Switch S1 Sensitivity Levels

Note:
1. Factory setting is all switches in the OFF position which selects the default sensitivity level.
2. If sensitivity is changed from the default only one switch should be in the ON position.
3. All four switches in the ON position disables the accelerometer and an alarm is triggered only on the Loss of Charge (LoC) switch.
4. If a Coil Cop is disarmed, press and hold the Arm button for four seconds. The System Active LED will flash to indicate the selected sensitivity level (for example, two flashes for Moderate Sensitivity, S1-2 On). If all four switches are ON, the LED will not flash.
Figure 29. Coil Cop® Microprocessor Board
6.5 Dimensional Drawing

[Diagram showing dimensional measurements]