Installation Instructions

CO_2 Sensing Kit

Used with 27½ - 50 Ton Packaged Units

5-Wall

6-Duct

Model Numbers:

BAYCO2K005*

BAYCO2K006*

TC/YC/TE*330-600

⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

December 2011

ACC-SVN22C-EN

Warnings, Cautions, and Notices

Warnings, Cautions, and Notices. Note that warnings, cautions, and notices appear at appropriate intervals throughout this manual. Warnings are provided to alert installing contractors to potential hazards that could result in personal injury or death. Cautions are designed to alert personnel to hazardous situations that could result in personal injury, while notices indicate a situation that could result in equipment or property-damage-only accidents.

Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

ATTENTION: Warnings, Cautions and Notices appear at appropriate sections throughout this literature. Read these carefully:

⚠WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠CAUTION	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.
NOTICE:	Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns!

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine, and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants-including industry replacements for CFCs such as HCFCs and HFCs.

Responsible Refrigerant Practices!

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified. The Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering, and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

⚠WARNING

Personal Protective Equipment (PPE) Required!

Installing/servicing this unit could result in exposure to electrical, mechanical and chemical hazards.

- **Before installing/servicing this unit, technicians MUST put on all Personal Protective Equipment (PPE) recommended for the work being undertaken. ALWAYS refer to appropriate MSDS sheets and OSHA guidelines for proper PPE.**
- **When working with or around hazardous chemicals, ALWAYS refer to the appropriate MSDS sheets and OSHA guidelines for information on allowable personal exposure levels, proper respiratory protection and handling recommendations.**
- **If there is a risk of arc or flash, technicians MUST put on all Personal Protective Equipment (PPE) in accordance with NFPA 70E or other country-specific requirements for arc flash protection, PRIOR to servicing the unit.**

Failure to follow recommendations could result in death or serious injury.

⚠ WARNING

Proper Field Wiring and Grounding Required!

All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state electrical codes. Failure to follow code could result in death or serious injury.

Table of Contents

CO_2 Sensor Installation

⚠WARNING

Hazardous Procedures!

The procedures described in this manual could result in exposure to electrical, mechanical or other potential safety hazards. Always refer to the safety warnings provided throughout this manual concerning these procedures. Unless specified otherwise, disconnect all electrical power including remote disconnect and discharge all energy storing devices such as capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. When necessary to work with live electrical components, have a qualified licensed electrician or other individual who has been trained in handling live electrical components perform these tasks. Failure to follow all of the recommended safety warnings provided, could result in death or serious injury.

1. Remove Control box access panel, Return air/Filter access panel and Fan access panel. See Figure 3, p. 8.

Notes:

- *BAYCO2K005*, BAYCO2K006* and BAYVNOR002* contain identical harnesses. If at least one of these accessories has previously been installed, skip to Step 3.*
- *If installing the CO_2 sensor kit in a SZ VAV application, refer to the section below for installation of the BAYRTVM001AA as there is additional wire routing involved that could be accomplished simultaneously.*

2. Place the harness provided with the kit into the unit control box and connect wires 55A and 56A to the LTB in the lower right hand corner of the unit control box as shown in Figure 3, p. 8.
3. Route the remainder of the wires in the kit harness through the control box, pull them through the large hole in the far left side of the control box and then through the hole in the divider panel.
4. Route P28 plug and wires 55A and 56A along the bottom of the raceway in the supply fan section and then through a hole with a star bushing in the top coil blockoff. Pull the P28 plug and wires 55A and 56A into the filter section. See Figure 3, p. 8.
5. Connect P28 plug to the jack marked “DCV” on the economizer module per Figure 3, p. 8.
6. Apply “BAYCO2 Kit Has Been Installed” Label next to the main unit wiring diagram label.
7. Install CO_2 sensor in conditioned space or return air duct according to instructions packed with the sensor.
8. Make field wiring connections to LTB per CO_2 and Ventilation Override wiring diagram. See Figure 3, p. 8.
9. Route low voltage external field wiring along with and secure to existing low voltage zone sensor or thermostat wiring.

Unit Close up

1. Replace Filter/Coil access panel.
2. Replace Supply fan access panel.
3. Replace Compressor/Control box access panel.

CO_2 Sensor Connections for ReliaTel Units With Economizer

Demand Control Ventilation (DCV) for Units with a Honeywell Economizer Module

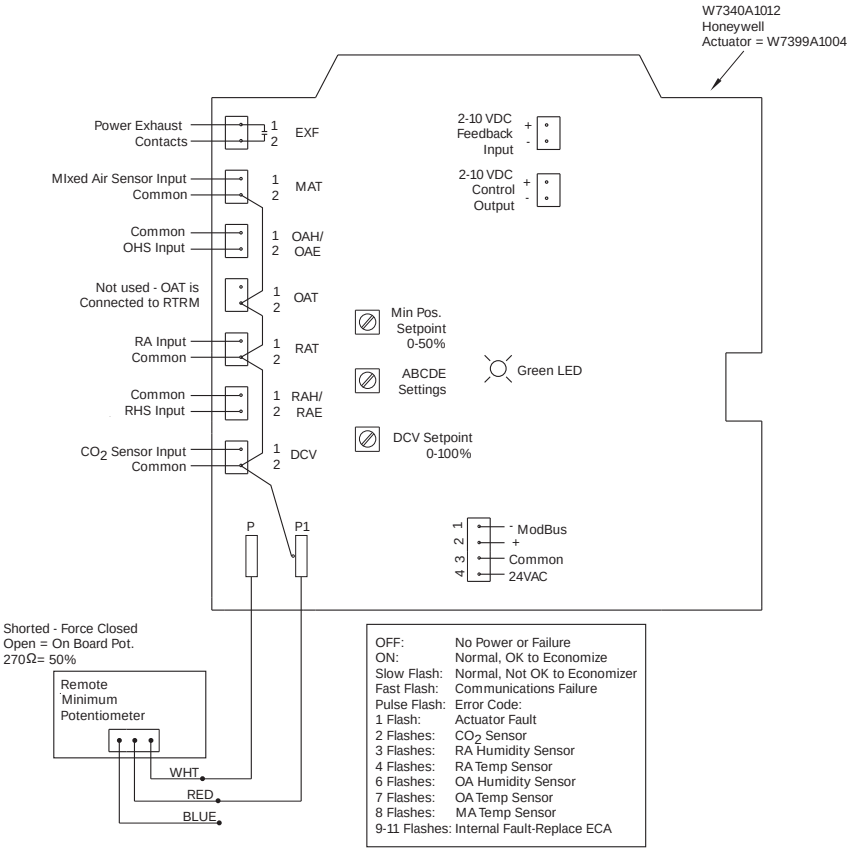
DCV eliminates over-ventilating the space by allowing the fresh air damper to close further than non-$C0_2$ sensing systems, which reduces power consumption. DCV adjusts the fresh air damper between a DCV Minimum Position and DCV Maximum Position. DCV Maximum Position equals non-$C0_2$ sensing systems minimum damper position.

When the CO_2 level is greater than or equal to the CO_2 setpoint the fresh air damper modulates between the DCV Minimum Position Setpoint and the DCV Maximum Position Setpoint, increasing the amount of outdoor air flow and reducing the CO_2 level in the space. The damper will only increase up to the DCV Maximum Position Setpoint. If the CO_2 level drops below the CO_2 setpoint the fresh air damper will drive to the DCV Minimum Position Setpoint.

At first power-up Default DCV Minimum Position Setpoint is 50% of DCV Maximum Position Setpoint. It will remain at this value unless the Setpoint Adjustment Procedure is performed. Once the Adjustment Procedure is performed the two setpoints are independent of each other.

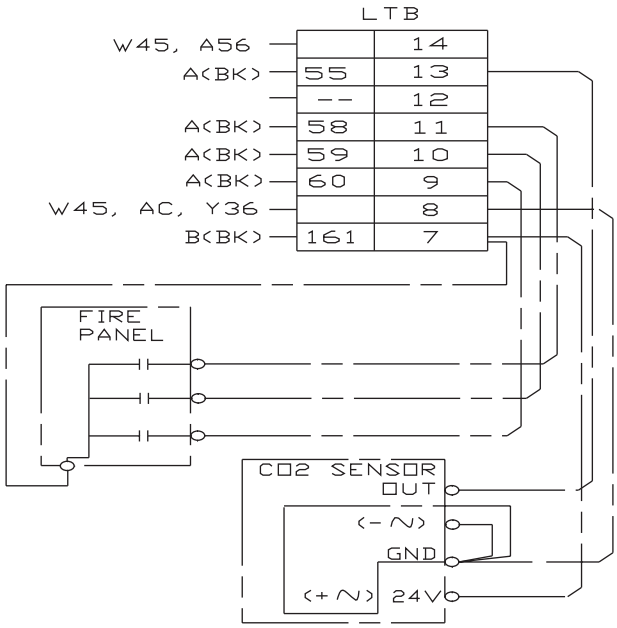
- CO_2 setpoint adjustment
- DCV setpoint potentiometer on economizer module can be adjusted for CO_2 concentrations as follows:
  - 0% - 500ppm
  - 50% - 1000 ppm
  - 100% - 1500ppm

Figure 1. ReliaTel Economizer Module Layout (Honeywell)



DCV Minimum and Maximum Position Setpoint Adjustment Procedure

Figure 2.



1. Remove Return Air Temperature (RAT) sensor connector from RAT terminal.
2. Connect CO_2 sensor to LTB terminals. See Figure 2.

   To adjust the DCV Minimum and Maximum Position power must be connected to the economizer module. Close the units disconnect and place the zone sensor fan selector in the fan “ON” position and the heat/cool selector in the “OFF” position. This will place the damper in the minimum ventilation position.
3. Apply power to economizer module.
4. Place a jumper between the RAT terminal pins.
5. Disconnect CO_2 sensor from LTB terminals. See Figure 2.
6. Economizer module LED will flash 2 times. If LED does not flash, remove power from the module and repeat steps 1-5.

   To adjust the position setting for the required ventilation air, turn the potentiometer clockwise to “open” (increase the amount of ventilation), or counterclockwise to “close” (decrease the amount of ventilation).
7. Set DCV Minimum Position to meet regulatory requirements using MIN POS / DCV MAX potentiometer.

   When adjusting position, the damper may move to the new setting in several small steps. Once the damper has remained in position for 10 – 15 seconds without movement, it can be assumed it is at the new position.
8. Carefully remove the jumper from RAT terminal pins.
9. DCV minimum position is now saved to memory, the economizer module LED flashes 5 times.
10. Remove power from the economizer module.
11. Connect RAT sensor connector to RAT terminal.
12. Connect $C0_2$ sensor to LTB terminals.

13. Apply power to the economizer module.

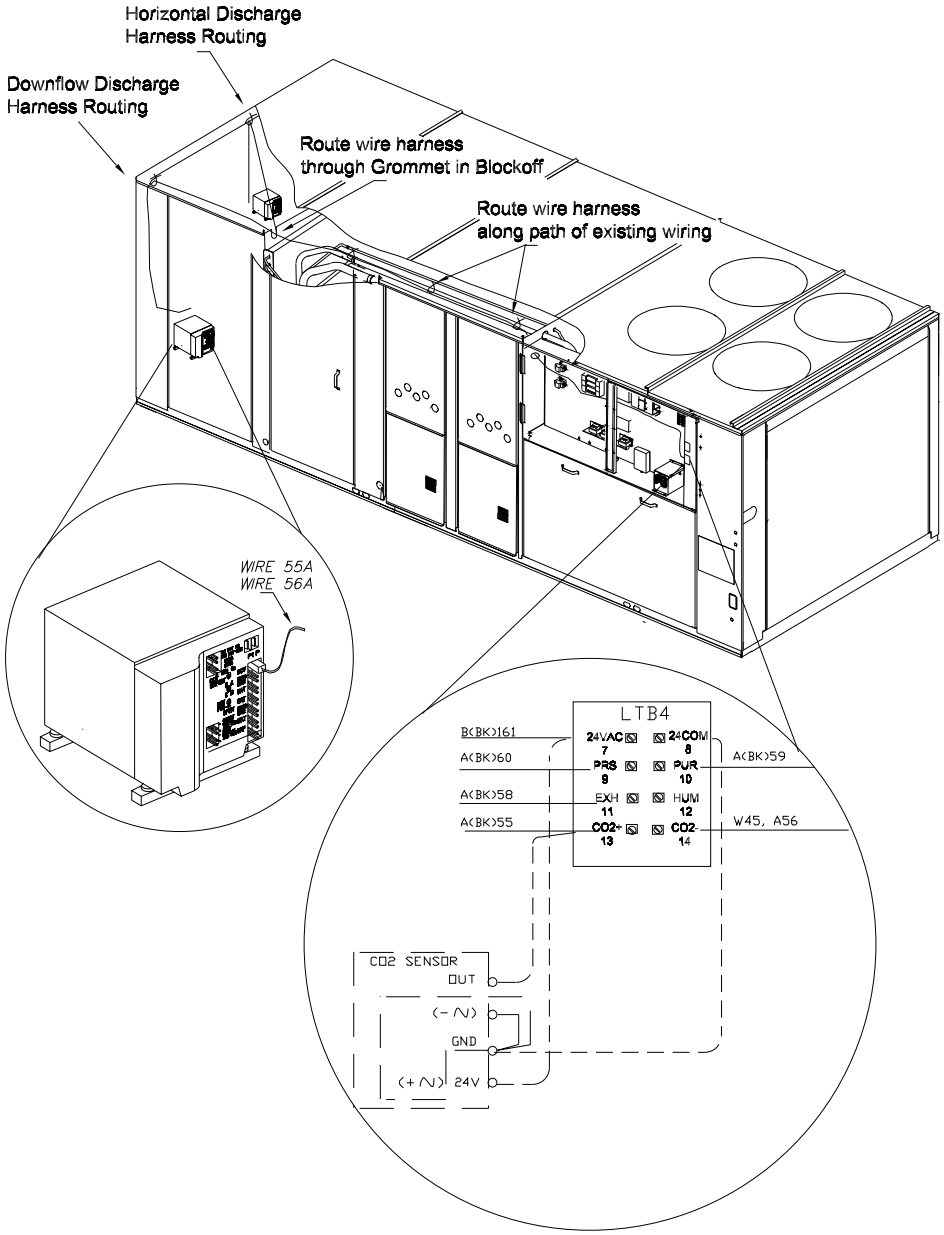
    To adjust the position setting for the required ventilation air, turn the potentiometer clockwise to “open” (increase the amount of ventilation), or counterclockwise to “close” (decrease the amount of ventilation).

14. Set DCV Maximum Position to meet code requirements using MIN POS / DCV MAX potentiometer.

    When adjusting position, the damper may move to the new setting in several small steps. Once the damper has remained in position for 10 – 15 seconds without movement, it can be assumed it is at the new position.

15. DCV Maximum Position is now set.

Figure 3.

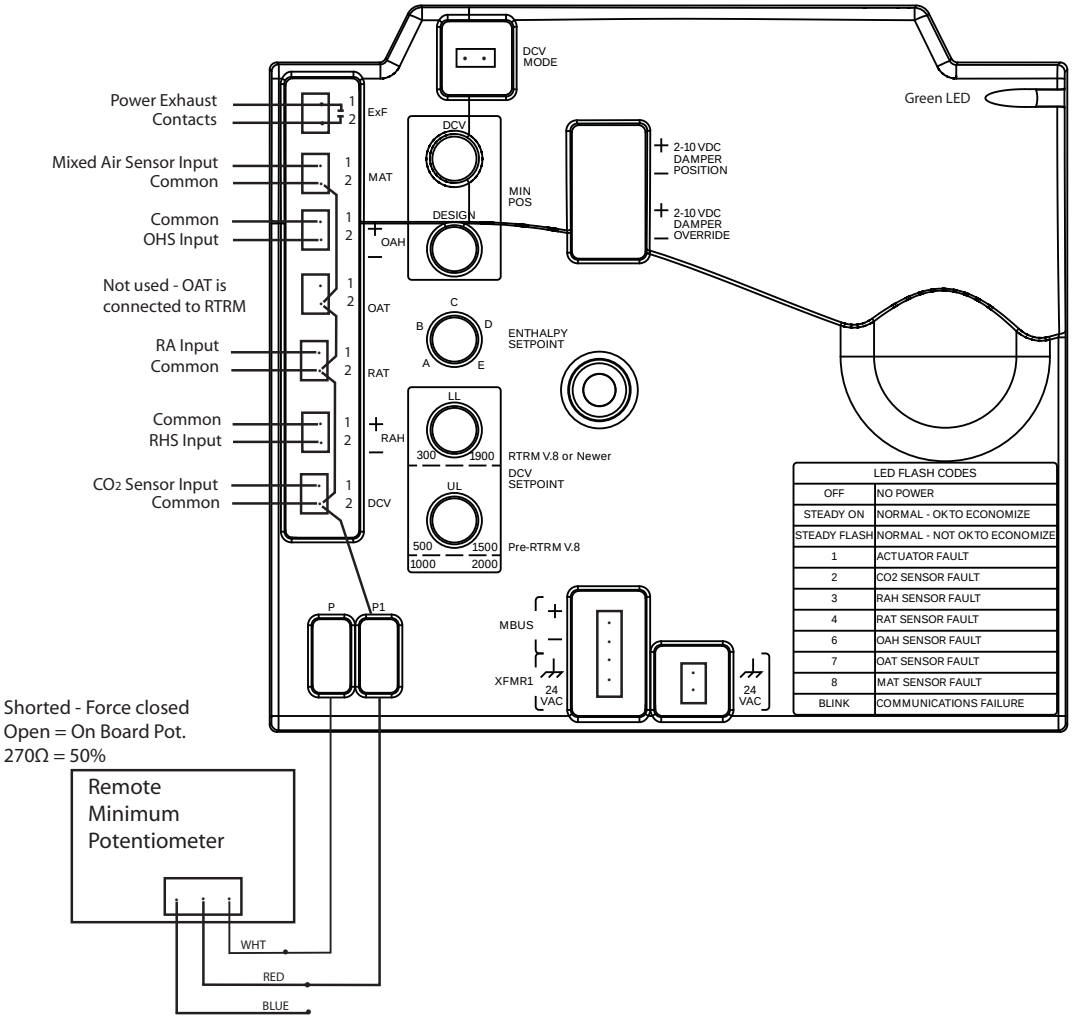


Constant Volume and Variable Air Volume Units

Demand Control Ventilation (DCV) for Units with the ReliaTel Economizer Module

Units equipped with an RTEM economizer logic module will perform Demand Controlled Ventilation differently based on the RTRM version also installed in the unit. Similarly to as described above, the unit control will modify the active OA Damper position between a minimum and maximum value based on a minimum and maximum Space CO_2 setpoint. See below for information concerning the different configurations of RTEM and RTRM versions.

Figure 4. Reliatel Economizer Module Layout (RTEM)



RTEM w/ RTRM v8.0 and Later

For units equipped with an RTRM v8.0 or later and also an RTEM, the control will utilize two separate Space CO_2 Setpoints and two separate Damper Minimum Position Setpoints as described below:

CO_2 Setpoints

The CO_2 Setpoints will be obtained through two potentiometers on the RTEM:

- Building Design CO_2Setpoint (Upper Limit) - Range: 500-2000 ppm
- DCV Minimum CO_2 Setpoint (Lower Limit) - Range: 300-1900 ppm

A 100 ppm differential will be enforced between the Upper Limit CO_2 Setpoint and Lower Limit CO_2 Setpoint.

OA Damper Min Position Setpoints

The OA Damper Min Position setpoints will be obtained by the position of two onboard potentiometers located on the RTEM:

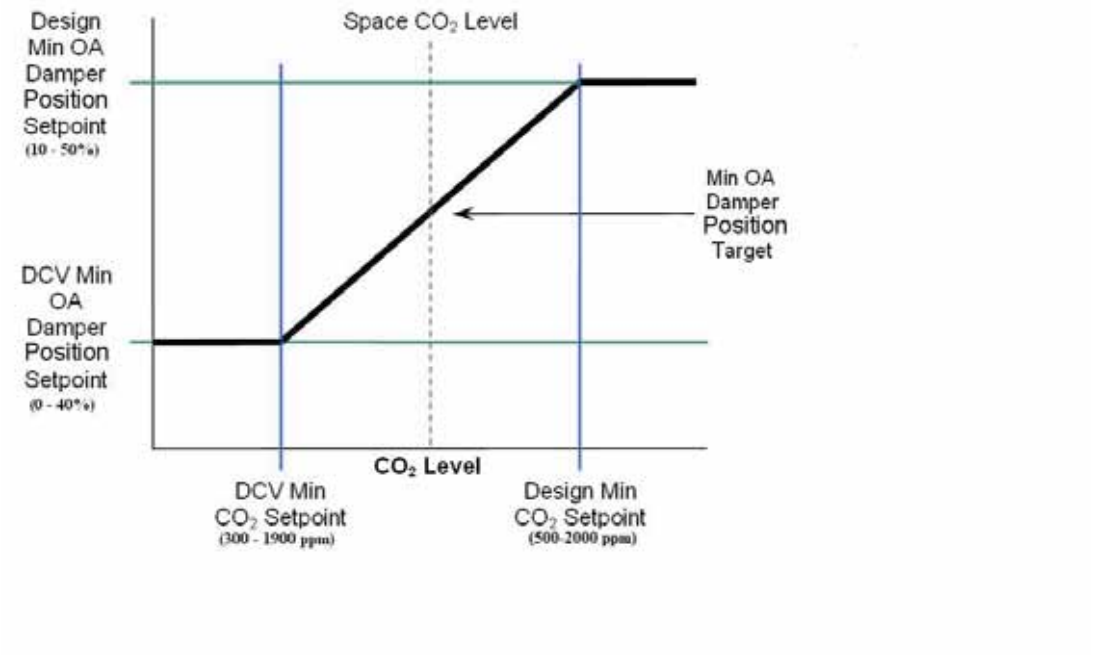
- Building Design Min Position Setpoint - Range: 10-50%
- DCV Min Position Setpoint - Range: 0-40%.

A 10% differential will be enforced between the Design Min Position Setpoint and DCV Min Position Setpoint; the DCV Min Position Setpoint will always be 10% less than the Design Min Position Setpoint. If the unit is configured for DCV and a Remote Min Position value is present on the P0 and P1 terminals, the Remote Min Position will become the Design Min Position Setpoint and the 10% differential will not be enforced.

Sequence of Operation

When the unit is in the occupied mode, the outdoor-air (OA) damper will be controlled between the selected Design Minimum Position and DCV Minimum Position setpoints based on the Space CO_2 value. See Figure Figure 5, p. 10

Figure 5. Outdoor air damper position



When the unit is in the unoccupied mode, DCV control is deactivated.

Note: When using CO_2-based DCV with an RTRM (v8.0 or later) and also an RTEM, set the Design Min Position Setpoint to the minimum outdoor airflow required by the local building code. The DCV Min Position Setpoint is typically based on either 1) the minimum exhaust airflow rate from the building or 2) the base ventilation rate required to dilute building- or process-related contaminants. See HVAC Knowledge Center wave52581 for guidance on determining the CO_2 setpoints and OA damper position setpoints for a given application.

During normal occupied mode, if the unit is not actually heating or cooling, and the fan mode is set to auto, the supply fan will be off. If the unit is configured for Active DCV control (DCV Mode OPEN), the supply fan will be energized when the space CO_2 level rises above the Lower Limit CO_2 Setpoint and the DCV algorithm will be in control of the outdoor air damper position. When the space CO_2 level falls below the Lower Limit CO_2 Setpoint minus 50 ppm, DCV control will begin to close the damper to the DCV Min Position Setpoint. Once the space CO_2 level is below the Lower Limit CO_2 Setpoint minus 50 ppm and the OA damper is at the DCV Min Position the Supply Fan will de-energize if not requested ON by another function.

The RTEM allows the selection of either Active or Passive DCV control. Installing a jumper across J10-1 and J10-2 on the RTEM module configures the unit for Passive DCV control. When configured for Passive DCV control, DCV control is not allowed to force on the supply fan, and DCV control will only be allowed when the supply fan is on (commanded ON by another function, such as comfort heating or cooling control, or the supply fan mode set to ON). Passive DCV will operate identically to Active DCV once the Supply Fan is energized.

Important: While the ReliaTel will allow Active DCV control when the fan mode is set to AUTO (cycle on and off with the compressor or heater), this practice is discouraged because it can result in excessive fan cycling and may not comply with ASHRAE Standard 62.1. If CO_2-based DCV is used, the supply fan mode should be set to ON (operate whenever the zone is occupied) or the unit should be configured for Passive DCV control.

Minimum Position Setpoint Adjustment Procedure

1. Disconnect the CO_2 sensor from the LTB terminals. See Figure 5, p. 10 To adjust the DCV Minimum and Design Minimum Position power must be connected to the economizer module.
2. Close the unit's disconnect and place the zone sensor fan selection in the fan "ON" position and the heat/cool selector in the "OFF" position. This will place the damper in the minimum ventilation position.
3. To select the Design Min Position setpoint, turn the Design Minimum Position potentiometer clockwise to "open" (increase the amount of ventilation), or counterclockwise to "close" (decrease the amount of ventilation).
4. To select the DCV Min Position setpoint, reconnect the CO_2 sensor to the LTB terminals. See Figure 3, p. 8.
5. Adjust the DCV Setpoint Upper Limit to the full clockwise position.
6. Adjust the DCV Setpoint Lower Limit to the full clockwise position.

   Note: Steps 5 and 6 will ensure that the damper only opens to the DCV Minimum Position.
7. To select the DCV Min Position setpoint, turn the DCV Minimum Position potentiometer clockwise to "open" (increase the amount of ventilation), or counterclockwise to "close" (decrease the amount of ventilation).
8. Adjust the DCV Setpoint Upper Limit to the correct setpoint per the application requirements.
9. Adjust the DCV Setpoint Lower Limit to the correct setpoint per the application requirements.

RTEM w/ RTRM v7.0 and Earlier

For units equipped with an RTRM v7.0 or earlier and also an RTEM, the control will utilize a single CO_2 Setpoint and two separate Damper Minimum Position Setpoints as described below:

Setpoint Selection

Units equipped with an RTRM v7.0 or earlier will utilize a single CO_2 Setpoint. The RTEM will use this setpoint and space CO_2 input value to determine the active OA damper position setpoint between the Bldg Design Min Position and DCV Min Position Setpoints.

For DCV control in these units, the CO_2 Setpoint (UL) will have a range of 500 to 1500 ppm.

The OA Damper Min Position setpoints will be obtained by the position of two onboard potentiometers located on the RTEM:

- Building Design Min Position Setpoint - Range: 10-50%
- DCV Min Position Setpoint - Range: 0-40%.

This scheme enforces a 10% differential between the Bldg Design Min Position and the DCV Min Position Setpoints.

Sequence of Operation

For units equipped with RTRM v7.0 or earlier and an RTEM, only Active DCV control is available, as the DCV Mode Configuration input is not recognized prior to RTRM v8.0.

Supply Fan Mode = ON

When the unit is in the occupied mode, the outdoor-air (OA) damper opens to the DCV Min Position Setpoint. If the space CO_2 level rises above the CO_2 Setpoint, the OA damper will open to the Bldg Design Min Position Setpoint. If the space CO_2 level drops below the CO_2 Setpoint, but is not yet 50 ppm below the setpoint, the OA damper will stop modulating (holding its current position). If the space CO_2 level drops below the CO_2 Setpoint minus 50 ppm, the OA damper will close to the DCV Min Position Setpoint. If there is a call for economizer cooling, the outdoor air damper may be opened further to satisfy the cooling request.

Supply Fan Mode = AUTO (from Zone Sensor or all T-stat Inputs Inactive)

When the supply fan is energized (commanded ON by another function, such as comfort heating or cooling control), DCV control will operate as described above ("Supply Fan Mode = ON").

When the supply fan is de-energized, if the space CO_2 level rises above the CO_2 Setpoint, DCV control will energize the supply fan and open the OA damper to the Design Min Position Setpoint. When the space CO_2 level drops below the CO_2 Setpoint, the supply fan will be de-energized and the OA damper will close to 0%.

Minimum Position Setpoint Adjustment Procedure

1. Disconnect the CO_2 sensor from the LTB terminals. See Figure 2. To adjust the DCV Minimum and Design Minimum Position power must be connected to the economizer module.
2. Close the unit's disconnect and place the zone sensor fan selection in the fan "ON" position and the heat/cool selector in the "OFF" position. This will place the damper in the minimum ventilation position.
3. To select the Design Min Position setpoint, turn the Design Minimum Position potentiometer clockwise to "open" (increase the amount of ventilation), or counterclockwise to "close" (decrease the amount of ventilation).
4. To select the DCV Min Position setpoint, reconnect the CO_2 sensor to the LTB terminals. See Figure 3, p. 8.
5. Adjust the DCV Setpoint Upper Limit to the full clockwise position.

   Note: This step will ensure that the damper only opens to the DCV Minimum Position.

6. To select the DCV Min Position setpoint, turn the DCV Minimum Position potentiometer clockwise to "open" (increase the amount of ventilation), or counterclockwise to "close" (decrease the amount of ventilation).
7. Adjust the DCV Setpoint Upper Limit to the correct setpoint per the application requirements.

Single Zone Variable Air Volume Units

Demand Control Ventilation (DCV) for Single Zone VAV Units

Demand Controlled Ventilation for Single Zone VAV configured units will only be performed with the RTEM; the Honeywell Economizer Logic Module is not supported. Units will perform Demand Controlled Ventilation as described above except the unit will require additional OA Damper Minimum position setpoints in order to compensate for the variable supply fan speeds. The additional setpoints will be available on the RTVM board included in the BAYRTVM001AA kit.

CO_2 Setpoints

The CO_2 Setpoints will be obtained through two potentiometers on the RTEM:

- Building Design CO_2 Setpoint (Upper Limit) - Range: 500-2000 ppm
- DCV Minimum CO_2 Setpoint (Lower Limit) - Range: 300-1900 ppm

A 100 ppm differential will be enforced between the Upper Limit CO_2 Setpoint and Lower Limit CO_2 Setpoint.

OA Damper Min Position Setpoints

The OA Damper Min Position setpoints will be obtained by the position of five local potentiometers located on the RTEM and RTVM modules:

1. Design Min Position @ Minimum Fan Speed - Range: 0-100% (RTVM R130)
2. Design Min Position @ 50% Fan Speed Command - Range: 0-100% (RTVM R136)
3. Design Min Position @ 100% Fan Speed Command - Range: 0-50% (RTEM Design Min Position)
4. DCV Min Position @ 0% Fan Speed Command - Range: 0-100% (RTVM R41)
5. DCV Min position @ 100% Fan Speed Command - Range: 0-50% (RTEM DCV Min Position)

A 10% differential will be enforced between the Active Design Min Position Setpoint and Active DCV Min Position Setpoint; the DCV Min Position Setpoint will always be 10% less than the Design Min Position Setpoint. If the unit is configured for DCV and a Remote Min Position value is present on the P0 and P1 terminals, the Remote Min Position will become the Design Min Position Setpoint and the 10% differential will not be enforced.

Sequence of Operation

When the unit is in the occupied mode, the outdoor-air (OA) damper will be controlled between a calculated Active Design Minimum Position and Active DCV Minimum Position setpoints based on the Space CO_2 value vs. the selected CO_2 setpoints and the active fan speed. For additional information, please refer to the IOM.

When the unit is in the unoccupied mode, DCV control is deactivated.

Note: When using CO_2-based DCV with an RTRM (v8.0 or later) and also an RTEM, set the Design Min Position Setpoints to the minimum outdoor airflow required by the local building code at each fan speed. The DCV Min Position Setpoint is typically based on either 1) the minimum exhaust airflow rate from the building or 2) the base ventilation rate required to dilute building- or process-related contaminants. See HVAC Knowledge Center wave52581 for guidance on determining the CO_2 setpoints and OA damper position setpoints for a given application.

The RTEM allows the selection of either Active or Passive DCV control. Installing a jumper across J10-1 and J10-2 on the RTEM module configures the unit for Passive DCV control. When configured

for Passive DCV control, DCV control is not allowed to force on the supply fan, and DCV control will only be allowed when the supply fan is on (commanded ON by another function, such as comfort heating or cooling control, or the supply fan mode set to ON). Passive DCV will operate identically to Active DCV once the Supply Fan is energized.

Important: While the ReliaTel will allow Active DCV control when the fan mode is set to AUTO (cycle on and off with the compressor or heater), this practice is discouraged because it can result in excessive fan cycling and may not comply with ASHRAE Standard 62.1. If CO_2-based DCV is used, the supply fan mode should be set to ON (operate whenever the zone is occupied) or the unit should be configured for Passive DCV control.

RTVM Module Installation

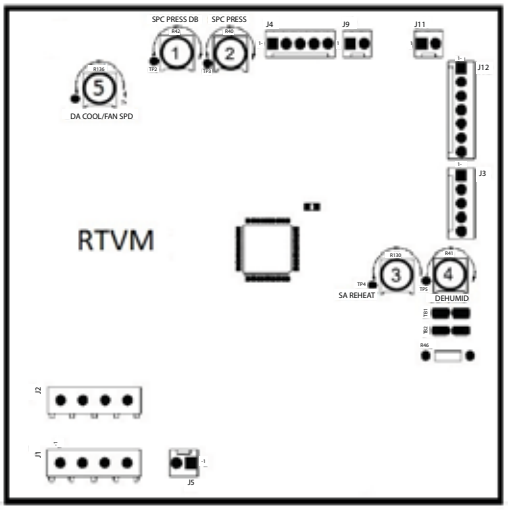
⚠WARNING

Hazardous Voltage!

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

Note: If the unit already has an RTVM module installed, skip to the Minimum Position Setpoint Adjustment Procedure section below.

Figure 6. ReliaTel ventilation module



1 = Space Pressure Deadband (iwc)
2 = Space Pressure Setpoint (iwc)
3** = R130 (SA REHEAT SP) = Design Minimum Position at Minimum Fan Speed Command
4** = R41 (DEHUMID) = DCV Minimum Position at Minimum Fan Speed Command
5** = R136 (DA COOL/FAN SPD) = Design Minimum Position at 50% Fan Speed Command

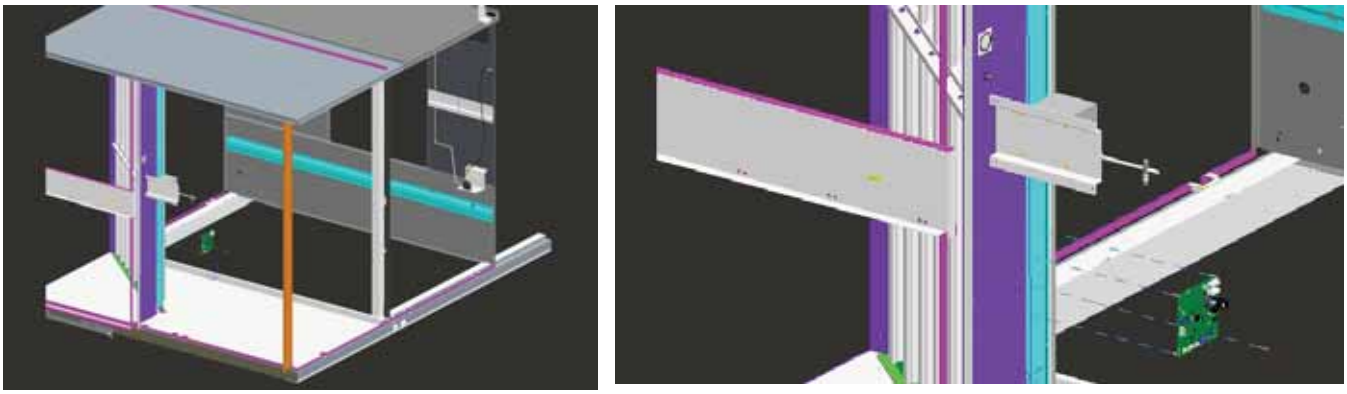
**Setpoints only required for Single Zone VAV units with Demand Controlled Ventilation installed.

Installing the RTVM Module in Horizontal Supply Configured Units

1. Inspect the BAYRTVM001AA kit and locate the following items:
   a. RTVM Module - X13651517*
   b. 4x X25330033130 Phillips Panhead Screws
   c. RTOM to RTVM Harness - 438573030100
   d. RTVM to ECA Harness - 438573030200
   e. BAYRTVM001AA Label - X39002335200
2. Remove Control box access panel, Return air/Filter access panel and Fan access panel. See Figure 3, p. 8.

3. Using a #25 bit, drill 4x 0.1495" diameter holes in the locations shown in Figure 7, p. 15 below.

Figure 7. Installing the RTVM in horizontal supply configuration



4. Mount the RTVM using the provided 4x #6-32 screws.
5. Return to the unit control box.
6. Locate and remove the following wires connected to the RTOM board at the J2 connector:
   a. W54
   b. W55
   c. W56
   d. W57
7. Return to the fresh air section of the unit.
8. Locate and remove the following wires connected to the RTEM board :
   a. W54
   b. W55
   c. W56
   d. W57

   Note: Wires W54, W55, W56, and W57 will be replaced with a new harness included in the BAYRTVM001AA kit.
9. Note the wire routing path for the above wires and remove them from the unit.
10. In the BAYRTVM001AA kit, locate the RTOM to RTVM Harness - 438573030100.
11. Connect the end of the 438573030100 harness labeled "RTOM - J2" to the J2 connection on the Options Module.
12. Using the path noted from wires W54, W55, W56, and W57, route the remainder of the 438573030100 harness through the control box - pull them through the large hole in the far left side of the control box and then through the hole in the divider panel.
13. Connect the end of the 438573030100 harness labeled "RTVM - J1" to the J1 connection on the RTVM module.
14. In the BAYRTVM001AA kit, locate the RTVM to ECA Harness - 438573030200.
15. Connect the end of the 438573030200 harness labeled "RTVM - J2" to the J2 connection on the RTVM Module.
16. Carefully route the wiring of the 438573030200 harness from the RTVM module to the ECA, while avoiding any sharp edges. Connect the end of the 438573030200 harness labeled "ECA" to the 4-pin "XFMR/Modbus" connection on the RTEM/ECA Module.

17. Using the supplied zip ties, bundle any excess wiring and zip tie it out of any unit interference.
18. Using the supplied zip ties, secure the 438573030200 and 438573030100 harnesses to ensure that there is no loose wiring that could get caught in any moving parts.
19. Install the "BAYRTVM Kit Has Been Installed" label next to the main unit wiring diagram label.

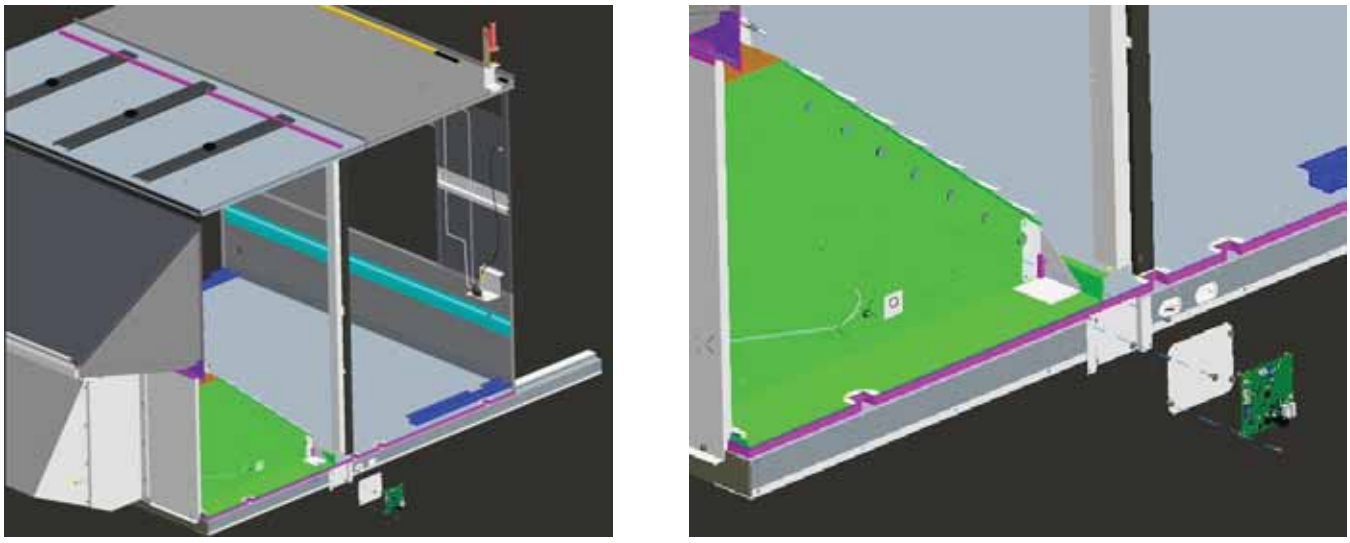
Unit Close up

1. Replace Filter/Coil access panel.
2. Replace Supply fan access panel.
3. Replace Compressor/Control box access panel.

Installing the RTVM Module in Downflow Supply Configured Units

1. Inspect the BAYRTVM001AA kit and locate the following items:
   a. RTVM Module - X13651517*
   b. 4x X25330033130 Phillips Panhead Screws
   c. 8x X25240209030 Sheetmetal Screws (1/4-14 x 0.625)
   d. 1x 439522450100 RTVM Mounting Bracket
   e. 1x 439527230100 RTVM Mounting Plate
   f. RTOM to RTVM Harness - 438573030100
   g. RTVM to ECA Harness - 438573030200
   h. BAYRTVM001AA Label - X39002335200
2. Remove Control box access panel, Return air/Filter access panel and Fan access panel. See Figure 3, p. 8.
3. Using 4x X25240209030 Sheetmetal Screws, mount the 439522450100 RTVM Mounting Bracket as shown in Figure 8.

Figure 8. Installing the RTVM in downflow supply configuration



4. Using 4x X25240209030 Sheetmetal Screws, mount the 439527230100 RTVM Mounting Plate to the Mounting Bracket as shown in Figure 8.
5. Mount the RTVM module to the mounting plate as shown in Figure 8 using the provided 4x #6-32 screws.

6. Return to the unit control box.
7. Locate and remove the following wires connected to the RTOM board at the J2 connector:
   a. W54
   b. W55
   c. W56
   d. W57
8. Return to the fresh air section of the unit.
9. Locate and remove the following wires connected to the RTEM/ECA board :
   a. W54
   b. W55
   c. W56
   d. W57

   Note: Wires W54, W55, W56, and W57 will be replaced with a new harness included in the BAYRTVM001AA kit.
10. Note the wire routing path for the above wires and remove them from the unit.
11. In the BAYRTVM001AA kit, locate the RTOM to RTVM Harness - 438573030100.
12. Connect the end of the 438573030100 harness labeled "RTOM - J2" to the J2 connection on the Options Module.
13. Using the path noted from wires W54, W55, W56, and W57, route the remainder of the 438573030100 harness through the control box - pull them through the large hole in the far left side of the control box and then through the hole in the divider panel.
14. Connect the end of the 438573030100 harness labeled "RTVM - J1" to the J1 connection on the RTVM module.
15. In the BAYRTVM001AA kit, locate the RTVM to ECA Harness - 438573030200.
16. Connect the end of the 438573030200 harness labeled "RTVM - J2" to the J2 connection on the RTVM Module.
17. Carefully route the wiring of the 438573030200 harness from the RTVM module to the ECA, while avoiding any sharp edges. Connect the end of the 438573030200 harness labeled "ECA" to the 4-pin "XFMR/Modbus" connection on the RTEM/ECA Module.
18. Using the supplied zip ties, bundle any excess wiring and zip tie it out of any unit interference.
19. Using the supplied zip ties, secure the 438573030200 and 438573030100 harnesses to ensure that there is no loose wiring that could get caught in any moving parts.
20. Install the “BAYRTVM Kit Has Been Installed” label next to the main unit wiring diagram label.

Unit Close up

1. Replace Filter/Coil access panel.
2. Replace Supply fan access panel.
3. Replace Compressor/Control box access panel.

Minimum Position Setpoint Adjustment Procedure

⚠CAUTION

Live Low Voltage Electrical Components!

The following procedure involves working with live low voltage electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform this procedure. Failure to follow all electrical safety precautions when exposed to live electrical components could result in minor to moderate injury.

To adjust the DCV Minimum and Design Minimum Position power must be connected to the economizer module.

1. Close the unit's disconnect and place the unit into Step 1 (Fan ON) of Service Test Mode by momentarily shorting the Test terminals at the unit LTB 1.
2. Using caution, adjust the DCV UL and DCV LL potentiometers on the RTEM module to full clockwise.
3. To select the DCV Min Position @ Minimum Fan Speed Command, adjust the potentiometer R41 (labeled DEHUMID) located on the RTVM module to get the desired outside airflow.
4. Using caution, adjust the DCV UL and DCV LL potentiometers on the RTEM module to full counter clockwise.
5. To select the Design Min Position @ Minimum Fan Speed command, adjust the potentiometer R130 (labeled SA REHEAT) located on the RTVM module to get the desired outside airflow.
6. Place the unit into Step 3 (Cool 1) of Service Test Mode by momentarily shorting the Test terminals at the unit LTB 1 until only the 1st compressor is running.
7. To select the Design Min Position @ 50% Fan Speed command, adjust the potentiometer R136 (labeled DA COOL - FAN SPD) located on the RTVM module to get the desired outside airflow.
8. Place the unit into Step 4 (Cool 2) of Service Test Mode by momentarily shorting the Test terminals at the unit LTB 1.
9. To select the Design Min Position @ 100% Fan Speed command, adjust the potentiometer DESIGN MIN POS located on the RTEM module to get the desired outside airflow.
10. Using caution, adjust the DCV UL and DCV LL potentiometers on the RTEM module to full clockwise.
11. To select the DCV Min Position @ 100% Fan Speed command, adjust the potentiometer DCV MIN POS located on the RTEM module to get the desired outside airflow.
12. Adjust the DCV Setpoint Upper Limit to the correct setpoint per the application requirements.
13. Adjust the DCV Setpoint Lower Limit to the correct setpoint per the application requirements.
14. Replace all panels on the unit.
15. Cycle power to the unit.

Unit Close up

1. Replace all panels.

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