Maintenance

Make sure all personnel are standing clear of the unit before proceeding. The system components will start when the power is applied.

Fan Belt Adjustment—Belt Drive Units

⚠WARNING

Rotating Components!

The following procedure involves working with rotating components. 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 rotating components cutting and slashing technician which could result in death or serious injury.

The fan belts must be inspected periodically to assure proper unit operation.

Replacement is necessary if the belts appear frayed or worn. Units with dual belts require a matched set of belts to ensure equal belt length.

When removing or installing the new belts, do not stretch them over the sheaves. Loosen the belts using the belt tension adjustment bolts on the motor mounting base.

Once the new belts are installed, using a Browning or Gates tension gauge (or equivalent) illustrated in Figure 33; adjust the belt tension as follows;

1. To determine the appropriate belt deflection;
   a. Measure the center-to-center shaft distance (in inches) between the fan and motor sheaves.
   b. Divide the distance measured in Step 1a by 64; the resulting value represents the amount of belt deflection that corresponds to the proper belt tension.
2. Set the large O-ring on the belt tension gauge at the deflection value determined in Step 1b.
3. Set the small O-ring at zero on the force scale of the gauge plunger.
4. Place the large end of the gauge at the center of the belt span; then depress the gauge plunger until the large O-ring is even with the top of the next belt or even with a straightedge placed across the fan and motor sheaves.

   Refer to Table 17, p. 41.
5. Remove the belt tension gauge. The small O-ring now indicates a number other than zero on the plunger's force scale. This number represents the force (in pounds) required to give the needed deflection.
6. Compare the "force" scale reading (Step 5) with the appropriate "force" value listed in Table 17, p. 41. If the "force" reading is outside the range, readjust the belt tension.

Note: *Actual belt deflection "force" must not exceed the maximum "force" value shown in Table 17, p. 41.*

7. Recheck the belt tension at least twice during the first 2 to 3 days of operation. Belt tension may decrease until the new belts are "run in".

Figure 33. Belt tension gauge

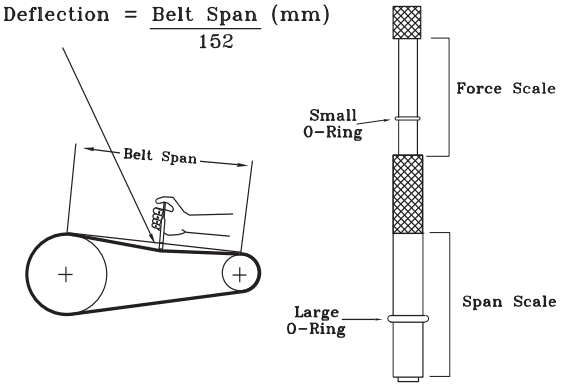

Table 17. Belt tension measurement and deflection ranges

Belts Cross Section	Small P.D Range (in.)	Deflection Force (lb)					
		Super Gripbelts (in.)		Gripnotch (in.)		Steel Cable Gripbelts (in.)	
		Min.	Max.	Min.	Max	Min.	Max.
A	3.0–3.6	3	4 1/2	3 7/8	5 1/2	3 1/4	4
	3.8–4.8	3 1/2	5	4 1/2	6 1/4	3 3/4	4 3/4
	5.0–7.0	4	5 1/2	5	6 7/8	4 1/4	5 1/4
B	3.4–4.2	4	5 1/2	5 3/4	8	4 1/2	5 1/2
	4.4–5.6	5 1/8	7 1/8	6 1/2	9 1/8	5 3/4	7 1/4
	5.8–8.8	6 3/8	8 3/4	7 3/8	10 1/8	7	8 3/4

Belts Cross Section	Small P.D Range (mm)	Deflection Force (kg)					
		Super Gripbelts (mm)		Gripnotch (mm)		Steel Cable Gripbelts (mm)	
		Min.	Max.	Min.	Max.	Min.	Max
A	13.3–16.0	13.3	20.0	17.2	24.5	14.5	17.8
	16.9–21.4	15.6	22.2	20.0	27.8	16.7	21.1
	22.0–31.1	17.8	24.5	22.2	30.6	18.9	23.4
B	15.1–18.7	17.8	24.5	25.6	35.6	20.0	24.5
	19.6–24.9	22.8	31.7	28.9	40.6	25.6	32.3
	25.8–39.1	28.4	38.9	32.8	45.0	31.1	38.9

Monthly Maintenance

Before completing the following checks, turn the unit OFF and lock the main power disconnect switch open.

⚠ 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.

Filters

Inspect the return air filters. Clean or replace them if necessary. Refer to the unit Service Facts for filter information.

Return Air Smoke Detector Maintenance

Airflow through the unit is affected by the amount of dirt and debris accumulated on the indoor coil and filters.

To insure that airflow through the unit is adequate for proper sampling by the return air smoke detector, complete adherence to the maintenance procedures, including recommended intervals between filter changes, and coil cleaning is required.

Periodic checks and maintenance procedures must be performed on the smoke detector to insure that it will function properly.

For detailed instructions concerning these checks and procedures, refer to the appropriate section(s) of the smoke detector Installation and Maintenance Instructions provided with the literature package for this unit.

Condensate Overflow Switch

During maintenance, the switch float (black ring) must be checked to ensure free movement up and down.

Cooling Season

- Check the unit's drain pans and condensate piping to ensure that there are no blockages.
- Inspect the evaporator and condenser coils for dirt, bent fins, etc. If the coils appear dirty, clean them according to the instructions described in "Condenser Coil Cleaning," p. 42.
- Manually rotate the condenser fan(s) to ensure free movement and check motor bearings for wear. Verify that all of the fan mounting hardware is tight.
- Inspect the F/A-R/A damper hinges and pins to ensure that all moving parts are securely mounted. Keep the blades clean as necessary.
- Verify that all damper linkages move freely; lubricate with white grease, if necessary.
- Check supply fan motor bearings; repair or replace the motor as necessary.
- Check the fan shaft bearings for wear. Replace the bearings as necessary.
- Check the supply fan belt. If the belt is frayed or worn, replace it. Refer to "Fan Belt Adjustment—Belt Drive Units," p. 41 for belt replacement and adjustments.
- Verify that all wire terminal connections are tight.
- Remove any corrosion present on the exterior surfaces of the unit and repaint these areas.
- Generally inspect the unit for unusual conditions (e.g., loose access panels, leaking piping connections, etc.).
- Make sure that all retaining screws are reinstalled in the unit access panels once these checks are complete.
- With the unit running, check and record the: ambient temperature; compressor suction and discharge pressures (each circuit); superheat (each circuit); Record this data on an "operator's maintenance log" like the one shown in Table 18, p. 43. If the operating pressures indicate a refrigerant shortage, measure the system superheat. For guidelines, refer to "Compressor Start-Up," p. 37.

Note: *Do NOT release refrigerant to the atmosphere! If adding or removing refrigerant is required, the service technician must comply with all federal, state and local laws.*

Heating Season

- Inspect the unit's air filters. If necessary, clean or replace them.
- Check supply fan motor bearings; repair or replace the motor as necessary.
- Inspect both the main unit control panel and heat section control box for loose electrical components and terminal connections, as well as damaged wire insulation. Make any necessary repairs.
- Verify that the electric heat system operates properly.

Condenser Coil Cleaning

Regular coil maintenance, including annual cleaning, enhances the unit's operating efficiency by minimizing: compressor head pressure and amperage draw; evaporator water carryover; fan brake horsepower, due to increase static pressure losses; airflow reduction.

At least once each year, or more often if the unit is located in a "dirty" environment, clean the condenser coils using the instructions outlined below. Be sure to follow these instructions as closely as possible to avoid damaging the coils.

Microchannel (MCHE) Coils

NOTICE:

Coil Damage!

DO NOT use any detergents with microchannel condenser coils. Use pressurized water or air ONLY, with pressure no greater than 600psi. Failure to do so could result in coil damage.

For additional information regarding the proper microchannel coil cleaning procedure, refer to RT-SVB83-EN.*

Due to the soft material and thin walls of the MCHE coils, the traditional field maintenance method recommended for Round Tube Plate Fin (RTPF) coils does not apply to microchannel coils.

Moreover, chemical cleaners are a risk factor to MCHE due to the material of the coil. The manufacturer does not recommend the use of chemical cleaners to clean microchannel coils. Using chemical cleaners could lead to warranty claims being further evaluated for validity and failure analysis.

The recommended cleaning method for microchannel condenser coils is pressurized water or air with a non-pinpoint nozzle and an ECU of at least 180 with pressure no greater than 600 psi. To minimize the risk of coil damage, approach the cleaning of the coil with the pressure washer aimed perpendicular to the face of the coil during cleaning. Optimum clearance between the sprayer nozzle and the microchannel coil is 1″–3″.

Final Process

For future reference, you may find it helpful to record the unit data requested below in the blanks provided.

(1) Complete Unit Model Number:

____

(2) Unit Serial Number:

____

(3) Wiring Diagram Numbers (from unit control panel)

— schematic(s)

____

____

— connection(s)

____

____

_

Table 18. Sample maintenance log

Date	Current Ambient Temp F/C	Refrigerant Circuit #1						Refrigerant Circuit #2					
		Compr. Oil Level	Suct. Press. Psig/kPa	Disch. Press Psig/kPa	Liquid Press Psig/kPa	Super-heat F/C	Sub-cool F/C	Compr. Oil Level	Suct. Press. Psig/kPa	Disch. Press Psig/kPa	Liquid Press Psig/kPa	Super-heat F/C	Sub-cool F/C
		- ok - low						- ok - low					
		- ok - low						- ok - low					
		- ok - low						- ok - low					
		- ok - low						- ok - low					
		- ok - low						- ok - low					
		- ok - low						- ok - low					
		- ok - low						- ok - low					
		- ok - low						- ok - low					
		- ok - low						- ok - low					
		- ok - low						- ok - low					
		- ok - low						- ok - low					

Troubleshooting

⚠WARNING

Hazardous Service Procedures!

The maintenance and troubleshooting procedures recommended in this section of the 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.

ReliaTel Control

The RTRM has the ability to provide the service personnel with some unit diagnostics and system status information.

Before turning the main power disconnect switch "Off", follow the steps below to check the ReliaTel™ Refrigeration Module (RTRM). All diagnostics and system status information stored in the RTRM will be lost when the main power is turned "Off".

To prevent injury or death from electrocution, it is the responsibility of the technician to recognize this hazard and use extreme care when performing service procedures with the electrical power energized.

1. Verify that the Liteport LED on the RTRM is burning continuously. If the LED is lit, go to Step 3.
2. If the LED is not lit, verify that 24 Vac is presence between J1-1 and J1-2. If 24 Vac is present, proceed to Step 3.

   If 24 Vac is not present, check the unit main power supply, check transformer (TNS1). Proceed to Step 3 if necessary.
3. Utilizing "Method 1" or "Method 2" in the "System Status Checkout Procedure, check the following:

   System status

   Heating status

   Cooling status

   If a System failure is indicated, proceed to Step 4. If no failures are indicated, proceed to Step 5.
4. If a System failure is indicated, recheck Step 1 and Step 2. If the LED is not lit in Step 1, and 24 Vac is present in Step 2, the RTRM has failed. Replace the RTRM.
5. If no failures are indicated, use one of the TEST mode procedures described in "Start Up," p. 37 to start the unit. This procedure will allow you to check all of the RTRM outputs, and all of the external controls (relays, contactors, etc.) that the RTRM outputs energize, for each respective mode. Proceed to Step 6.
6. Step the system through all of the available modes, and verify operation of all outputs, controls, and modes. If a problem in operation is noted in any mode, you may leave the system in that mode for up to one hour while troubleshooting. Refer to the sequence of operations for each mode, to assist in verifying proper operation. Make the necessary repairs and proceed to Step 7 and Step 8.
7. If no abnormal operating conditions appear in the test mode, exit the test mode by turning the power "Off" at the main power disconnect switch.
8. Refer to the individual component test procedures if other microelectronic components are suspect.

System Status Checkout Procedure

"System Status" is checked by using one of the following two methods:

Method 1

If the Zone Sensor Module (ZSM) is equipped with a remote panel with LED status indication, you can check the unit within the space. If the ZSM does not have LEDs, use "Method 2," p. 45.

BAYSENS110* and BAYSENS119* have the remote panel indication feature.

The LED descriptions are listed below.

- LED 1 (System)
  - "On" during normal operation.
  - "Off" if a system failure occurs or the LED fails.
  - "Flashing" indicates test mode.
- LED 2 (Heat)
  - "On" when the heat cycle is operating.
  - "Off" when the heat cycle terminates or the LED fails.
  - "Flashing" indicates a heating failure.
- LED 3 (Cool)
  - "On" when the cooling cycle is operating.
  - "Off" when the cooling cycle terminates or the LED fails.
  - "Flashing" indicates a cooling failure.
- LED 4 (Service)
  - "On" indicates a clogged filter.
  - "Off" during normal operation.

– "Flashing" indicates an evaporator fan failure or a Condenser Overflow Switch (COF) failure.

The following is the complete listing of indication causes:

System Failure

Check the voltage between terminals and 9 on J6, it should read approximately 32 Vdc. If no voltage is present, a System failure has occurred. Refer to Step 4 in the previous section for the recommended troubleshooting procedure.

Heating Failure

Verify Heat Failure by Ignition Module

(IGN) LED indicator:

OFF: No Power or Failure

ON: Normal

Slow Flash: Normal, Heat Call

Fast Flash: Error Code:

1 Flash: Communication Failure

2 Flashes: System Lockout

4 Flashes TC01 or TC02 Open

5 Flashes: Flame w/o Gas Valve

Cooling Failure

1. Cooling and heating set point (slide pot) on the zone sensor has failed. Refer to "Zone Temperature Sensor (ZTS) Test," p. 46.
2. Zone temperature thermistor ZTEMP on ZTS failed. Refer to "Zone Temperature Sensor (ZTS) Test," p. 46.
3. CC1 or CC2 24 Vac control circuit has opened, check CC1 and CC2 coils, and any of the controls below that apply to the unit (HPC1, HPC2).
4. LPC1 has opened during the three-minute minimum "on time" during consecutive compressor starts, check LPC1 or LPC2 by testing voltage between the J1-8 and J3-2 terminals on the RTRM and ground. If Vac is present, the LPCs has not tripped. If no voltage is present, LPCs has tripped.

Service Failure

1. If the supply fan proving switch has closed, the unit will not operate (when connected to RTOM), check the fan motor, belts, and proving switch.
2. If the clogged filter switch has closed, check the filters.

Simultaneous Heat and Cool Failure

- Emergency Stop is activated.

Method 2

The second method for determining system status is done by checking voltage readings at the RTRM (J6). The system indication descriptions and the approximate voltages are listed below.

System Failure

Measure the voltage between terminals J6-9 and J6-6.

- Normal Operation = approximately 32 Vdc
- System Failure = less than 1 Vdc, approximately 0.75 Vdc
- Test Mode = voltage alternates between 32 Vdc and 0.75 Vdc

Heat Failure

Measure the voltage between terminals J6-7 and J6-6.

- Heat Operating = approximately 32 Vdc
- Heat Off = less than 1 Vdc, approximately 0.75 Vdc
- Heating Failure = voltage alternates between 32 Vdc and 0.75 Vdc

Cool Failure

Measure the voltage between terminals J6-8 and J6-6.

- Cool Operating = approximately 32 Vdc
- Cool Off = less than 1 Vdc, approximately 0.75 Vdc
- Cooling Failure = voltage alternates between 32 Vdc and 0.75 Vdc

Service Failure

Measure the voltage between terminals J6-10 and J6-6.

- Clogged Filter = Approximately 32 Vdc.
- Normal = Less than 1 Vdc, approximately 0.75 Vdc
- Fan Failure = voltage alternates between 32 Vdc and 0.75 Vdc.

Note: *If the Condensate Overflow Switch is closed, the unit will not operate. Check to make sure the float position is not in a tripped condition and verify an "open" between wires connecting to RTOM J6-1, J6-2.*

To use LEDs for quick status information at the unit, purchase a BAYSENS110* ZSM and connect wires with alligator clamps to terminals 6 through 10. Connect each respective terminal wire (6 through 10) from the Zone Sensor to the unit J6 terminals 6 through 10.

Note: *If the system is equipped with a programmable zone sensor, (BAYSENS119*), the LED indicators will not function while the BAYSENS110* is connected.*

Resetting Cooling and Heating Lockouts

Cooling Failures and Heating Lockouts are reset in an identical manner.

"Method 1," p. 46 explains resetting the system from the space; "Method 2," p. 46 explains resetting the system at the unit.

Note: *Before resetting Cooling Failures and Heating Lockouts check the Failure Status Diagnostics by the methods previously explained. Diagnostics will be lost when the power to the unit is disconnected.*

Method 1

To reset the system from the space, turn the "Mode" selection switch at the zone sensor to the "Off" position. After approximately 30 seconds, turn the "Mode" selection switch to the desired mode, i.e. Heat, Cool or Auto.

Method 2

To reset the system at the unit, cycle the unit power by turning the disconnect switch "Off" and then "On".

Lockouts can be cleared through the building management system. Refer to the building management system instructions for more information.

Zone Temperature Sensor (ZTS) Service Indicator

The ZSM SERVICE LED is a generic indicator, that will signal the closing of a Normally Open switch at any time, providing the Indoor Motor (IDM) is operating.

This indicator is usually used to indicate a clogged filter, or an air side fan failure.

The RTRM will ignore the closing of this Normally Open switch for 2 (±1) minutes. This helps prevent nuisance SERVICE LED indications. The exception is the LED will flash 40 seconds after the fan is turned "On" if the Fan Proving Switch is not made.

Clogged Filter Switch

This LED will remain lit the entire time that the Normally Open switch is closed. The LED will be turned off immediately after resetting the switch (to the Normally Open position), or any time that the IDM is turned "Off".

If the switch remains closed, and the IDM is turned "On", the SERVICE LED will be turned "On" again after the 2 (±1) minute ignore delay.

This LED being turned "On", will have no other affect on unit operation. It is an indicator only.

Fan Failure Switch

When the "Fan Failure" switch is wired to the RTOM, the LED will remain flashing the entire time the fan proving switch is closed, indicating a fan failure, and it will shut the unit operations down.

Condensate Overflow Switch

When the condensate overflow switch is closed, a drain pan overflow condition is indicated and it will shut unit operations down.

Zone Temperature Sensor (ZTS) Test

Note: *These procedures are not for programmable or digital models and are conducted with the Zone Sensor Module electrically removed from the system.*

Test 1

Zone Temperature Thermistor (ZTEMP)

This component is tested by measuring the resistance between terminals 1 and 2 on the Zone Temperature Sensor. Below are some typical indoor temperatures, and corresponding resistive values.

Table 19. Temps and resistance values

Zone Temperature		Nominal ZTEMP Resistance (K-Ohms)	Nominal CSP or HSP Resistance (Ohms)
(°F)	(°C)		
50	10.0	19.9	889
55	12.8	17.47	812
60	15.6	15.3	695
65	18.3	13.49	597
70	21.1	11.9	500
75	23.9	10.50	403
80	26.7	9.3	305
85	29.4	8.25	208
90	32.2	7.3	110

Test 2

Cooling Set Point (CSP) and Heating Set Point (HSP) The resistance of these potentiometers are measured between the following ZSM terminals. Refer to Table 19 for approximate resistances at the given setpoints.

Cool SP = Terminals 2 and 3

Range = 100 to 900 Ohms approximate

Heat SP = Terminals 2 and 5

Range = 100 to 900 Ohms approximate

Test 3

System Mode and Fan Selection

The combined resistance of the Mode selection switch and the Fan selection switch can be measured between terminals 2 and 4 on the Zone Sensor. The possible switch combinations are listed Table 21, p. 47 with their corresponding resistance values.

Test 4

LED Indicator Test, (SYS ON, HEAT, COOL & SERVICE)

Method 1

Testing the LED using a meter with diode test function. Test both forward and reverse bias. Forward bias should measure a voltage drop of 1.5 to 2.5 volts, depending on your meter. Reverse bias will show an Over Load, or open circuit indication if LED is functional.

Method 2

Testing the LED with an analog Ohmmeter. Connect Ohmmeter across LED in one direction, then reverse the leads for the opposite direction. The LED should have at least 100 times more resistance in reverse direction, as compared with the forward direction. If high resistance in both directions, LED is open. If low in both directions, LED is shorted.

Method 3

To test LEDs with ZSM connected to unit, test voltages at LED terminals on ZSM. A measurement of 32 Vdc, across an unlit LED, means the LED has failed.

Table 20. Default operation for mechanical ZSM (CV only)

J6 Input/Connection	If no input/connection this happens
J6-7[a] - Heat indication	LED will not come on while heating LED will not flash during heat fail
J6-8[a] - Cool indication	LED will not come on while cooling LED will not flash during cool fail[a]
J6-9[a] - System indication (sys on)	LED will not come on while unit has power
J6-10[a] - Service indication	LED will not come on when CFS or FFS trips

(a) these connections are only on certain model ZSMs

Note: *Measurements should be made from LED common (ZSM terminal 6 to respective LED terminal). Refer to Table 20, p. 47.*

Table 21. System mode and fan selection

Resistance Valves (K-Ohms)	Zone Sensor Unit/Fan Mode	Local Unit Mode	Local Fan Mode
2.32	Off/Auto	Off	Auto
4.87	Cool/Auto	Cool	Auto
7.68	Auto/Auto	Auto	Auto
10.77	Off/On	Off	On
13.32	Cool/On	Cool	On
16.13	Auto/On	Auto	On
19.48	Heat/Auto	Heat	Auto
27.93	Heat/On	Heat	On
35.0	Emergency Heat/Auto	Emergency Heat	Auto
43.45	Emergency Heat/On	Emergency Heat	On
Out of Range (Short)	INVALID/Short	Invalid (CV), Auto (VAV)	Invalid
Out of Range (Open)	INVALID/Open	Invalid (CV), Off (VAV)	Invalid

Programmable & Digital Zone Sensor Test

Testing Serial Communication Voltage

1. Verify 24 Vac is present between terminals J6-14 and J6-11.
2. Disconnect wires from J6-11 and J6-12. Measure the voltage between J6-11 and J6-12, should be about 32 Vdc.
3. Reconnect wires to terminals J6-11 and J6-12. Measure voltage again between J6-11 and J6-12, voltage should flash high and low every 0.5 seconds. The voltage on the low end will measure about 19 Vdc, while the voltage on the high end will measure from approximately 24 to 38 Vdc.
4. Verify all modes of operation, by running the unit through all of the steps in the "Test Modes" section discussed in "Start Up," p. 37".
5. After verifying proper unit operation, exit the test mode. Turn the fan on continuously at the ZSM, by pressing the button with the fan symbol. If the fan comes on and runs continuously, the ZSM is good. If you are not able to turn the fan on, the ZSM is defective.

ReliaTel Refrigeration Module (RTRM) Default Chart

If the RTCI loses input from the building management system, the RTRM will control in the default mode after approximately 15 minutes. If the RTRM loses the Heating and Cooling setpoint input, the RTRM will control in the default mode instantaneously.

The temperature sensing thermistor in the Zone Sensor Module is the only component required for the "Default Mode" to operate.

Unit Operation Without a Zone Sensor

This procedure is for temporary operation only. The economizer and condenser fan cycling functions are disabled.

⚠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.

1. Open and Lock the unit disconnect switch.
2. Remove the Outside Air Sensor (OAS) from the condenser section of unit.
3. Use two (2) wire nuts, to individually cap the wires.
4. Locate the RTRM (J6). Connect two (2) wires to terminals J6-1 and 2.
5. Connect the sensor (OAS) using two wire nuts to the two (2) field supplied wires that were connected to terminals 1 and 2 on J6.

Unit Economizer Control (ECA) Troubleshooting ReliaTel Control

Verify Economizer Status by Economizer Actuator (ECA) LED indicator:

- OFF: No Power or Failure
- ON: Normal, OK to Economize
- Slow Flash: Normal, Not OK to Economize
- Fast Flash - 1/4 Second On / 2 Seconds Off:
  - Error Code: Communications Failure
- Pulse Flash: 1/30 Second On / 1/4 Second Off: (2 Seconds between pulse sequences)

Error Code:

- 1 Flash: Actuator Fault
- 2 Flashes: CO_2 Sensor
- 3 Flashes: RA Humidity Sensor
- 4 Flashes: RA Temp Sensor
- 5 Flashes: OA Quality Sensor
- 6 Flashes: OA Humidity Sensor
- 7 Flashes: OA Temp Sensor
- 8 Flashes: MA Temp Sensor
- 9 Flashes: RAM Fault
- 10 Flashes: ROM Fault
- 11 Flashes: EEPROM Fault

Wiring Diagrams

Note: *Wiring diagrams can be accessed via e-Library by entering the diagram number in the literature order number search field or by contacting technical support.*

Table 22. Wiring diagrams

Type of Airflow	Schematic Type	Voltage	Diagram Number	Description
Constant Volume	Power	200-575	2313-1480	YS*150-300 50/60HZ, 2 Stage Gas Heat
			1213-1002	YH*150-300 50/60HZ, 2 Stage Gas Heat
			2313-1481	YS*150-300 50/60HZ, Modulating Gas Heat,
			1213-1003	YH*150-300 50/60HZ, Modulating Gas Heat
	Control	200-575	2313-1489	YS*150-300 2 Stage Gas Heat, with or without Dehumidification
			1213-1010	YH*150-300 2 Stage Gas Heat, with or without Dehumidification
			2313-1490	YS*150-300 with or without Dehumidification
			1213-1010	YH*150-300 Modulating Gas Heat, with or without Dehumidification
			2313-1495	YS*150-300 with or without Dehumidification, Option Modules
			1213-1015	YH*150-300 with or without Dehumidification, Option Modules
	Raceway Connection	200-575	2313-1516	YS*150-300 2 Stage Gas Heat, with or without Dehumidification
			1213-1039	YH*150-300 2 Stage Gas Heat, with or without Dehumidification
			2313-1517	YS*150-300 Modulating Gas Heat, with or without Dehumidification
			1213-1040	YH*150-300 Modulating Gas Heat, with or without Dehumidification
	Control Box Connections	200-230	2313-1501	YS*150-300 50/60HZ, 2 Stage Gas Heat, with or without Dehumidification
			2313-1503	YS*150-300 50/60HZ, Modulating Gas Heat, with or without Dehumidification
		380-575	2313-1502	YS*150-300 50/60HZ, 2 Stage Gas Heat, with or without Dehumidification
			2313-1504	YS*150-300 50/60HZ, Modulating Gas Heat, with or without Dehumidification
		200-575	1213-1019	YH*150-240 2 Stage Gas Heat, with or without Dehumidification
			1213-1020	YH*150-240 Modulating Gas Heat, with or without Dehumidification
			1213-1048	YH*300 50/60HZ, 2 Stage Gas Heat, with or without Dehumidification
			1213-1049	YH*300 50/60HZ, Modulating Gas Heat, with or without Dehumidification
	Module Connections	200-575	1213-1029	YH*150-300 50/60HZ, 2 Stage Gas Heat, with or without Dehumidification
			1213-1030	YH*150-300 50/60HZ, Modulating Gas Heat, with or without Dehumidification
Variable Air Volume/ Multi-speed Fans/Single Zone Variable Air Volume	Power	208-575	2313-1484	YS*150-300 50/60HZ, 2 Stage Gas Heat
			1213-1002	YH*150-300, 50/60HZ, 2 Stage Gas Heat
			2313-1485	YS*150-300 50/60HZ, Modulating Gas Heat
			1213-1003	YH*150-300, 50/60HZ, Modulating Gas Heat
	Control	208-575	2313-1493	YS*150-300, YH*150-300, 2 Stage Gas Heat, with or without Dehumidification
			1213-1010	YH*150-300, 2 Stage Gas Heat, with or without Dehumidification
			2313-1494	YS*150-300 Modulating Gas Heat, with or without Dehumidification
			1213-1010	YH*150-300, Modulating Gas Heat, with or without Dehumidification
			2313-1495	YS*150-300 with or without Dehumidification, Option Modules
			1213-1015	YH*150-300, with or without Dehumidification, Option Modules
	Raceway Connection	208-575	2313-1520	YS*150-300 2 Stage Gas Heat, with or without Dehumidification
			1213-1039	YH*150-300, 2 Stage Gas Heat, with or without Dehumidification
			2313-1521	YS*150-300 Modulating Gas Heat, with or without Dehumidification
			1213-1040	YH*150-300, Modulating Gas Heat, with or without Dehumidification

Wiring Diagrams

Table 22. Wiring diagrams

Type of Airflow	Schematic Type	Voltage	Diagram Number	Description
Variable Air Volume/ Multi-speed Fans/Single Zone Variable Air Volume	Control Box Connections	208-230	2313-1511	YS*150-300 50/60HZ, 2 Stage Gas Heat, with or without Dehumidification
			2313-1509	YS*150-300 50/60HZ, Modulating Gas Heat, with or without Dehumidification
		460-575	2313-1510	YS*150-300 50/60HZ, 2 Stage Gas Heat, with or without Dehumidification
			2313-1512	YS*150-300 50/60HZ, Modulating Gas Heat, with or without Dehumidification
		200-575	1213-1252	YH*150-240 2 Stage Gas Heat, with or without Dehumidification
			1213-1253	YH*150-240 Modulating Gas Heat, with or without Dehumidification
			1213-1255	YH*300 50/60HZ, 2 Stage Gas Heat, with or without Dehumidification
			1213-1256	YH*300 50/60HZ, Modulating Gas Heat, with or without Dehumidification
	Module Connections	200-575	1213-1029	YH*150-300 50/60HZ, 2 Stage Gas Heat, with or without Dehumidification
			1213-1030	YH*150-300 50/60HZ, Modulating Gas Heat, with or without Dehumidification

Table 23. Wiring diagrams for units with High Short Circuit Rating (SCCR)

Type of Airflow	Schematic Type	Voltage	Diagram Number	Description
Constant Volume	Power	208-575	2313-1579	YS*180-300 2-Stage Gas Heat
			1213-1005	YH*150-300 2-Stage Gas Heat
			2313-1580	YS*180-300 Modulating Gas Heat
			1213-1006	YH*150-300 Modulating Gas Heat
	Control	208-575	2313-1584	YS*180-300 2-Stage Gas Heat
			1213-1014	YH*150-300 2-Stage Gas Heat
			2313-1585	YS*180-300 Modulating Gas Heat
			1213-1014	YH*150-300 Modulating Gas Heat
			2313-1590	YS*180-300 2-Stage Gas Heat & Modulating Gas Heat Options Modules
			1213-1015	YH*150-300 2-Stage Gas Heat & Modulating Gas Heat Options Modules
	Raceway Connection	208-575	2313-2021	YS*180-300 2-Stage Gas Heat
			1213-1044	YH*150-300 2-Stage Gas Heat
			2313-2022	YS*180-300 Modulating Gas Heat
			1213-1045	YH*150-300 Modulating Gas Heat
	Control Box Connections	208-575	2313-2004	YS*180-300 2-Stage Gas Heat
			1213-1024	YH*150-240 2-Stage Gas Heat
			2313-2005	YS*180-300 Modulating Gas Heat
			1213-1025	YH*150-240 Modulating Gas Heat
			1213-1262	YH*300 2-Stage Gas Heat
	Module Connections	208-575	2313-2050	YS*180-300 2-Stage Gas Heat
			1213-1034	YH*150-300 2-Stage Gas Heat
			2313-2051	YS*180-300 Modulating Gas Heat
			1213-1035	YH*150-300 Modulating Gas Heat
Multi-zone Variable Air Volume/ Multi-speed Fans/Single Zone Variable Air Volume	Power	208-575	2313-1579	YS*180-300 2-Stage Gas Heat
			1213-1005	YH*150-300 2-Stage Gas Heat
			2313-1580	YS*180-300 Modulating Gas Heat
			1213-1006	YH*150-300 Modulating Gas Heat

Table 23. Wiring diagrams for units with High Short Circuit Rating (SCCR)

Type of Airflow	Schematic Type	Voltage	Diagram Number	Description
Multi-zone Variable Air Volume/ Multi-speed Fans/Single Zone Variable Air Volume	Control	208-575	2313-1588	YS*180-300 2-Stage Gas Heat
			1213-1014	YH*150-300 2-Stage Gas Heat
			2313-1589	YS*180-300 Modulating Gas Heat
			1213-1014	YH*150-300 Modulating Gas Heat
			2313-1590	YS*180-300 2-Stage Gas Heat & Modulating Gas Heat Options Modules
			1213-1015	YH*150-300 2-Stage Gas Heat & Modulating Gas Heat Options Modules
	Raceway Connection	208-575	2313-2025	YS*180-300 2-Stage Gas Heat
			1213-1044	YH*150-300 2-Stage Gas Heat
			2313-2026	YS*180-300 Modulating Gas Heat
			1213-1045	YH*150-300 Modulating Gas Heat
	Control Box Connections	208-575	2313-2008	YS*180-300 2-Stage Gas Heat
			1213-1024	YH*150-240 2-Stage Gas Heat
			2313-2009	YS*180-300 Modulating Gas Heat
			1213-1025	YH*150-240 Modulating Gas Heat
			1213-1262	YH*300 2-Stage Gas Heat
			1213-1263	YH*300 Modulating Gas Heat
	Module Connections	208-575	2313-2054	YS*180-300 2-Stage Gas Heat
			1213-1034	YH*150-300 2-Stage Gas Heat
			2313-2055	YS*180-300 Modulating Gas Heat
			1213-1035	YH*150-300, Modulating Gas Heat