



Installation Instructions

Low Ambient Kit

Model Number: BAYLOAM012A
Used With: CTA090, CTA120

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.

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1 Warnings, Cautions, and Notices

Read this manual thoroughly before operating or servicing this unit. Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:

- 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 equipment or property-damage only accidents.
- 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.

Important 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 according to local rules. For the USA, 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.

2 WARNING

Proper Field Wiring and Grounding Required!
 Failure to follow code could result in death or serious injury. 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.

WARNING

Personal Protective Equipment 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 SDS sheets and OSHA guidelines for proper PPE. When working with or around hazardous chemicals, ALWAYS refer to the appropriate SDS 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 necessary Personal Protective Equipment (PPE) in accordance with NFPA70E for arc/flash protection PRIOR to servicing the unit. Failure to follow recommendations could result in death or serious injury.

WARNING

Follow EHS Policies!
 Failure to follow instructions below could result in death or serious injury.

- All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.
- Non-Trane personnel should always follow local regulations.

3 Inspection

Remove the contents of the kit from the shipping package and inspect for possible damage. If anything has been damaged it should be reported, and claims made against the transportation company immediately.

Any missing parts should be immediately reported to your supplier and replaced with authorized parts only.

Note: All phases of the installation must comply with National, State, and Local codes.

Parts List

Table 1. BAYLOAM012A low ambient kit parts

| Quantity | Description |
|----------|--|
| 3 | Adjustable single pole double throw (SPDT) remote bulb sensing thermostats |
| 1 | Adjustable time delay relay with quick connects |
| 6 | 8-32 x 0.5 screws |
| 1 | 8-32 x 1.25 screw |
| 1 | Wire assembly |
| 6 | Wire ties |
| 1 | Connection diagram/Schematic |

4 Installation

Hazardous Voltage w/ Capacitors!

Disconnect all electric power, including remote disconnects and discharge all motor start/run capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. For variable frequency drives or other energy storing components provided by Trane or others, refer to the appropriate manufacturer's literature for allowable waiting periods for discharge of capacitors. Verify with an appropriate voltmeter that all capacitors have discharged. Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

For additional information regarding the safe discharge of capacitors, see PROD-SVB06A-EN.

Note: Installer will be required to drill holes in control panel to mount components.

Table 2. Device designation

| Designation | Description |
|-------------|---|
| TS1 | Adjustable remote sensing thermostat with capillary tube and bulb. |
| TS2 | Adjustable remote sensing thermostat with capillary tube and bulb. |
| TS3 | Adjustable remote sensing thermostat with capillary tube and bulb. |
| TDR1 | Dip switch adjustable time delay relay |
| FTB1 | Low voltage fan terminal block connected to fan speed control wires |
| FTB2 | High voltage terminal block connected to fan power wires |
| LTB1 | Low voltage terminal board connected to thermostat |

5 1. Prepare Unit for Installation

- a. Disconnect all power from the unit.
- b. Allow time for all capacitors to discharge.
- c. Remove control box access panel.
2. Mount thermostats and time delay relay
 - a. See Figure 1 for mounting position and part designation. See Table 2 for descriptions of the designations.

Note: All thermostats are equivalent. The position they are placed will determine the designation that refers to each thermostat.

- b. Lay out components in depicted positions and drill holes for mounting. Select a drill bit that has a slightly smaller diameter than the included screws.
- c. Mount thermostats onto control panel with the 6 provided 8-32 x .5 screws (2 screws per thermostat). Be careful not to damage or crimp capillary tubes.
- d. Mount time delay relay onto control panel using the provided 8-32 x 1.25 screw. Take care not to damage relay by over tightening screw.

3. Mount the remote bulb sensors of the thermostats

- a. Locate pop in bushing where fan wires are routed. See Figure 2. If the fan wires pass through a wire tie attached to the bushing, ensure the wire tie is tightened in order to group the fan wires at the edge of the pop in bushing.
- b. Carefully route each thermostat bulb through the pop in bushing one at a time. See Figure 2. Take care not to crimp or damage capillary tubes as they are uncoiled and passed through the bushing.
- c. Gently pull remote bulb sensors to fan bracket arm shown in Figure 2. Individually secure each bulb sensor to the bottom of the fan bracket with provided wire tie. Secure wire ties tightly, and ensure the bulb of the thermostat is held by the wire tie not the capillary tube.

- d. Ensure that capillary tubes are not at risk of contacting any moving parts, or any un-insulated live voltage parts.

Hazardous Voltage!

Ensure capillary tubes do not make contact with un-insulated parts. Un-insulated parts could become live when power is turned back on resulting in capillary tubes being energized. Failure to follow instructions could expose technicians to energized capillary tubes which could result in death or serious injury.

NOTICE

Equipment Damage!

Ensure that capillary tubes are not at risk of contacting any moving parts. Contact with moving parts could damage thermostat.

7 Figure 1. Hook up diagram - horizontal

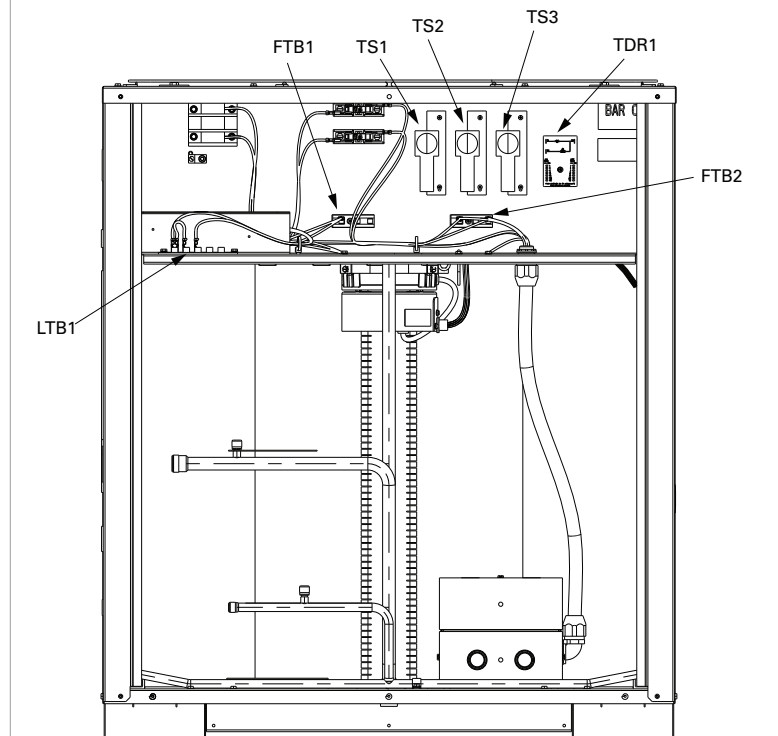
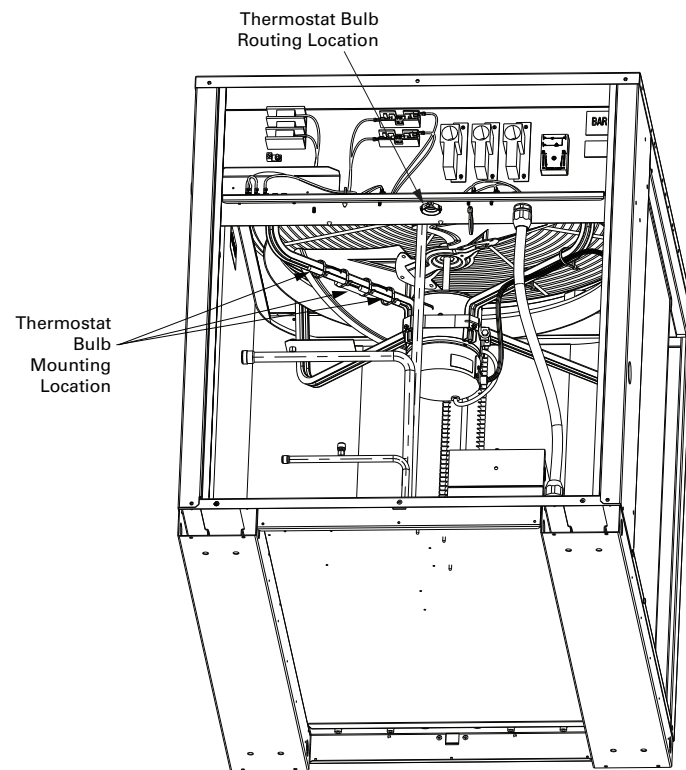


Figure 2. Hook up diagram - horizontal



1. Wire the thermostats and time delay relay to low voltage fan speed control inputs

- Disconnect wire 58B (orange) from LTB-Y1 and FTB1-B and discard.

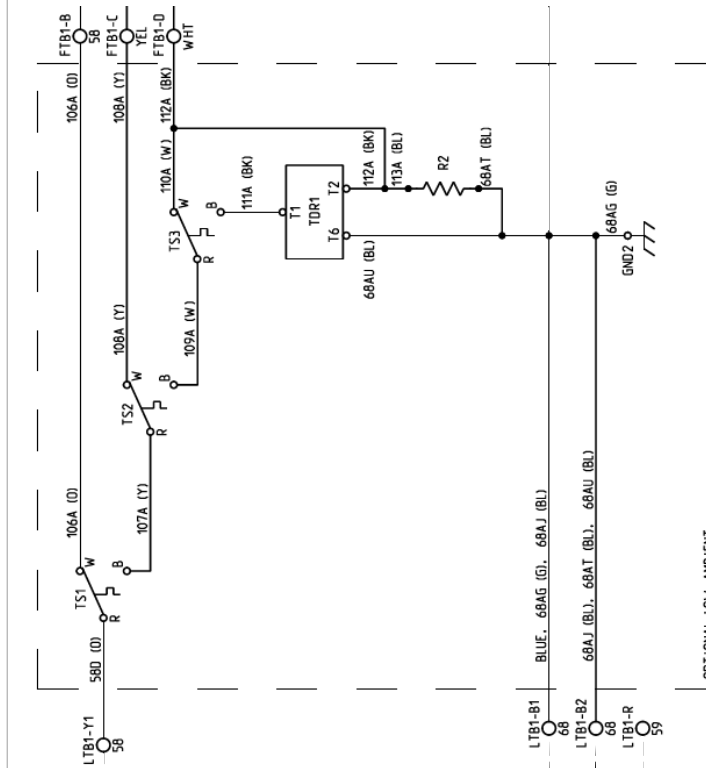
Note: Do not disconnect any fan wires from either FTB1 or FTB2

- See schematic Figure 3 and connection diagram Figure 4 for proper wiring.

Note:

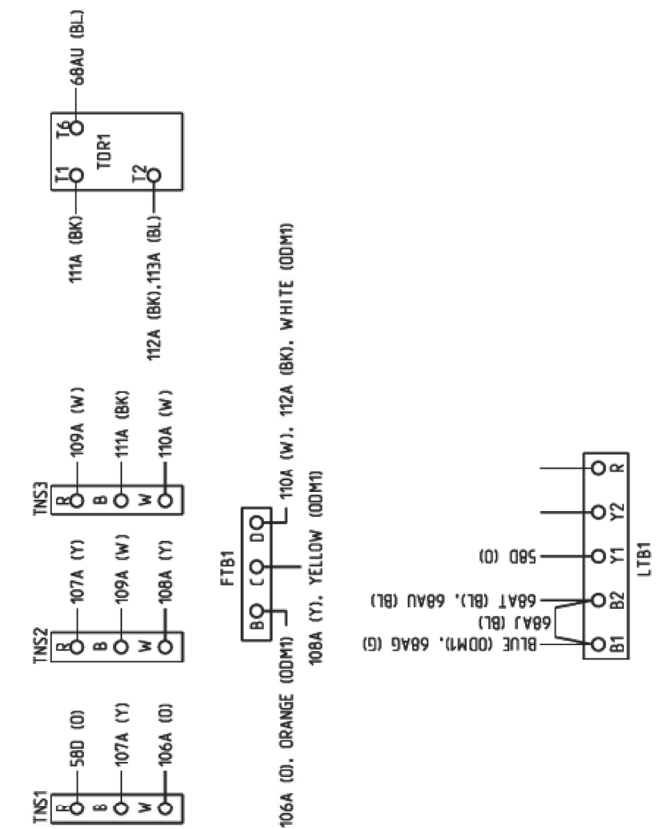
- Connect wires to LTB1 after all other connections have been made.
- Bundle excess wire length with existing factory installed wires using included wire tie.
- Ensure good connections at thermostat screw terminals. Do not tighten screw on wire insulation.

Figure 3. Schematic(a)



(a) Wires 68AG and 68AJ are connected in the factory and should not be moved.

Figure 4. Connection diagram



System Setup

Sequence of Operation

BAYLOAM012A controls the head pressure by adjusting condenser fan speed based on the ambient temperature (and cycling the condenser motor below 20°F).

There are three SPDT thermostats connected, and each have their normally closed contact connected to a different fan speed control input. The slow speed input (white fan wire) is also connected to a time delay relay that cycles the fan motor at low speed when the last thermostat is tripped.

Each thermostat has an accuracy of $\pm 3.5^\circ\text{F}$ from its set point and a switch differential of 2.5°F ($\pm 1.3^\circ\text{F}$). Accounting for switch tolerance, at ambient temperatures above the highest thermostat set point the fan motor will run at high speed. Ambient temperatures between the highest and middle thermostat set points will run the fan at medium speed, and temperatures between the middle and low set points will run the fan at low speed. Temperatures below the lowest set point will cause the time delay relay to cycle the fan at low speed.

Controls Adjustment

At the top of the adjustable dial on each thermostat is a v-shaped metal tab that indicates thermostat set point. See Table 2 for thermostat designations. The time delay relay contains 2 rows of 2 position dip switches, one marked "ON TIME" and one marked "OFF TIME." Each switch, when moved to the "ON" position, corresponds to a delay in minutes equal to the number value displayed next to the switch. The left row determines the time the fan input will be energized, and the right row determines the amount of time the input will be de-energized. As long as the relay input (T1) is energized, the output (T2) will alternate between timed energized and de-energized periods according to the dip switch settings.

System Check

Verify all controls are wired and adjusted according to the instructions contained within this guide. If you have a multimeter you can verify the wiring connections by checking continuity between desired connection points. If a multimeter is not available a visual inspection of the wiring is recommended, along with checking that all connection points are firmly

secured with conducting parts making good contact.

- Apply power to the unit. Apply "Y1" control signal.
- Verify the fan begins to run. Depending on ambient temperature fan speed will vary.

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: Dangerous high voltage in unit. Remove power before attempting to make adjustments inside control panel.

- Adjust thermostat dials to ensure fan is properly connected and will run at all speeds. See Table 3.

Table 3. Fan test thermostat setting

| Desired Fan Speed | Setpoint °F | | |
|-------------------|-------------|-----|-----|
| | TS1 | TS2 | TS3 |
| High | 0 | N/A | N/A |
| Medium | 95 | 0 | N/A |
| Low | 95 | 95 | 0 |
| Intermittent Low | 95 | 95 | 95 |

- After removing power and configuring each thermostat set point shown in Table 1, Re-apply power and "Y1" control signal to unit.
- Verify fan speed is consistent with thermostat set point.
- To test intermittent low speed set only the top dip switch on each side, corresponding to 1 minute, to "ON." Wait 2-3 minutes while observing fan speed to confirm that the fan cycles at low speed.

Thermostat Adjustment

- Upon confirmation of correct wiring and unit function, the thermostats must be adjusted to the proper respective temperatures. Set the left most thermostat (TS1) to 57°F, the middle thermostat (TS2) to 37°F, and the right most thermostat (TS3) to 22°F as shown in Table 4.

Table 4. Final thermostat setting

| TS1 | TS2 | TS3 |
|------|------|------|
| 57°F | 37°F | 22°F |

Note: For proper function thermostats must always be calibrated to have the highest set point on the left side and the lowest set point on the right side with at least 5°F difference between each set point.

Dip Switches

- The default recommended setting for the time delay relay is 1 minute and 4 minute switches moved to "ON" position. This will result in the fan running low speed for 5 minutes, then remaining off for 5 minutes when TS3 is below its set point (and there is a call for cooling.)

Wire Ties and Labels

- Bundle excess wire with factory bundled wire near LTB1. Take care to not stretch wires too tight, but do not leave excess slack if possible. Use wire tie to hold bundle in place.
- Place hook-up diagram/schematic on inside of control panel door. Place included installed equipment label on outside of unit.

Repairs and Replacement

For replacement parts, contact the local parts distributor to ensure equivalent parts are installed. Refer to included hook up diagram for appropriate wiring.

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