



# Installation Instructions

## 130–400 Ton RTAA Chiller Controls Upgrade Procedure MOD01421 and BRD03015 No Longer Available

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**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.
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**Models:** RTAA, KIT16221

### **⚠ 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.

**⚠ 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.

**⚠ 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.

## Discussion

Electronic component availability has required Trane to obsolete the MOD01421 (1U1 control module) which includes BRD03015. The following procedure describes the process by which you can upgrade your 130–400 ton RTAA chiller to the newer clear language display (CLD) control system, eliminating the need for the obsolete module.

**Table 1. KIT16221 contents**

<b>Description</b>	<b>Quantity</b>	<b>Part Number<sup>(a)</sup></b>
Clear Language Display	1	MOD00942
CPM 1U1	1	MOD01424
Bezel with adhesive tape	1	COV02180
Transformer, 120 to 24 Vac	1	TRR00463
Connector, CPM to CLD	2	CON01543
Mounting brackets and hardware	1	KIT16214

(a) Part Numbers may change over time.

## Replacement Procedure

**⚠ WARNING**

**Live Electrical Components!**

During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

1. Stop the chiller if it is running.
  - a. Open the left control panel door (as you're facing the control panel).
  - b. Toggle the Chiller Switch to the Stop/Reset position.
  - c. Wait for all running compressors to shut down (approximately 20 sec).
2. Record unit configuration settings from menus **P1**, **P2**, **P3**, **P4**, and **P5**.
  - a. Use to [Table 2](#) through [Table 6](#) to record the configuration settings if your chiller display and keypad are still functional. If you are unable to retrieve the configuration settings from your chiller and they were not recorded elsewhere, use your unit model number and refer to Figure 8, p. 22 in RTAA-IOM-3 (*Installation, Operation, and Maintenance: Air-Cooled Series® Rotary Liquid Chillers*). For default configuration settings not identified in the unit model number, refer to p. 94–97 of RTAA-IOM-3.
  - b. Use the following key sequence to access hidden menus **P4** and **P5**.
    - i. Press the **Set Point Down** button to the left and the up/down display arrows until the display reads **P0**.
    - ii. Press the **Set Point Up** button twice.
    - iii. Press the **Set Point Down** button once.
    - iv. Press the **Set Point Up** button twice.
    - v. Press the **Set Point Down** button once.
    - vi. Press the **Set Point Up** button twice.
    - vii. You should now be at menu **P4**. Press the **Set Point Up** button once to get to menu **P5**.

## Unit Configuration Settings

**Table 2. Menu P1**

10	Front Panel Chilled Water Setpoint	
11	Design Delta Temperature Setpoint	
12	Differential to Start Setpoint	
13	Front Panel Current Limit Setpoint	
14	Outdoor Air Temperature (optional)	<i>Not a Setting</i>
15	Low Ambient Lockout d/E	
16	Low Ambient Lockout Setpoint	
17	Condenser Entering Water Temperature (Not applicable for RTAA)	
18	Condenser Leaving Water Temperature (Not applicable for RTAA)	
19(1)	Service Pumpdown Circuit 1 d/E	
19(2)	Service Pumpdown Circuit 2 d/E	
1A(1)	Circuit Lockout – Circuit 1 d/E	
1A(2)	Circuit Lockout – Circuit 2 d/E	
1b(1)	Diagnostics Reset – Circuit 1 d/E	
1b(2)	Diagnostics Reset – Circuit 2 d/E	



**Table 3. Menu P2**

20–28	<i>These menu items are not settings</i>	<i>Not settings</i>
29(A)	Compressor A Starts	
29(B)	Compressor B Starts	
29(C)	Compressor C Starts	
29(D)	Compressor D Starts	
2A(A)	Compressor A Hours	
2A(B)	Compressor B Hours	
2A(C)	Compressor C Hours	
2A(D)	Compressor D Hours	

**Table 4. Menu P3**

30	External Chilled Water Setpoint d/E	
31	External Current Limit Setpoint d/E	
32	Ice Machine Control d/E	
33	Active Ice Termination Setpoint	<i>Not a setting</i>
34	Front Panel Ice Termination Setpoint	
35	Return Reset d/E	
36	Zone Reset d/E	
37	Outdoor Reset d/E	
38	Reset Ratio Setpoint	
39	Start Reset Setpoint	
3A	Maximum Reset Setpoint	
3b	External Circuit Lockout d/E	

**Table 5. Menu P4**

40	Leaving Water Temperature Cutout Setpoint	
41	Low Refrigerant Temperature Cutout Setpoint	
42	Condenser Limit Setpoint	
43	Balanced Compressor Starts and Hours (Lead/Lag) d/E	
44	SI Display Units d/E	
45	Unit Line Voltage	
46	Under/Over Voltage Protection d/E	
47	Phase Imbalance Protection d/E	
48	Phase Reversal Protection d/E	
49	Superheat Setpoint	
4A(1)	EXV Control Response Setpoint – Circuit 1	
4A(2)	EXV Control Response Setpoint – Circuit 2	
4b	Leaving Water Temperature Control Response Setpoint	
4C	ICS Address	
4d(1)	Fan Control Deadband Bias – Circuit 1	
4d(2)	Fan Control Deadband Bias – Circuit 2	
4E	Programmable Relay Setup	
4F	Restart Inhibit Timer	

**Table 6. Menu P5**

50	Number of Compressors	
51(A)	Compressor A Tons	
51(B)	Compressor B Tons	
51(C)	Compressor C Tons	
51(D)	Compressor D Tons	
52	Low Water Temperature EXV Gain Compensation	d/E
53	Fan Control	d/E
54(1)	Number of Fans on Circuit 1	
54(2)	Number of Fans on Circuit 2	
55	Reduced Inrush Starting	d/E
56(A)	Compressor A Current Overload Setting	
56(B)	Compressor B Current Overload Setting	
56(C)	Compressor C Current Overload Setting	
56(D)	Compressor D Current Overload Setting	
57	GP Compressor Unit	<i>Disabled</i>
58	Low Ambient – Half Air Flow Fan	d/E
59	Low Ambient Two Speed Motors	d/E
5A	Night Noise Setback	d/E
5b(1)	Number of EXV's on Circuit 1	
5b(2)	Number of EXV's on Circuit 2	
5C(1)	Future Option	
5C(2)	Future Option	

**⚠ WARNING**

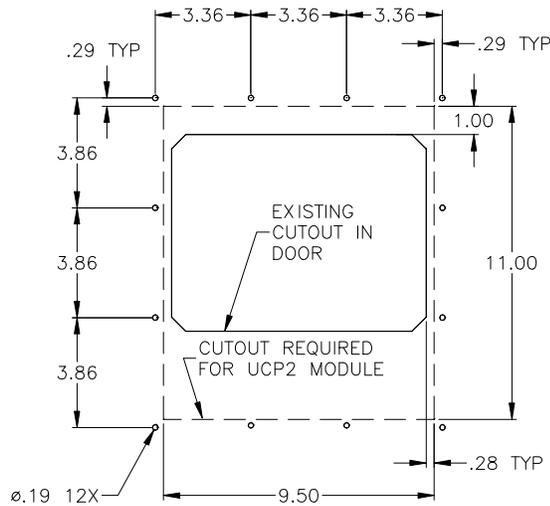
**Hazardous Voltage w/Capacitors!**

**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*

3. Disconnect and lockout the power to the chiller.
  - a. Open the unit disconnect switch that feeds power to the chiller.
  - b. Install lockout/tagout lock(s).
4. Cut the hole for the new CLD in the control panel door.
  - a. Remove the existing clear Plexiglas® window from the control panel door.
  - b. If necessary, remove the control panel door from the chiller.
  - c. Measure and mark 4.75 in. from the middle hole on top of the existing cutout to just outside the right and left edges.
  - d. Measure and mark 1 in. from top edge of existing hole.
  - e. Measure and mark 11 in. down from the mark made in the previous step.
  - f. Trace square on door as shown in [Figure 1, p. 6](#).
  - g. Cut along the traced lines.
  - h. Deburr the edges of the new hole.

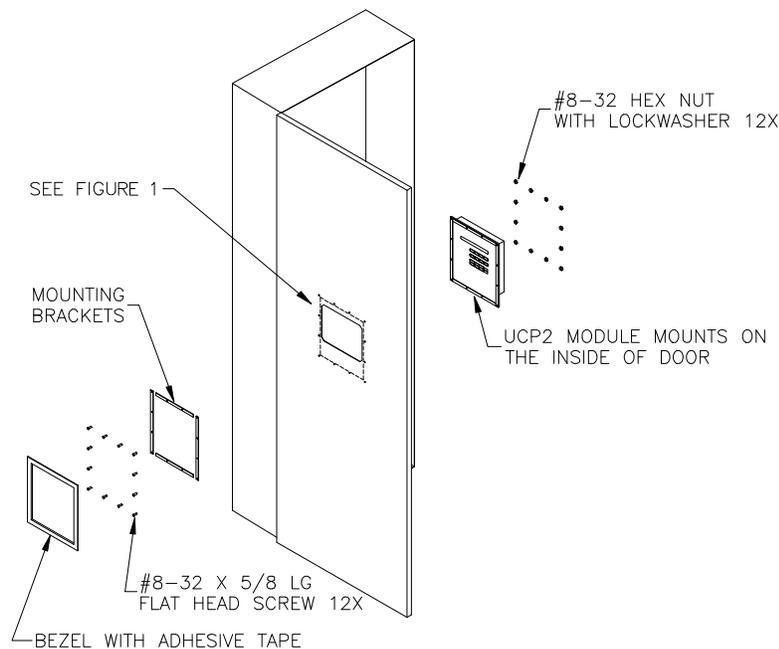
**Figure 1. Existing cutout and modifications required**



**5. Install the CLD2 into the control panel door.**

- a. Using the new CLD as your template. Hold up the new CLD to the hole and make marks where holes should be drilled.
- b. Drill holes.
- c. Starting at the top, attach brackets from the outside of the door in such a way that the door panel is sandwiched between the CLD on the inside and mounting brackets on the outside of the door panel as shown in Figure 2. The screw head should be flush with the bracket.
- d. Tighten the nuts so that the gasket on the CLD is properly compressed.
- e. Remove the tape backing from the plastic bezel and apply it to the outside of the door opening so it covers the mounting brackets.

**Figure 2. New CLD assembly**



6. Replace the 1U1 module.
  - a. If required, mark the wires connected to TB1, TB2, TB3, TB4, and TB5.
  - b. Remove all wires and connectors from the 1U1 module.
  - c. Loosen *but do not remove* the two lower 1U1 mounting screws.
  - d. Remove the two upper 1U1 mounting screws. If star washers exist on any of the screws, be careful not to lose them.
  - e. Remove the 1U1 from the control panel.
  - f. Install the new 1U1 into the control panel reusing the same screws.
  - g. Replace the two upper 1U1 mounting screws.
  - h. Tighten the two lower 1U1 mounting screws.
  - i. Re-connect wiring to the 1U1. There are differences between TB4 on the old and new 1U1. Refer to [Table 7](#) when reconnecting wiring to that terminal block.

**Table 7. Old-to-new wiring terminal positions on CPM**

Terminal	130-400T RTAA 1U1	New RTAA 1U1
TB4-1	ALARM (COMMON)	ALARM (COMMON)
TB4-2	ALARM (NORMALLY OPEN)	ALARM (NORMALLY OPEN)
TB4-3	ALARM (NORMALLY CLOSED)	ALARM (NORMALLY CLOSED)
TB4-4	COMPRESSOR RUNNING (COMMON)	COMPRESSOR RUNNING (COMMON)
TB4-5	COMPRESSOR RUNNING (NORMALLY OPEN)	COMPRESSOR RUNNING (NORMALLY OPEN)
TB4-6	COMPRESSOR RUNNING (NORMALLY CLOSED)	MAXIMUM CAPACITY (COMMON)
TB4-7	MAXIMUM CAPACITY (NORMALLY COMMON)	MAXIMUM CAPACITY (NORMALLY OPEN)
TB4-8	MAXIMUM CAPACITY (NORMALLY OPEN)	EVAPORATOR PUMP (COMMON)
TB4-9		EVAPORATOR PUMP (NORMALLY OPEN)

7. Install the 24 Vac transformer.
  - Install the 120/24 Vac transformer in the bottom part of the control panel to the left of 1TB3. Install the transformer so the primary connections face 1TB3.
8. Install additional wiring.
  - a. Connect the 24 Vac transformer primary (120 Vac side) wires to 1TB3-1 and 1TB3-2.
  - b. Connect the 24 Vac transformer secondary to CLD terminals J2-1 and J2-2.
  - c. Connect the IPC communications wires.
 

**Note:** *IPC communications is a daisy-chain communications system that is connected to the J1 connectors on all of the modules in the RTAA control system except for the CLD.*

    - i. Inspect all of the J1 connectors on the upper left-hand side of each silver control module and find two open terminals on the IPC communications bus.
    - ii. When you find two open terminals, remove the white cover from the back of the orange plug and use a small screwdriver to push 18 AWG wires into the knives on the connector until they cut through the wire insulation and hold the conductors securely.
    - iii. Re-install the white plug cover.

**Note:** *If there are no open J1 terminals, you can splice into the IPC communications link using butt splices or wire nuts. Connect the other end of the IPC communications wires to J1-1 and J1-2 on the new CLD module.*

9. Remove lockout lock and restore power to the chiller.
10. Configure the chiller.
  - a. Use the settings recorded in [Step 2, p. 3](#) to configure the new CLD. Refer to p. 72 of RTAA-SVX01A-EN (*Installation, Operation, and Maintenance: Series R® Air-Cooled Rotary Liquid Chillers*) to help you enter settings into the new CLD.
  - b. **Variable Speed Fans** should be set to DISABLE for both circuits.
11. Re-start the chiller by pressing the green **Auto** button on the keypad.

## Starts and Hours

**Note:** *The compressor starts and hours recorded in [Step 2, p. 3](#) cannot be transferred into the new control system. Therefore, it is recommended that you record these numbers for all compressors. All counters will start from zero in the new CLD control system.*

## Chilled Water Pump Control

The new control system you're installing has an added feature. It has a normally open contact output that can be used to control the evaporator water pump. Refer to [Table 7, p. 7](#) for the connection points on the new 1U1 module. **Chilled Water Pump** can be set to ON or AUTO in the **Operator Settings** menu. If this setting is ON, the pump output will remain energized any time the control system is powered. If set to AUTO, the pump output will be energized whenever the chiller is put into the Auto mode and will de-energize from 1 to 30 minutes (the default is 10 minutes) after the chiller leaves the Auto mode. The 1- to 30-minute timer can be configured in the **Chilled Water Pump Off Delay** setting.

## Optional Remote Display Panel

If there is a remote display panel connected to your RTAA chiller, the following settings in your CLD will need to be made:

**ICS Address: 32**

**Setpoint Source: Tracer**

A new operating code may be displayed on the remote coded panel that is not listed on the black decal on the front of your remote display. The new operating mode is **300 Stopped By Remote Display**. This mode will be displayed as **Stopped by Tracer** at the chiller front panel.

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