



Installation, Operation, and Maintenance

Trane Rental Services

Desiccant Dehumidification Units



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.



Introduction

Read this manual thoroughly before operating or servicing this unit.

Warnings, Cautions, and Notices

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 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 and HCFCs such as saturated or unsaturated HFCs and HCFCs.

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.

⚠ 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/national electrical codes.

⚠ WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury. Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, **MUST** follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- Before installing/servicing this unit, technicians **MUST** put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). **ALWAYS** refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.
- When working with or around hazardous chemicals, **ALWAYS** refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labeling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.
- If there is a risk of energized electrical contact, arc, or flash, technicians **MUST** put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, **PRIOR** to servicing the unit. **NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.**

⚠ 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.

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Revision History

- Updated the General Information chapter.
- Updated the Installation and Start-up Guidelines in the Unit Specifications chapter.
- Updated the Installation Controls chapter.



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General Information

Overview

This manual covers the desiccant dehumidification units (DHU) available to rent from Trane Rental Services for temporary dehumidification solutions. This includes DHU technical information, start-up information, and unit maintenance. Information contained in this manual is provided to ensure the safe installation and operation of the equipment and its surroundings.

Use this manual as a reference to determine unit size, power requirements, or lifting requirements. If additional information is required, contact Trane Rental Services (TRS).

Prior to securing rental equipment, contact TRS for availability including ancillary items: electrical cable, flexible duct, etc. Equipment is available on a first-come, first-serve basis, but can be reserved with a signed rental agreement.

Trane Rental Services DHUs are highly efficient at providing clean, dehumidified air with minimal electrical power required. The DHUs can be used in free blow or ducted applications. Each unit has a single horizontal supply air connection, single return air connection, and is equipped with a post-cooling coil to aid in reducing leaving air temperatures when required. When used in free blow applications, ducting on the front of the unit must be removed. Flexible duct is available upon request.

Table 1. RSDH5000 Desiccant dehumidification unit

Manufacturer - Munters™		
Airflow	Orientation	Horizontal
	Nominal Airflow	4,750 cfm
	Blower RPM	3500
	Max Static Discharge Pressure	1.70 in. ESP
Post-cooling Coil Water Connection(s)	Type	Flanged
	Size	3 inches
Supply Air Connection(s)	Type	Round
	Quantity	1
	Size	17.75 inches
Return Air Connection(s)	Type	Round
	Quantity	1
	Size	17.75 inches
Reactivation Air Connection(s)	None (Free Blow)	
Pre - Filter	Type	30% efficient
	Quantity and Dimensions	(2) 12 in. x 24 in. (2) 24 in. x 24 in.
	Inlet Delta P	0.21 in. wc
	Final Delta P	0.42 in. wc

Note: Unit can be provided with reducer to provide either 2.5 inch or 4 inch grooved water connection to allow connection to our flexible water hose accessories.

Unit Specifications and Weights

Table 2. Unit specifications

Dehumidifier									
Desiccant Type	Process Air				Reservation Air				
	SCFM	Moisture Removal (lb/hr)	WheelΔP (in. wc)	Unit ΔP (in. wc)	SCFM	WheelΔP (in. wc)	Unit ΔP (in. wc)	Energy Type	Input kW
	SiGel	4750	102	1.82	2.12	1050	1.63	3.00	Electric
Fans									
Location	Fan Data				Performance				
	Size	Rotation	Motor HP	RPM	SCFM	TSP (in. wc)	Sys Loss (in. wc)	ESP (in. wc)	ΔT
	Supply	15	CW	10	3500	4750	7.04	5.34	1.70
React	12-1/4-7	CW	3	3450	1050	4.50	3.00	1.50	
Post Cooling Coil									
Type	Airside Values			Coil Dimensions			Fluidside Values		
	SCFM	Load MBH	ΔP (in. wc)	Face ft²	Rows	FPI	Flow (gpm)	ΔP (ft)	
	Post Cool	4750	366	1.58	10	10	12	57	24.5

Table 3. Dimensions and weights

Length	Width	Height	Weight
15 ft 2 in.	6 ft 2 in.	6 ft 5 in.	4175 lb

Rigging

DHUs are equipped with fork pockets on two sides and lifting rings along the base of the unit.

⚠ WARNING

Heavy Objects!

Failure to follow instructions below could result in unit dropping which could result in death or serious injury, and equipment or property-only damage.

Ensure that all the lifting equipment used is properly rated for the weight of the unit being lifted. Each of the cables (chains or slings), hooks, and shackles used to lift the unit must be capable of supporting the entire weight of the unit. Lifting cables (chains or slings) may not be of the same length. Adjust as necessary for even unit lift.

Figure 1. Desiccant dehumidification unit





Installation

⚠ WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

1. Confirm unit is level.
2. Verify air inlet and outlet are clear of any debris or obstructions.

NOTICE

Proper Airflow!

Failure to follow the instructions below could result in equipment damage.

The reactivation air from the unit could be in excess of 180°F. Do not position unit where reactivation outlet air could come into contact with sensitive materials and cause equipment and property damage.

3. Connect power cable from unit to the power source and confirm wires are properly phased, connected, and locked securely to panel.
 - a. For ducted applications, install the supply and return air ducts on the duct adapters (front of the unit). Ensure duct is straight.
 - b. For free blow applications, no duct installation is required.

Start-up Guidelines

1. Verify that the unit disconnect is in the **OFF** position on the unit.
2. Energize the source power to the DHU.
3. Switch the unit disconnect **ON** to supply power to the unit.

Figure 2. Main unit disconnect



4. Refer to "[Installation - Controls](#)," p. 9 for unit operation.
5. Close all covers (local and remote panels) and secure.



Electrical Data

DHUs have connections to allow for use with TRS available 2/0 electrical cable. Below is a list of electrical data for these units. If additional information is needed, contact Trane Rental Services.

Table 4. Electrical data - RSDH5000

Fused Disconnect?	Yes
Unit Power	460V, 3-phase
Unit MCA	154.1 A
Unit MOP	175 A
Supply Motor FLA	11.6 A
Reactivation Motor FLA	3.6 A



Installation - Controls

Customer Interface

- Start the system in Auto mode using the **AUTO/OFF/MANUAL** selector to interface with customer supplied equipment.
- Start the system in Auto mode by selecting the contact closure through the **ON/OFF** selector switch between TB06#61 and TB06#10.
- MANUAL mode does not require the dry contact closure input to enable the system to start.
- The selector switch has an integral light and will illuminate to indicate the equipment has power.

Auxiliary Dry Contacts - Operational System States

- **SYSTEM FAULT** - Auxiliary dry contacts of CR02 are provided for customer interlocking and will close when the dehumidifier goes into any fault as described in the list of system and DH warnings. See "[List of System and DH Warnings](#)," p. 11.
- **SYSTEM RUN (CONTROL RELAY)** - Auxiliary dry contacts of MS03 are provided for customer interlocking and will close when the process blower is in operation.
- **SYSTEM WARNING** - Auxiliary dry contacts of CR03 are provided for customer interlocking and will close when the dehumidifier goes into a warning condition.
- **D/H RUN** - Auxiliary dry contacts of MS02 are provided for customer interlocking and will closed when the dehumidifier is in operation.

⚠ WARNING

Hazardous Service Procedures!

Failure to follow all precautions in this manual and on the tags, stickers, and labels could result in death or serious injury.

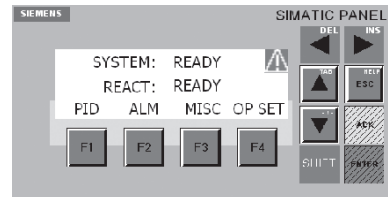
Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, **MUST** follow precautions in this manual and on the tags, stickers, and labels, as well as the following instructions: Unless specified otherwise, disconnect all electrical power including remote 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.

Start-up

Main Power Initialization Sequence

1. Energize the main power to the equipment by supplying correct voltage directly to the unit using the system main fused disconnect.
- Note:** The selector switch will illuminate indicating the equipment is energized.
2. High voltage is supplied to all motor starters and control transformer(s). The control voltage (115V/1Ø/60Hz) is supplied to the control circuits.
 3. The HMI LCD (located on or in, visible through the door) main control enclosure is energized and will display **System Screen**. See [Figure 3](#).
 4. There is a 10 second delay in the equipment start-up once power is activated by the selector switch.

Figure 3. HMI LCD



Normal Start-up

Normal start-up occurs when the main selector switch (SS01) is placed in the **MANUAL** or **AUTO** position with a customer-supplied auxiliary interlock (dry-contact) closed between TB06#61 and TB06#10.2.

Shutdown

A normal shutdown will occur if:

- Selector switch (SS01) is maintained in the **OFF** position.
- Selector switch (SS01) is maintained in **AUTO** position with a contact opening across TB06 # 61 and TB06 # 10.2.
- A fault has occurred.

Normal shutdown sequence of operation:

1. The reactivation control proportional control loop and fault circuits are de-energized.
2. The process control loops are de-energized in the list of system and DH warnings. See "[List of System and DH Warnings](#)," p. 11.
3. A purge timer in the (PLC1) is a delay time with a fixed, on time of three minutes. This allows the air to continue to cool the desiccant wheel. When the timer has completed its count cycle, the desiccant wheel drive motor (MTR1), the

reactivation blower motor (MTR2), and supply blower motor (MTR3-optional) are all de-energized.

NOTICE

Equipment Damage!

Failure to follow all instructions could result in equipment damage!

Do not shut down unit by de-energizing main power prior to the completion of the purge cycle. Wait for **PURGING** to change to **STANDBY** or **READY** before de-energizing main power.

Faults and Warnings

Important: Press **ESC** or **Help** button twice quickly to exit back to the system screen at any time during screen navigation.

Table 5. List of system and DH faults

Fault	Description
FAULT - D/H WHEEL MOTOR STARTER PROTECTOR TRIPPED	If the desiccant drive motor starter/protector (MSP1) trips, the system is faulted.
	The system will go into the shutdown ("Shutdown," p. 9) sequence and the system auxiliary dry contacts close in sequence ("Auxiliary Dry Contacts - Operational System States," p. 9), process blower (optional) will purge.
	The dehumidifier will be held in the Fault condition by (PLC1). To restart the dehumidifier: 1. Clear the alarm pressing the acknowledge ACK on the HMI. 2. Reset the overload, go to the ALARM screen, and press the F4 RESET key, which resets the PLC. To restart the system: 1. Move the selector switch (SS01) to the OFF position. 2. Move the (SS01) back to the AUTO or MANUAL position.
FAULT - REACTIVATION MOTOR STARTER PROTECTOR TRIPPED	If the reactivation blower motor starter/protector (MSP2) trips, the system is faulted.
	The dehumidifier goes into the shutdown sequence. See "Normal shutdown sequence of operation," p. 9 and "Auxiliary Dry Contacts - Operational System States," p. 9.
	The dehumidifier will be held in the Fault condition by (PLC1). To restart the dehumidifier: 1. Clear the alarm pressing the acknowledge ACK on the HMI. 2. Reset the overload, and go to the ALARM screen, and press the F4 RESET key, which resets the PLC. To restart the system: 1. Move the selector switch (SS01) to the OFF position. 2. Move the (SS01) back to the AUTO or MANUAL position.
FAULT - SUPPLY BLOWER MOTOR STARTER PROTECTOR TRIPPED/ VFD FAULT (optional)	If the supply blower motor starter/protector (MSP3) trips or the customer-supplied variable frequency drive (VFD) goes into a Fault, the system is faulted.
	The system goes into the shutdown sequence. See "Normal shutdown sequence of operation," p. 9, and "Auxiliary Dry Contacts - Operational System States," p. 9.
	The dehumidifier will be held in the Fault condition by (PLC1). To restart the dehumidifier: 1. Clear the alarm pressing the acknowledge ACK on the HMI. 2. Reset the overload, and go to the ALARM screen, and press the F4 RESET key, which resets the PLC. To restart the system: 1. Move the selector switch (SS01) to the OFF position. 2. Move the (SS01) back to the AUTO or MANUAL position.

Alarm Indication

Fault and warning indication include the HMI display and fault warning lights. The HMI will display the blinking triangle with exclamation point and the fault message on the Alarm screen. See [Figure 4](#).

A fault results in the red light (LT02) constantly illuminating.

Figure 4. HMI alarm indication

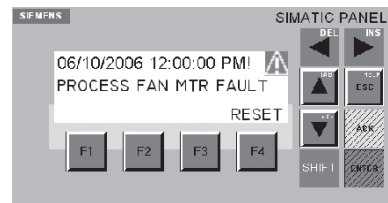


Table 5. List of system and DH faults (continued)

Fault	Description
FAULT - DEHUMIDIFIER WHEEL ROTATION	Limit switch (LS01) is wired normally closed and located inside the dehumidifier wheel compartment next to desiccant wheel. As the wheel turns, a cam fastened to the wheel housing opens this limit switch.
	If limit switch (LS01) is not opened once every 600 seconds, a timer in (PLC1) times out the system is faulted.
	The system goes into the shutdown sequence. See "Normal shutdown sequence of operation," p. 9 and "Auxiliary Dry Contacts - Operational System States," p. 9 .
	The dehumidifier will be held in the Fault condition by (PLC1). To restart the dehumidifier: 1. Clear the alarm pressing the acknowledge ACK on the HMI. 2. Reset the overload, and go to the ALARM screen, and press the F4 RESET key, which resets the PLC. To restart the system: 1. Move the selector switch (SS01) to the OFF position. 2. Move the (SS01) back to the AUTO or MANUAL position.
FAULT – REACTIVATION ELECTRIC HEATER OVERTEMPERATURE	Temperature switch (TS01) is in the reactivation electric heater and will detect extreme temperature level or heat buildup.
	Temperature switch (TS01) is in the reactivation heated to duct and will detect extreme temperature level or heat buildup.
	The system goes into the shutdown sequence. See "Normal shutdown sequence of operation," p. 9 and "Auxiliary Dry Contacts - Operational System States," p. 9 .
	The dehumidifier will be held in the Fault condition by (PLC1). To restart the dehumidifier: 1. Clear the alarm pressing the acknowledge ACK on the HMI. 2. Reset the overload, and go to the ALARM screen, and press the F4 RESET key, which resets the PLC. To restart the system: 1. Move the selector switch (SS01) to the OFF position. 2. Move the (SS01) back to the AUTO or MANUAL position.

List of System and DH Warnings

WARNING – REACTIVATION LOW TEMP

LOW TEMP (Reactivation Low Temperature Fault Set point).
The adjustment range is 90.0 to 110.0. The parameter corresponds to the value of the set point in engineering units (Typical set point = 110°F).

Proportional Control Loops/ DH Interlocks

Reactivation Heat Energy Control

- The reactivation electric heater solid state relays will accept a 0-10V modulating signal from the logic controller to control the reactivation inlet air temperature.
- This is sensed by the reactivation air inlet temperature transmitter (TC01).
- The reactivation inlet temperature set point will vary based on the reactivation outlet control PID loop to maintain maximum, required reactivation inlet temperatures over a wide range of DH load conditions.
- When the reactivation outlet PID loop output is 0% the reactivation inlet set point will be 200°F.
- When the reactivation outlet PID loop output is 100% the reactivation inlet set point will be 325°F.

Human Machine Interface Control (Op73 Simatic Panel)

Note: Other visual options are password protected for
FACTORY USE ONLY.

Table 6. Screen descriptions, navigation, and security

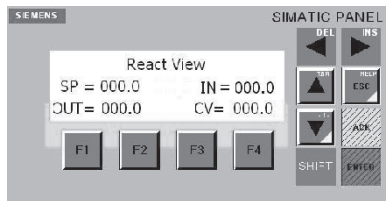
System Screen is the first screen that comes up when power is applied to the equipment (Figure 2). The System screen displays the equipment's operational status along with separate indication for the Reactivation air stream. The System screen also acts as the navigation portal for all of the screens configured in the system. All navigation references in this section assume the operator starts on the System screen. At any time during navigation, the ESC button on the Simatic Panel may be pressed twice to return to the System screen.

"SYSTEM" displays the modes of operation of the process as listed below:	
READY	The system is ready to run and there are no faults and the interlocks are made.
RUNNING	The system is running, and process control loops are running if enabled.
FAULTED	The system has faulted.
PURGING	The system is going through a shutdown sequence and is purging.
REACT	Displays the modes of operation of the dehumidifier as listed below:
READY	The DH is ready to run and there are no faults, and the interlocks are made.
RUNNING	The DH is running, and process control loops are running if enabled.
FAULTED	The DH has faulted.
PURGING	The DH is going through a shutdown sequence and is purging.
STANDBY	The system is running, and the DH stopped because there is no call for dehumidification (full bypass).

1. Reactivation Temperature

- Pressing the **Up Arrow** once navigates to this screen (Figure 5).
- The Reactivation Temperature screen displays the real time indication of the reactivation inlet and outlet temperatures (degrees Fahrenheit).

Figure 5. Reactivation temperature



2. Date/Time

- Press the **Up Arrow** twice navigates to this screen (Figure 6).
- The Date/Time screen displays the current date and time. This may be configured by the customer using the correct username and password.
- The display will change to the Username and Password screen (Figure 7), prompted by pressing **F1**.

Figure 6. Date and time

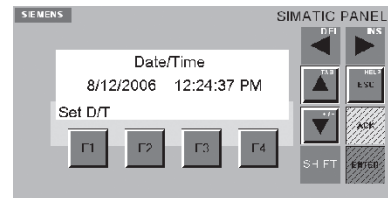
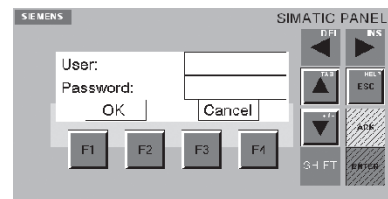


Figure 7. Username and password



3. Username and Password

The operator will be prompted by the password screen (Figure 7) when secure parameters are accessed.

Important: Contact Rental Services Technical Support if a password is required.

The **ENTER** button will reverse highlight the character for editing.

- Use the **arrow** buttons as necessary to select the desired characters.
- Once the last character has been located, press **ENTER**, to proceed to the password window. Important! Do not press any arrow.

- c. Press **ENTER** again to edit the password.
 - d. Once the last character has been located press **ENTER**. Do not press any arrow.
 - e. **OK** will display a dotted box. Press **ENTER** to accept, and the screen will return to make the selection without security restriction.
4. Run Time Meter
 - a. Press the **Down Arrow** once to navigate to this screen (Figure 8).
 5. Control Group Selection 1*
 - a. Press **F1 (PID)** to navigate to this screen (Figure 9).
 - b. The OP73 Display may prompt the operator for **Username and Password** (Figure 10). **Enter** this to proceed. See section 834 for information regarding Username and Password. The Control Group Selection 1 screen displays the various system loops available on the equipment.

Figure 8. Runtime meter

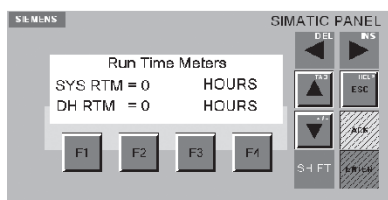


Table 7. System loops

Alarms	<ol style="list-style-type: none"> 1. Press F2 (ALM) to navigate to this screen (Figure 9). 2. The Alarm screen displays the Faults and Warnings the system encountered during operation. The triangle with exclamation point will indicate to the operator when an alarm condition exists. 3. Press the ACK button to clear the current alarm message without clearing the history. <p>Note: The Alarm Screen displays and records information on triggered alarms. Each time an alarm is triggered, it is added to the Alarm History list Figure 10, and the last alarm is displayed.</p>
F4 Reset	<ol style="list-style-type: none"> 1. The operator must press the F4 button to reset a fault in the PLC. This will clear all system faults and enable the equipment to be restarted by cycling the selector switch. 2. The selector switch may also be used as the system reset by turning it to the OFF position and return it to the AUTO or MANUAL position. 3. Press the acknowledge button (ACK) to clear the message and alarm symbol indication. 4. The system screen will display READY after a fault has been reset.
F1 CLEAR History	<ol style="list-style-type: none"> 1. The alarm history (see Figure 10) can be viewed by pressing the Down Arrow first and both Up and Down Arrows to scroll the alarms stored. 2. To clear the alarm history, press F1. 3. Enter the Username and Password to clear the history.

Figure 9. Alarm

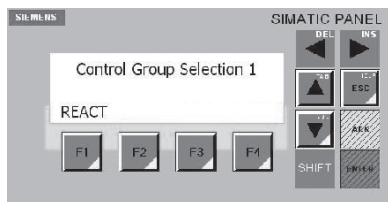
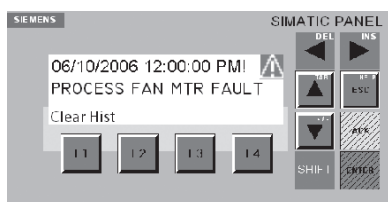
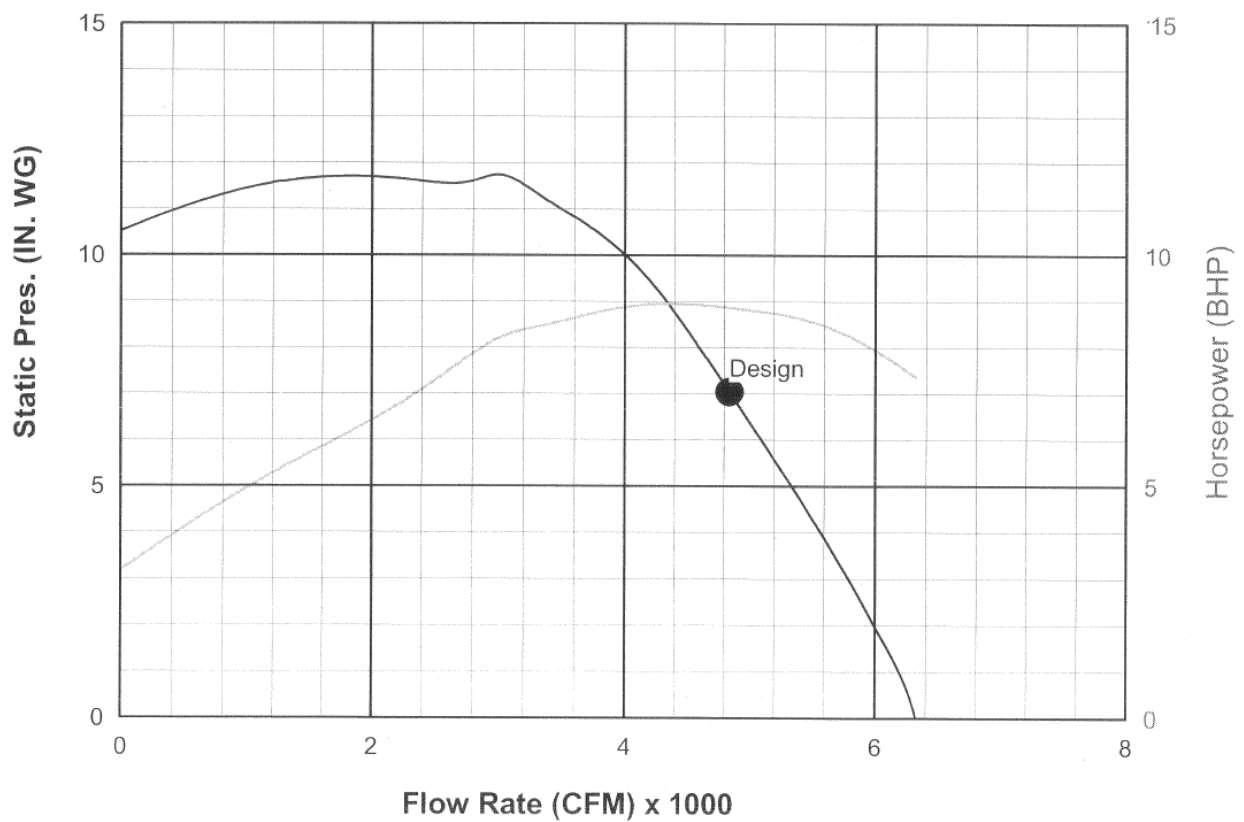


Figure 10. Alarm history list



Fan Curve

Figure 11. Fan curve





Shutdown and Maintenance

Shutdown Guidelines

Refer to [“Shutdown,” p. 9](#) for unit shutdown procedure.

Maintenance Guidelines

The motor and blower bearings are permanently lubricated and require no maintenance. The desiccant wheel is belt driven. The drive belt should be examined periodically for wear and correct tension.

Each unit is provided with disposable filters that are installed in the return air section. The filter access panel must be removed to gain access to the filters. Check filters periodically to verify that they are clean.

Wiring Diagrams

Figure 12.

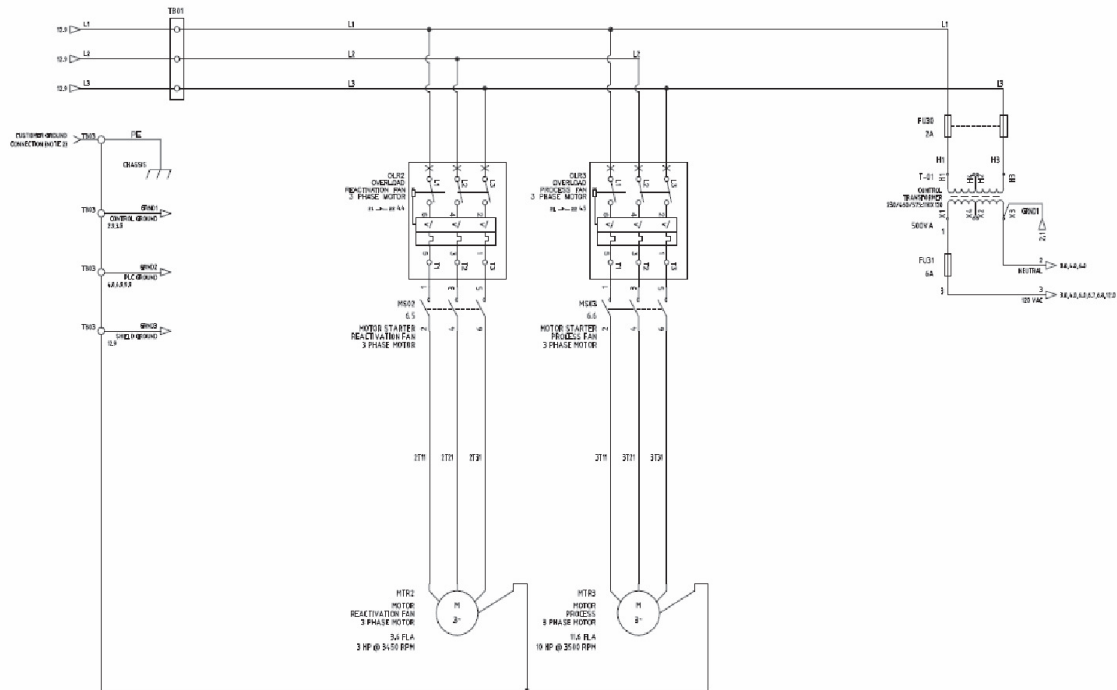


Figure 13.

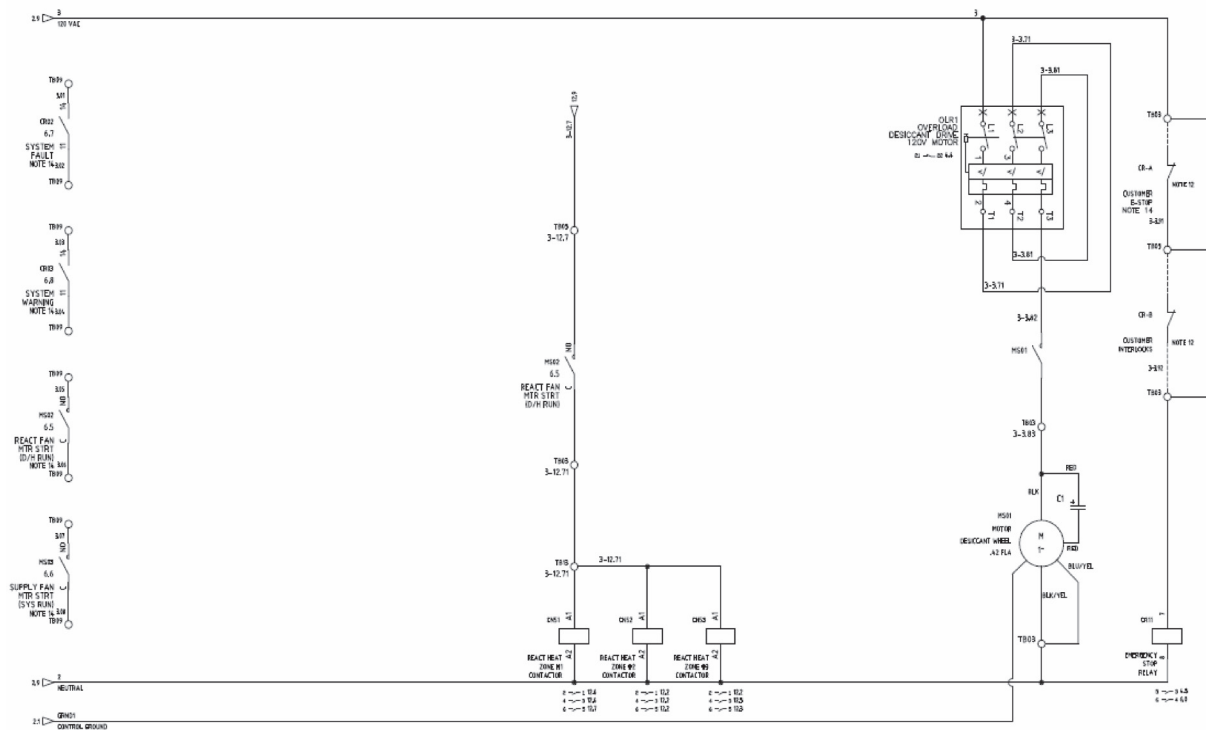


Figure 16.

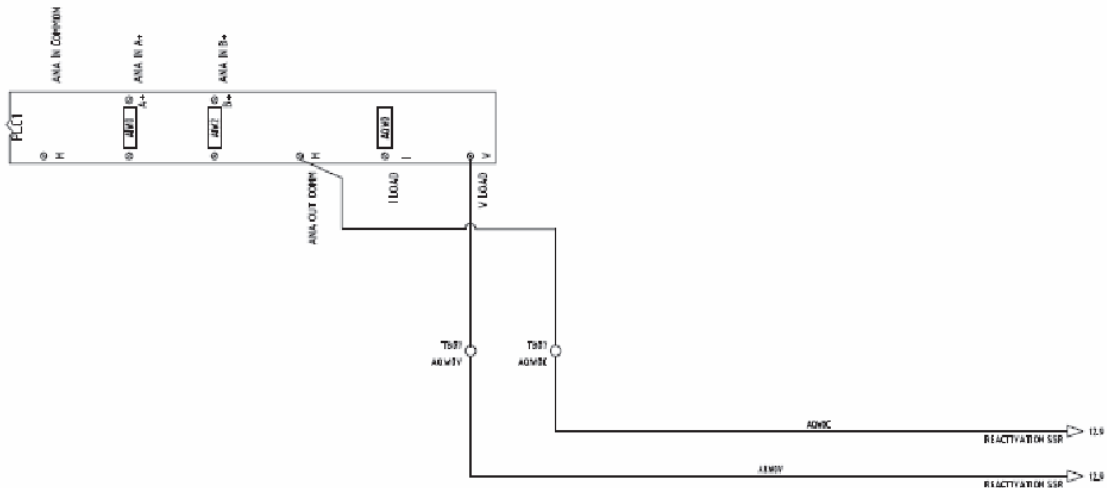


Figure 17.

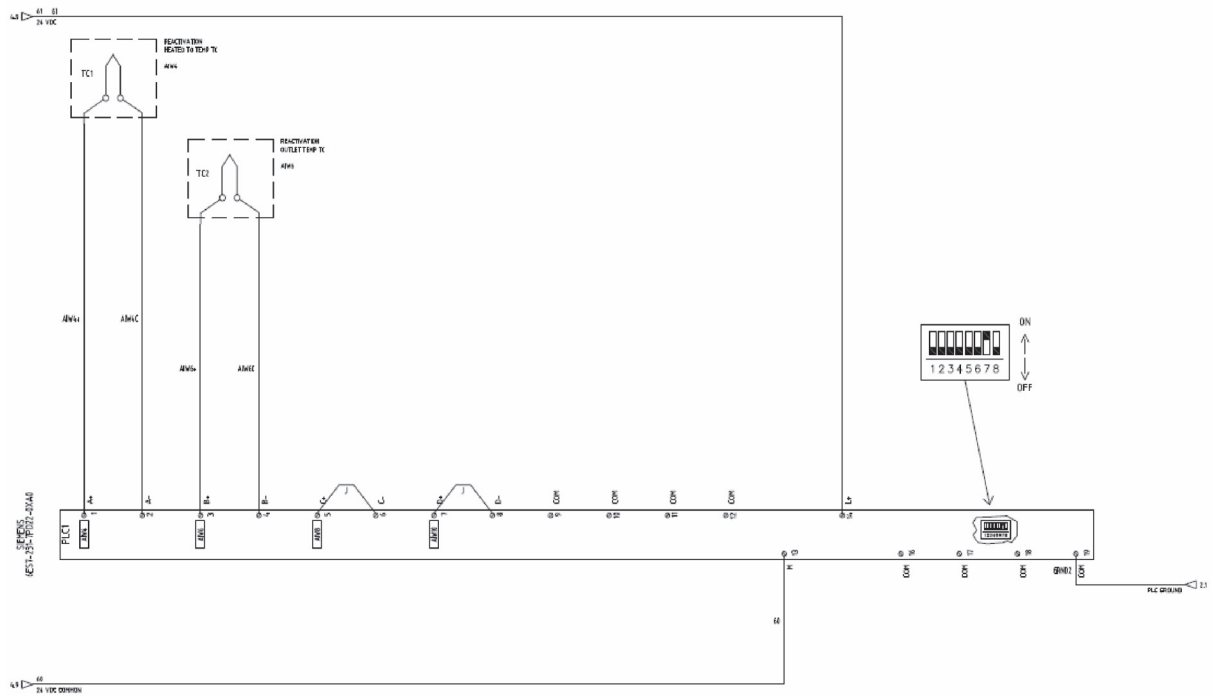


Figure 18.

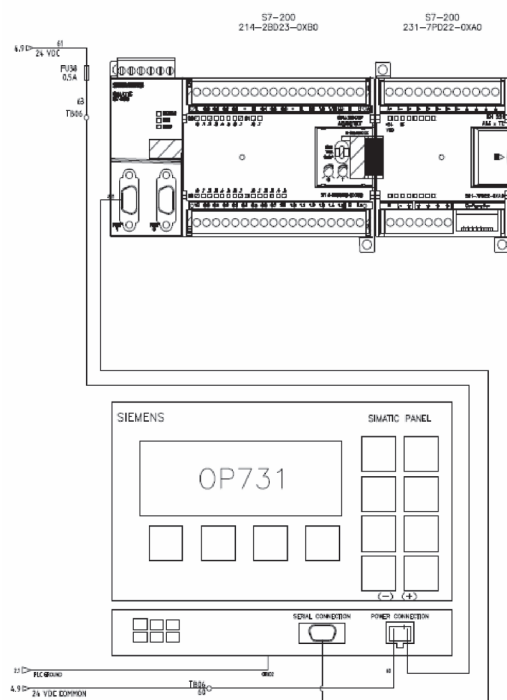


Figure 19.

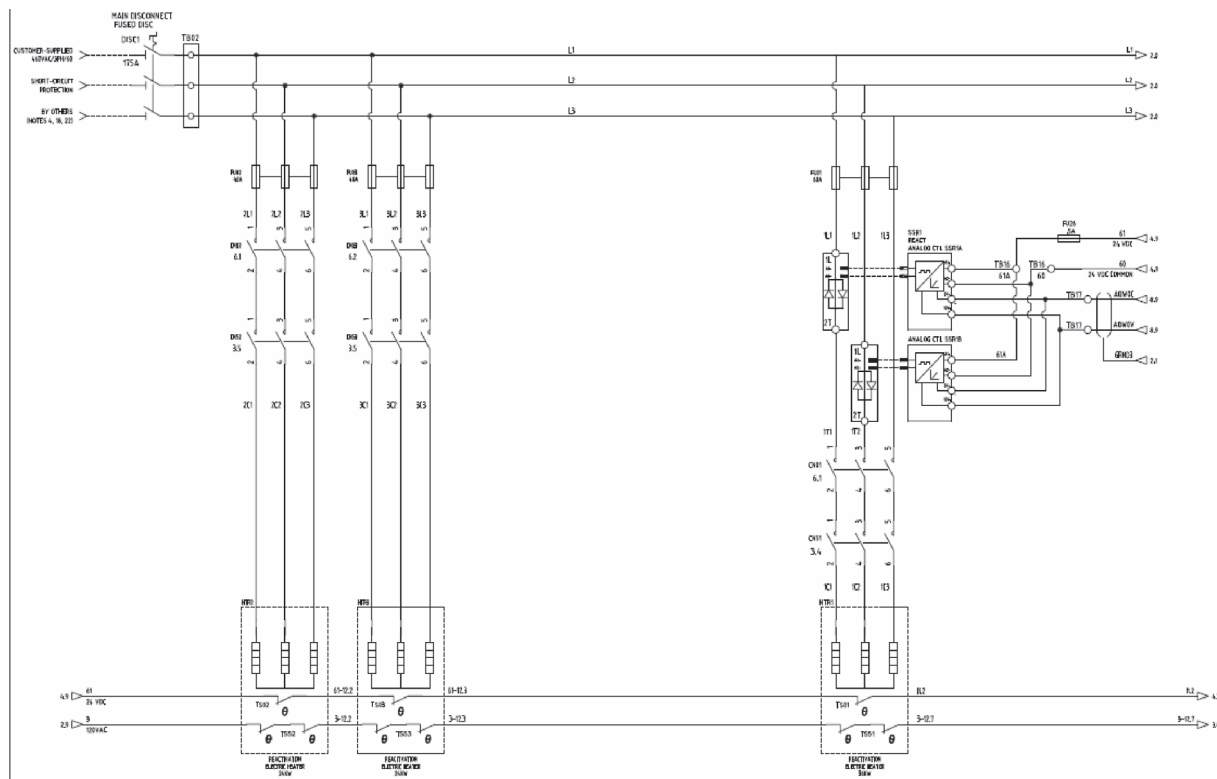


Figure 20.

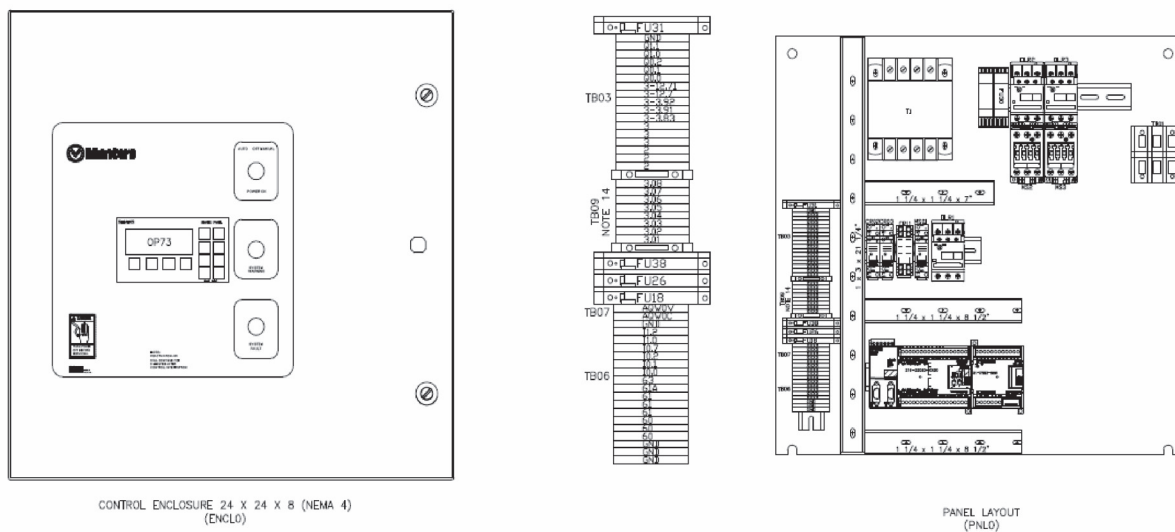
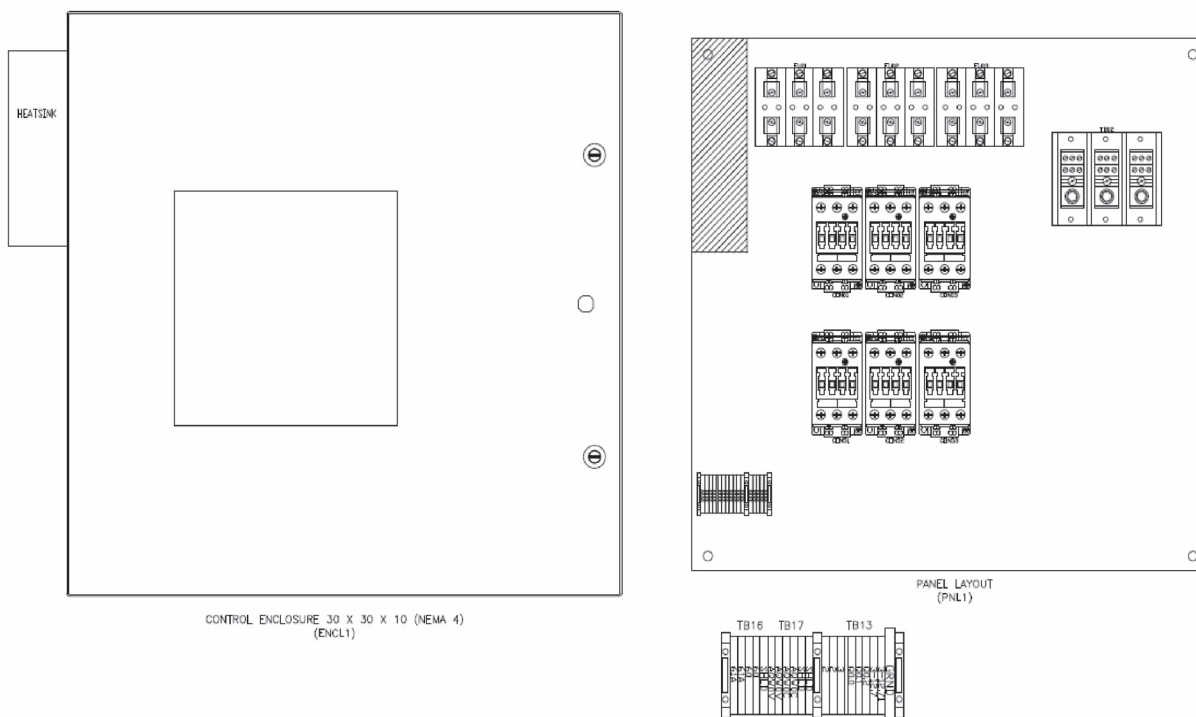


Figure 21.





Notes

Trane - by Trane Technologies (NYSE: TT), a global climate innovator - creates comfortable, energy efficient indoor environments for commercial and residential applications. For more information, please visit trane.com or tranetechnologies.com.

Trane has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice. We are committed to using environmentally conscious print practices.