

DESICAir® Series-1000



Desiccant Dehumidifiers

**Dry Desiccant Dehumidification
Systems For Humidity Control**



Stulz Air Technology Systems, Inc. (SATS)

Founded in 1947, STULZ acquired Air Technology Systems (ATS) in March 2001, naming the new company Stulz Air Technology Systems, Inc. (SATS). SATS is dedicated to providing innovative solutions for critical temperature and humidity control needs. SATS designs and manufactures specialized environmental control equipment for commercial, industrial and custom military applications. SATS serves a diverse marketplace - including telecommunications, information technology, medical, financial, educational, industrial process and government contracts - utilizing world-class "island" manufacturing processes in a modern, 150,000 ft² facility. The addition of SATS to the STULZ family of companies solidifies STULZ as a global leader in the precision air conditioning marketplace. SATS combines a global network of sales and service companies with an extensive factory engineering staff and highly flexible manufacturing resources dedicated to providing world-class quality, innovation and customer service.

ISO-9001 Quality Registered



SATS operates in an ISO-9001:2000 Registered Quality Management System. Each employee of SATS is committed to *satisfying our customer expectations with the highest level of consistent, measurable and continuous quality improvement.*

SATS DESICAIR®- DRY DESICCANT DEHUMIDIFICATION

SATS DESICAIR® dehumidifiers utilize a unique dry and stable desiccant. The desiccant is a customized form of silica gel which is synthesized and permanently encapsulated in the rotor's molecular matrix. DESICAIR® dehumidifiers provide precise humidity and/or temperature control of either a room or a process air stream such as may be required for pharmaceutical air preparation, tableting, panning, etc; air conveying of hygroscopic products; preparation, hardening and packaging of confectionery, chocolate, candy; plastic molding operations; electronics manufacturing, warehousing; archival storage of documents, films, artifacts or works of art; seed storage; investment casting operations; stand by readiness of military hardware; battery manufacturing; general manufacturing and many other applications.

DESICAIR® dehumidifiers are available in sizes from **50 to 15,000 scfm** and with moisture removal capacities exceeding 500 lbs per hour.



DESICAIR® Series DEZ 1000 and Series DES 2000 dehumidifiers provide dry air for humidity control with many standard options.

DESICAIR® DHP Series systems combine desiccant dehumidification with cooling, heating, humidifying, filtration and many other custom features such as double wall construction. This series facilitates single source, stand alone environmental control.

Product Reliability

Each desiccant rotor is precision manufactured for long life and low maintenance requirements and driven by a positive grip cog type drive belt. Each DESICAIR® dehumidifier must pass stringent quality assurance testing before leaving our factory. SATS offers the industry's only 5 year rotor protection warranty as a standard!

Typical applications include:

PROCESSES

- Plastic Injection Molding
- Pharmaceutical Tableting / Capsuling
- Electronics Manufacturing
- Candy Production
- Packaging Operations

ENVIRONMENTAL

- Warehouse & Storage Facilities
- Museums
- Document Archives
- Military Equipment Preservation
- Laboratories & Clean Rooms
- Pneumatic Conveying (Grain Elevators)
- Water Remediation

PERFECT FOR FLOOD DAMAGE RESTORATION!

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DESICAIr® FAMILY OF PRODUCTS



DH100 Series



DRY 500 Series



DEZ 1000 Series



DES 2000 Series

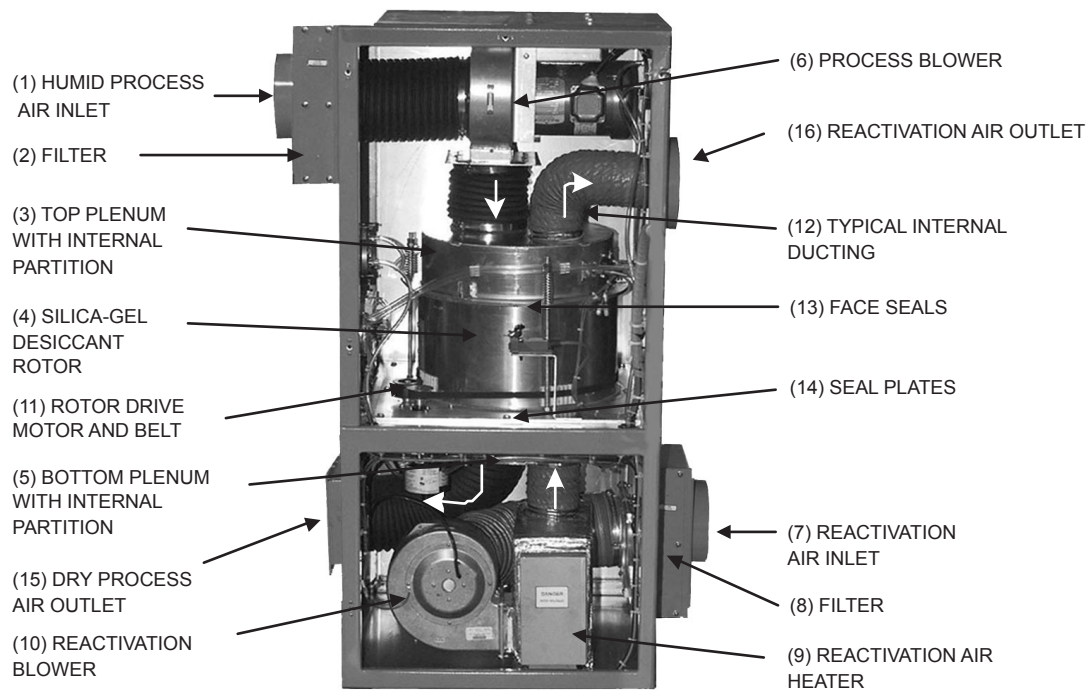


DHS Series



DHP Series

Desiccant Dehumidification - How It Works



DESICAIR® Series 1000
Desiccant Dehumidifier

How it Works ...

Humid (process) air (1) is drawn into the dehumidifier through a filter (2) and a specially designed plenum (3). The air passes through the rotor (4) where moisture is adsorbed by the desiccant. As moisture is adsorbed by the desiccant, heat is given off to the air stream. This heat gain causes the dry bulb temperature of the air stream to increase. The dehumidified air passes through a second plenum (5) and is discharged by the process blower (6) through the outlet (15).

Simultaneously, the reactivation air (7) is drawn through a filter (8) and is heated (9) and enters a separate segment of the rotor (4) through the plenum (5). This heat reduces the relative humidity of the reactivation air, increasing its moisture holding capacity. The heated reactivation air removes the previously adsorbed moisture as a vapor from the desiccant in the rotor. The reactivation air passes through a plenum (3) and is discharged by the reactivation blower (10) through the outlet (16).

The plenums (3,5) are constructed with internal partitions to keep the process and reactivation air streams from mixing.

While the dehumidifier is operating, the rotor is continuously turned by the drive motor and belt (11). The moisture adsorbed from the process air stream is carried to the reactivation zone where the moisture is transferred to the reactivation air stream.

The air streams pass concurrently through the rotor in counterflow. Counterflow is the most efficient pattern for thermal and mass transfer. The process and reactivation air streams follow separate and isolated paths through the dehumidifier. They are prevented from mixing by four significant design features:

Internal ducting (12)

A partition in both plenums (3,5)

Solid rotor flute construction (4)

Unique one piece face seals (13).

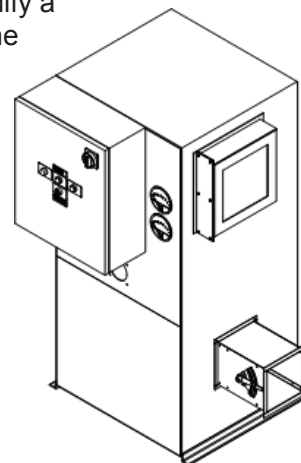
The face seals (13) are of one piece construction and mounted to seal plates (14). The seals provide both the periphery and process to reactivation air seal.

SERIES 1000 Dehumidifiers

The Series 1000 models are industrial duty dry desiccant dehumidifiers. They dehumidify a space or process application to a humidity level chosen by the user without lowering the air temperature. Using desiccant air drying technology, humidity can be reduced to levels below that which is achievable with a refrigeration based dehumidification system.

The Series 1000 dehumidifiers even allow cold air streams to be dehumidified without further reducing the air temperature, so freezing and/or frosting of components is prevented. Air to be dehumidified is drawn into the unit, filtered, dehumidified and then supplied to the space or process to be conditioned.

Each dehumidifier is complete with all the necessary blowers, controls, filters and drive components to assure the safe and automatic operation of the dehumidifier. Single point electrical power connection is provided.



SERIES 1000 Systems Offer Outstanding Advantages

Flexibility

A range of options to meet your needs.

- Round or Square Duct Connections
- Cabinet Stands
- Status Indicator Lamps
- Remote Unit Starting/Monitoring

Versatility

- Space or Process Conditioning
- Portable Units Available

Range of Sizes

A range of flow capacities to meet your space or process conditioning requirements from 300, 450 or 600 scfm.

Non-Proprietary Parts

All *Series 1000* systems incorporate non-proprietary components where possible. Most major HVAC, refrigeration or electrical distributors stock an exact model cross reference or an alternate to most factory provided components.

Code Conformance



- Control enclosures are certified to UL508A Standards.
- Unit may be Nationally Recognized Testing Laboratories (NRTL) certified to UL1995 Standards.

Comprehensive Warranty

All parts are warranted for 2 years from date of installation.

Note: Certain terms and conditions apply.

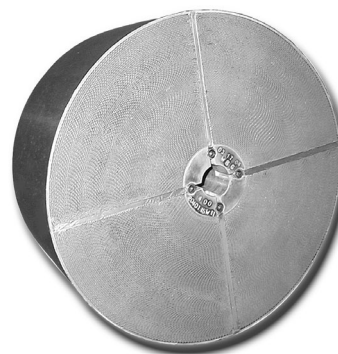
5-Year Rotor Warranty - The desiccant rotor is protected with an exclusive *SATS DESICAiR®* warranty for five (5) years against softening or collapse due to exposure to humid air.

Solid State Controls

Precision humidity management with unrivaled, user friendly controls that offer a wide range of functions and features.

Desiccant Rotor

The rotary style desiccant rotor utilized in *Series 1000* systems is manufactured using a unique, media (substrate) formulated for maximum performance with minimal maintenance.



The desiccant rotor consists of a corrugated high temperature fiber media impregnated with a non-

SERIES 1000 Dehumidifiers - Outstanding Advantages

migrating, water selective, synthesized silica gel desiccant. The desiccant permanently encapsulates the media matrix in such a way as to render the entire surface area of the rotor active as a desiccant. The advanced silica gel desiccant is non-corrosive and non-toxic. The rotor is equipped with a non-slip, cogged gear, belt-drive system.

Rotor Pressure Drop

Differential pressure indicating gauges are provided to indicate the pressure drops across the rotor for air balancing.



Separate gauges are provided for process and reactivation air streams. The gauges are factory mounted on the cabinet and visible without requiring the removal of any panels or access covers.

User Access

Convenient access is provided at the front of the unit for operator monitoring and control purposes. There the user may access the control panel, hinged

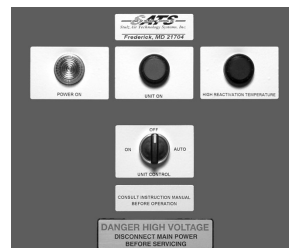


control enclosure, unit nameplate and pressure indicating gauges. An observation window is included to allow for visual confirmation of rotor rotation without

opening a service panel. Service access panels are furnished to allow for service or replacement of all major components without disconnecting ductwork or power supply connections.

Control Panel

Each unit is equipped with a control panel that includes a three-(3) position rotary selector switch allowing the operator to select between On, Off or Automatic control modes. Status indication lights are mounted on the control panel to provide visual indication of current operating conditions of the system.



The standard control panel lights include Power On (white), Unit On (green) and Summary Fault (red). The Unit On and the Summary Fault light includes a unique "Press-To-Test" feature which can be used to check bulb operation.

Electrical

Wiring practices, branch circuit protection, motor starters and overload protection are provided in accordance with the latest edition of the National Electric Code.

Capacity Control Methods

Series 1000 dehumidifiers are designed with the capacity to meet maximum operating conditions for a given humidity control project. In most cases the unit is required to operate at less than maximum capacity. If not controlled properly, too much energy can be consumed to meet performance requirements. Capacity control ensures that only enough reactivation energy is applied to meet the performance required. *Series 1000* dehumidifiers have been developed to use a choice of SATS' proprietary control methods that offer optimum reactivation energy efficiency. Three control methods offer the flexibility of selecting the best method for a particular application.

- **D-Stat®:** Cycles the dehumidifier (including the process air blower) on and off in response to a control device such as a humidistat. Controls humidity of a space or process application to +/- 5% RH.

SERIES 1000 Dehumidifiers - Outstanding Advantages

- **D-Stat II®:** Functions the same as the D-Stat® control method except the process blower runs continuously. This method allows the process air to move for ventilation or sensible cooling and promotes uniform humidity throughout the conditioned space.
- **H-Trac®:** Proportionally controls reactivation energy to maintain a constant relative humidity while the process blower runs continuously. Recommended for tight humidity control to $\pm 2\%$ RH or for setpoints below 30% RH.

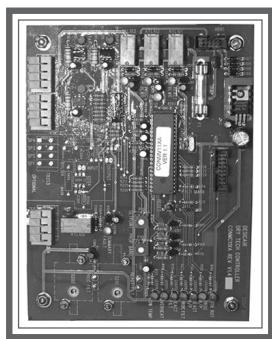
Controller Options

SATS offers a wide selection of solid state system controllers for use with NRTL or non-NRTL labeled dehumidifiers. The controller provides basic reactivation energy management and may be selected to include features such as remote on/off control, monitoring of operating parameters and self diagnostics capability.

Dry-Tech Controller:

(For Non-NRTL labeled dehumidifiers)

Dry-Tech controllers provide the most cost effective solution for dehumidification control. They are designed exclusively for use with *Series 1000* dehumidifiers utilizing the D-Stat® or D-Stat II® capacity control method. The microprocessor based Dry-Tech controller offers the industry's most sought after features such as remote start/stop control, colored status indicator LED's and a summary fault dry contact status relay.



Dry-Tech Controller

Dry-Tech printed circuit boards are manufactured using highly reliable manufacturing techniques and are

proven in thousands of applications to be extremely rugged and the best suited for the rigorous requirements of industrial dehumidification controls. Dry-Tech controllers are mounted in a protective enclosure which is factory installed inside the dehumidifier cabinet behind an access panel. The enclosure is furnished with a clear plexiglass window to conveniently view the status indicator LED's, mounted on the Dry-Tech board.

Dry-Tech LED Indicators

The LED's give visual indication of key operating parameters for the system and provide self diagnostic alerts when service is needed.

Status LED's:

- Process Blower On Green
- Reactivation Blower On Green
- Reactivation Heater On Green
- Software Running Green
- Summary Fault Green

Service/Troubleshooting LED's:

- D-Stat Input Red
- Remote Start On Red
- Process Air Proving Fault Red
- Reactivation Air Proving Fault Red
- Rotor Rotation Fault Red
- Dirty Process Air Filter (opt) Red
- Dirty Reactivation Air Filter (opt) Red
- High Reactivation Temp Red
- Low Reactivation Temp Red

Summary Fault Contact:

A summary fault dry contact relay is provided with Dry-Tech controllers for remote monitoring of key operating conditions. The summary fault relay actuates (and the *summary fault LED illuminates) in conjunction with the assigned troubleshooting LED's listed above. Customer interface terminal positions for the summary fault contact are located inside the control enclosure.

*In addition to the summary fault LED on the Dry-Tech board, a summary fault indicator light is provided on the control panel as a standard feature when Dry-Tech controllers are utilized.

The summary fault contact energizes if there is an overheat fault, low reactivation temperature fault, rotor rotation fault or if there is insufficient process or reactivation airflow. The summary fault contact also energizes upon detection of a dirty filter if optional, dirty filter status monitoring is selected.

SERIES 1000 Dehumidifiers - Outstanding Advantages

Optional Dirty Filter Monitoring:

Optional air proving switches may be provided in the unit to monitor the condition of the air filters. When Dry-Tech controllers are utilized, this option enables the summary fault alarm, (contact and lights) to annunciate upon detection of a dirty filter. The LED's on the Dry-Tech board are then used to determine which filter needs to be serviced.

Optional Controllers

(For NRTL labeled dehumidifiers)

Series 1000 dehumidifiers are designed to use many of the industry's standard controllers. A choice of controllers are available for NRTL rated dehumidifiers that utilize our proprietary, capacity control methods to manage reactivation energy. Controllers for NRTL labeled units are selected based on the specified requirements of your project and the capacity control method needed.



Controllers for use with NRTL labeled units

NOTE: With NRTL labeled dehumidifiers, the summary fault indicator light on the control panel is replaced with a high reactivation temperature fault indicator light. The high reactivation temperature fault indicator light illuminates when an overheat condition occurs.

Remote Monitoring/Control Features

All DES/CAiR Series 1000 dehumidifiers are provided with customer interface terminal positions as a standard feature inside the control enclosure for remote monitoring and control purposes.

Remote Start/Stop:

Terminal positions are provided to connect a remote, start/stop control device. This may be used to start and stop the unit when the mode selector switch is in the "Auto" position.

Process Blower Interlock:

A dry contact relay is provided that closes when the process blower is turned on. It can be used to indicate operating status or to start and stop auxiliary equipment such as a circulating fan.

Optional Summary Fault Detection Package

(For NRTL labeled dehumidifiers)

In lieu of the fault detection features offered with Dry-Tech controllers, an optional summary fault detection package is offered for dehumidifiers that are NRTL labeled. The summary fault detection package consists of a summary fault dry contact relay and additional "press-to-test" fault status indicator lights. The additional indicator lights are mounted on the unit control panel with the high reactivation temperature fault light.

Summary Fault Dry Contact Relay:

A dry contact relay provides indication of a summary fault condition. The relay contacts are configurable to operate as normally open or as normally closed. The relay energizes in conjunction with the illumination of a control panel fault indicator light if a monitored fault condition occurs.

Fault Lights:

Additional fault status indicator lights are provided on the dehumidifier control panel when the optional summary fault detection package is selected. The illumination of a fault light will occur together with the actuation of the summary fault relay contact.

Rotor Rotation Fault Light:

This illuminates red if the rotor has not made a complete revolution within a specified period of time.

Motor Fault Light:

This illuminates red if there is a fault with the process blower motor or the reactivation blower motor.

Optional Dry Status Contacts

Dry status contacts may be individually selected as options for remote monitoring purposes. Customer interface terminal positions for the dry contacts are provided inside the control enclosure.

Process Air Proving Contact:

This contact energizes when the process air proving switch detects sufficient airflow.

Reactivation Air Proving Contact:

This contact energizes when the reactivation air proving switch detects sufficient airflow.

Dirty Filter Indication Contact:

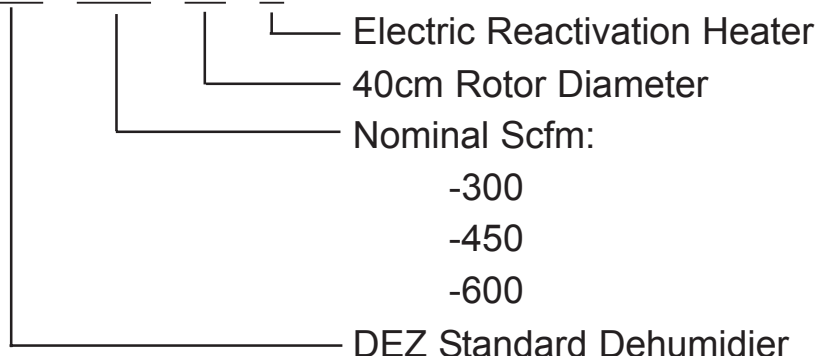
This contact energizes when the differential pressure across the process or the reactivation air filter indicates that the filter should be changed.

SERIES 1000 Dehumidifiers - Nomenclature

Model Nomenclature and Specifications

SERIES 1000 MODEL NUMBERING SYSTEM

DEZ - XXX - 40 - E



NOMINAL PERFORMANCE RATINGS

	Process Air		Reactivation Air		Heater* Kw
	Scfm	E.S.P.	Scfm	E.S.P.	
DEZ-300-40-E	300	0.6 w.c.	100	0.4 w.c.	6 Kw
DEZ-450-40-E	450	2.0 w.c.	150	0.8 w.c.	9 Kw
DEZ-600-40-E	600	1.5 w.c.	200	0.3 w.c.	12 Kw

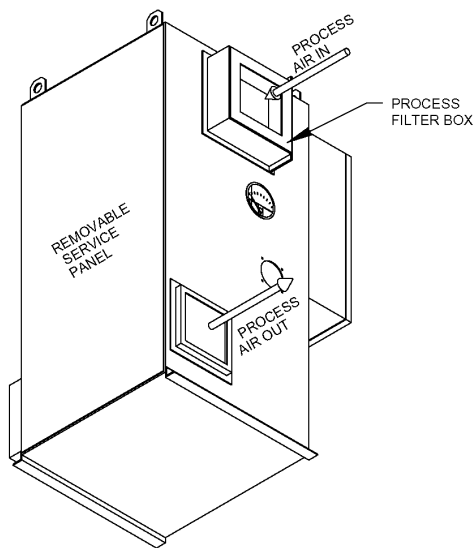
***Note:** Heaters are shown at their maximum rating. The heaters may not operate at their maximum capacity under normal operating conditions. Please contact the factory for actual heater power consumption specific to an application.

<u>ELECTRICAL DATA</u>					
POWER SUPPLY	460/3/60	230/3/60	208/3/60	230/1/60	208/1/60
DEZ-300-40-E	9.6 FLA	18.8 FLA	20.8 FLA	29.8 FLA	33.0 FLA
DEZ-450-40-E	14.4 FLA	28.8 FLA	31.9 FLA	50.8 FLA	56.2 FLA
DEZ-600-40-E	18.2 FLA	36.4 FLA	40.2 FLA	63.8 FLA	70.6 FLA

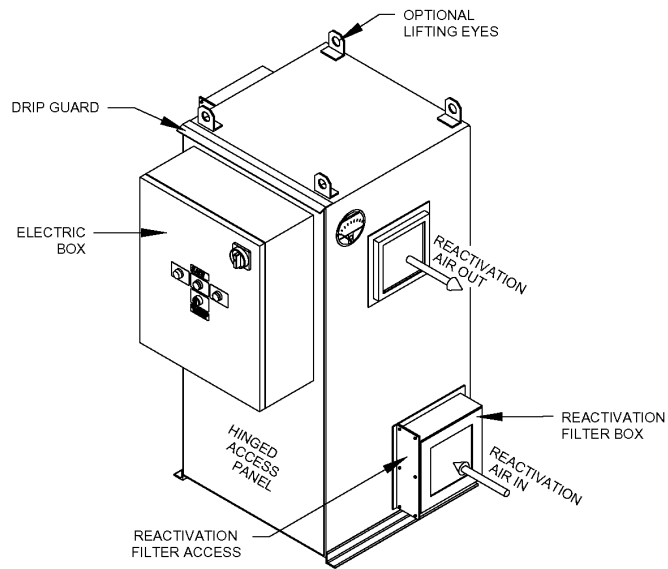
Layouts/Configurations

DEZ-300-40 - TYPICAL CONFIGURATION

(FLANGED INLETS, FLANGED OUTLETS, INTERNAL SLIDEGATE FOR REACTIVATION AIRFLOW CONTROL, NO PROCESS AIRFLOW CONTROL DAMPER)



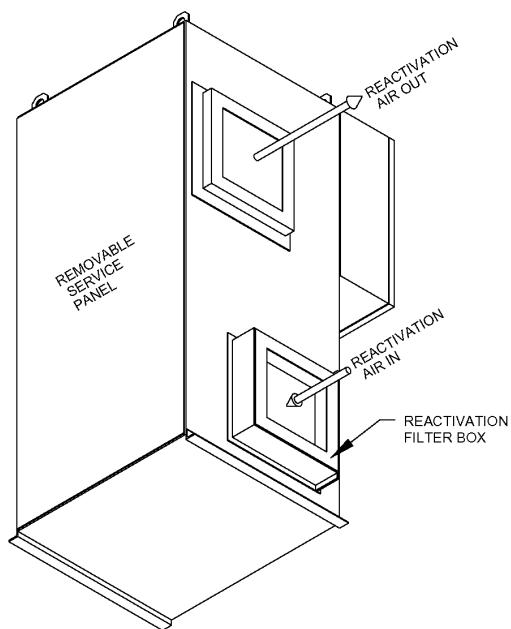
REAR/BOTTOM/LEFT



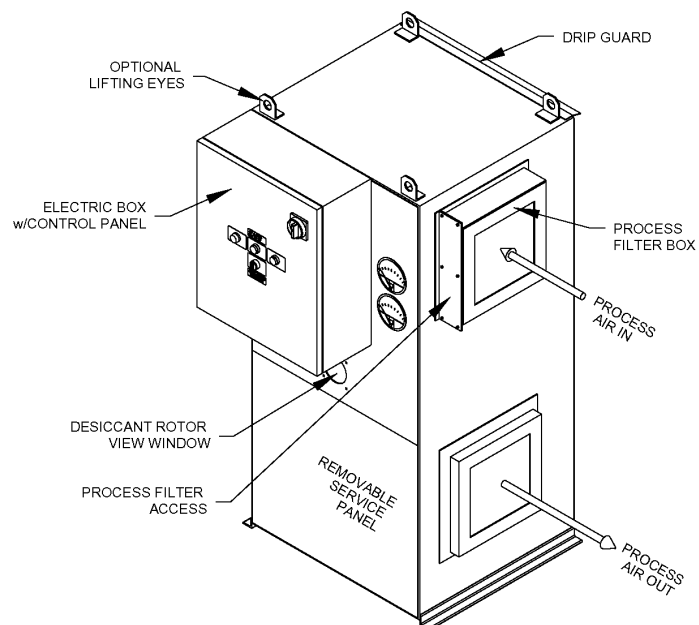
FRONT/TOP/RIGHT

DEZ-450/600-40 - TYPICAL CONFIGURATION

(FLANGED INLETS, FLANGED OUTLETS, INTERNAL SLIDEGATE FOR REACTIVATION AIRFLOW CONTROL, NO PROCESS AIRFLOW CONTROL DAMPER)



REAR/BOTTOM/LEFT



FRONT/TOP/RIGHT

Selected Standard Features - “DEZ” Series 1000

“DEZ” Model	DEZ-300	DEZ-450	DEZ-600
SELECTED STANDARD FEATURES:			
Reactivation			
• Electric with Solid State Control	Standard	Standard	Standard
Cabinet Construction - 0.125” Thick All Aluminum Construction			
• Outdoor Rated (Nema 4 control enclosure)	Standard	Standard	Standard
• 1/2” Insulation for 55°F inlet temperature	Optional	Optional	Optional
• 1” Insulation for 45°F inlet temperature	Optional	Optional	Optional
• 100% Front Access to Internal Components	Standard	N/A	N/A
• Cabinet Stands - Raises Unit 10 1/2” Above Floor	Optional	Optional	Optional
• Lifting Eyes - Aids In Moving/Positioning Unit	Optional	Optional	Optional
• Mobile Casters - For Portable Units	Optional	Optional	Optional
• Paint - Industrial/Marine, Hi-Gloss, Siloxane Epoxy	Standard	Standard	Standard
Filtration- Meets ASHRAE Standard 52.1-1992			
• Process Inlet 30% Pleated	Standard	Standard	Standard
• Reactivation Inlet 30% Pleated	Standard	Standard	Standard
Gauges			
• Rotor Differential Pressure Indicating Gauges	Standard	Standard	Standard
• Run Time Hour Meter	Standard	Standard	Standard
Inlet/ Outlet Configurations			
Process Inlet			
• Flanged	Standard	Standard	Standard
• Round with Flex Duct Bead	Optional	Optional	Optional
• Round for Rigid Duct	Optional	Optional	Optional
• Louvered for Outdoor Installations	Optional	Optional	Optional
Process Outlet			
• Flanged	Standard	Standard	Standard
• Round with Flex Duct Bead	Optional	Optional	Optional
• Round for Rigid Duct	Optional	Optional	Optional
Reactivation Inlet			
• Flanged	Standard	Standard	Standard
• Round with Flex Duct Bead	Optional	Optional	Optional
• Round for Rigid Duct	Optional	Optional	Optional
• Louvered for Outdoor Installations	Optional	Optional	Optional
Reactivation Outlet			
• Flanged	Standard	Standard	Standard
• Round with Flex Duct Bead	Optional	Optional	Optional
• Round for Rigid Duct	Optional	Optional	Optional
• Weather Hood for Outdoor Installations	Optional	Optional	Optional
Air Dampers			
• Reactivation (Internal)	Standard	Standard	Standard
• Reactivation (External with Locking Handle)	Optional	Optional	Optional
• Process (External with Locking Handle)	Optional	Optional	Optional

Selected Standard Features (cont'd)

"DEZ" Model	DEZ-300	DEZ-450	DEZ-600
SELECTED STANDARD FEATURES:			
Power			
• 460/3/60	Standard	Standard	Standard
• 230/3/60	Optional	Optional	Optional
• 208/3/60	Optional	Optional	Optional
• 230/1/60	Optional	Optional	Optional
• 208/1/60	Optional	Optional	Optional
Disconnects			
• None	Standard	Standard	Standard
• Rotary, Non-fused	Optional	Optional	Optional
Safety			
• Thermal Overheat Protection	Standard	Standard	Standard
• Process & Reactivation Air Proving	Standard	Standard	Standard
• Emergency Stop	Optional	Optional	Optional
• Voltage/Phase Monitor	Optional	Optional	Optional
Capacity Control Method			
• D-Stat (w/ Non-NRTL Rated Unit)	Standard	Standard	Standard
• D-Stat (w/ NRTL Rated Unit)	Optional	Optional	Optional
• D-Stat II (w/ Non-NRTL Rated Unit)	Optional	Optional	Optional
• D-Stat II (w/ NRTL Rated Unit)	Optional	Optional	Optional
• H-Trac (w/ NRTL Rated Unit)	Optional	Optional	Optional
Control Sensor Provision			
• None - Customer Provided	Standard	Standard	Standard
• Field Mounted - Duct	Optional	Optional	Optional
• Field Mounted - Wall	Optional	Optional	Optional
Status Monitoring			
Indicator Lights			
• Power On (White)	Standard	Standard	Standard
• Unit On (Green)	Standard	Standard	Standard
• *Summary Fault (Red)	Standard	Standard	Standard
(*The Summary Fault light is replaced with a High Reactivation Temperature Fault light on NRTL labeled units.)			
• **Summary Fault Detection Package	Optional	Optional	Optional
(**For use with NRTL labeled units)			
Includes: >Summary Fault Dry Contact<			
>Rotor Rotation Fault Light (Red)<			
>Motor Fault Light (Red)<			
Customer Interface Terminals			
• Remote Start/ Stop	Standard	Standard	Standard
• Process Blower Interlock Dry Contact	Standard	Standard	Standard
• ***Dirty Filter Dry Contact	Optional	Optional	Optional
• Process Air Proving Dry Contact	Optional	Optional	Optional
• Reactivation Air Proving Dry Contact	Optional	Optional	Optional
(***) Optional dirty filter notification provided via a Summary Fault Alarm Contact when Dry-Tech controllers are utilized)			

Guide Specifications - Standard Features

QUALITY ASSURANCE (ISO 9001 Registered)

SATS operates in an ISO 9001:2000 Registered Quality Management System. Each SATS employee is committed to satisfying his or her customer expectations with the highest level of consistent, measurable and continuous quality improvement.

GENERAL GUIDE SPECIFICATIONS

General Description

The dehumidification system shall be a desiccant dehumidifier designed to provide precision humidity control to a space or process application. The dehumidifier and options selected shall be factory assembled, tested and shipped complete with all components as described here-in to maintain the specified humidity level within the intended space or to maintain the discharge outlet within the design load limits of this project. The dehumidifier shall include an advanced silica gel desiccant rotor, process air blower, reactivation air blower, reactivation heater, positive drive rotor drive system and all necessary controls for continuous and safe unattended operation.

The system cabinet shall be designed for outdoor installation and year round service. The system shall require only connection of ductwork, utilities, remote sensors and/or control signals.

At a process air flow rate of _____ SCFM, the system shall provide _____ lb/hr (____ Gr/lb) moisture removal at an entering air temperature condition of _____ °F DB / _____ °F WB, _____ °F Dew Point (____ % RH).

All system components except the desiccant rotor shall have provisional warranty coverage for a period of 2 years after installation. The rotor shall be warranted for a period of 5 years against softening or collapse due to exposure to humid air.

The dehumidification system manufacturer shall be an ISO-9001 registered company. The system shall be a model *DEZ-_____ DESICAiR Series 1000* as manufactured by Stulz Air Technology Systems, Inc. (SATS) in Frederick, Maryland, USA.

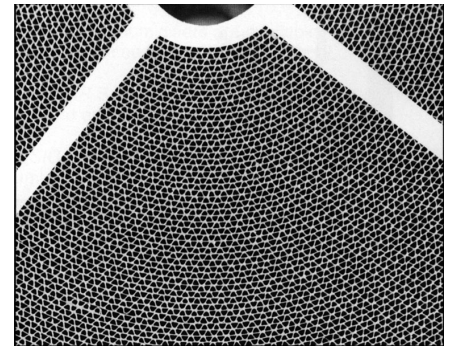
Desiccant Dehumidification

The dehumidifier shall be of the non-cycling type with dry non-granular, non-deliquescent, non-corrosive, non-toxic silica gel desiccant. The unit shall provide for continuous dehumidification with concurrent reactivation of the desiccant. The blower arrangement shall provide counter flow of the process and reactivation air streams.

The dehumidification process shall be by adsorption. Absorption type desiccants such as lithium chloride or other salt type sorption materials which require a change in state for the dehumidification process shall not be acceptable.

Desiccant Rotor

The desiccant rotor shall consist of a high temperature, corrugated, synthetic fiber substrate media with an advanced silica gel desiccant uniformly and permanently encapsulated in the matrix structure of the media. The advanced silica gel desiccant shall have uniform macro-pore openings.



The advanced silica gel desiccant shall remove water vapor from the passing airstream at the rate specified in the schedule. Nominal face velocity shall not exceed 800 fpm. The advanced silica gel shall be bonded to the substrate in such a way that the entire rotor surface shall be active as a desiccant. The desiccant shall be bonded to the substrate and not loose within the rotor. The rotor shall be an extended surface contactor with a plurality of parallel flutes and have laminar air flow characteristics.

The rotor shall be fabricated to include mechanical support of the media and shall have an external sheet metal wrapper to encase the media. The rotor shall allow optimal airflow to minimize airflow pressure drop. Neither granular nor impregnated desiccants shall be acceptable. Dehumidifiers requiring either "topping off" or re-impregnation shall not be acceptable.

The desiccant rotor shall not be adversely affected by exposure to air even at 100% relative humidity or to prolonged storage or intermittent use in humid atmospheres for up to ten years. The desiccant dehumidification rotor shall be capable of sustained operation with either the process or the reactivation blower operating without reactivation heat applied.

Guide Specifications - Standard Features

The rotor shall be able to be cleaned with either warm water or detergent wash without damage or loss of desiccant. The desiccant shall retain a minimum of 95% of its working capacity after ten washings per the manufacturers instructions.

Rotor Drive

The desiccant rotor shall be belt driven from a fractional horse power gear motor. The rotor drive system shall consist of all the necessary components for continuous, slip free operation. The rotor drive system shall be housed within the cassette section of the dehumidifier and not be exposed to ambient conditions.



The drive system shall include a gearmotor and a reinforced flex grip cog type drive belt. Matching cogs shall be permanently mounted on the rotor to ensure slip free rotation. An adjustable belt tensioner shall be provided.

The rotor shall be horizontally mounted with a center shaft employing a ball bearing support to minimize driving friction. Rotation shall be continuous. The rotational speed shall be selected for the maximum dehumidification effectiveness per the manufacturers performance data and to prevent wave front breakthrough at design conditions.

Rotor Pressure Drop

Gauges:

Pressure indication gauges shall be provided to indicate the static pressure drops across the rotor. Separate gauges and static pressure taps shall be installed for process and reactivation air streams.



The gauges shall be externally mounted on the cabinet and visible without requiring the removal of any panels or access covers. The gauges shall be suitable for either indoor or outdoor service and have 4-1/2" face and analog dial. The scale shall be selected such that the design pressure indication is within the mid-range of the gauge. The gauges shall be Dwyer Magnehelic gauges or approved equal.

Rotor Air Seals

The process and reactivation sections of the desiccant rotor shall be provided with air seals to prevent cross leakage from one airstream to another. A seal shall be installed against a flange on the periphery of the rotor to prevent air from by passing the rotor. The seals shall provide positive sealing across the sections.

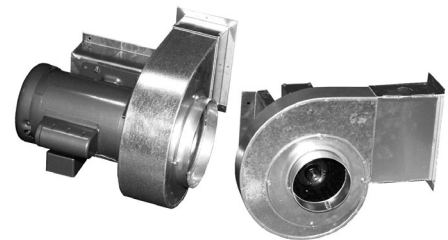
The seals and rotor construction shall provide for independent adjustment and regulation of the process and reactivation air flow without concern for the air pressure difference between the sections.



Seals shall provide minimum leakage up to 8" wc pressure differential. Trailing type wiper seals, balloon or bulb type seals shall not be used.

Blowers/Motors

A process air blower and a reactivation air blower shall be provided as standard and sized for the air requirements of each model. The blowers shall be centrifugal type with a welded housing unless specified otherwise. The blowers shall be direct drive, forward curved types unless otherwise specified. The blowers shall be mounted inside the dehumidifier cabinet to prevent moisture from infiltrating into the dehumidification system.



The blower motors shall include short circuit and thermal overload protection.

Process Blower Motor:

The process blower/motor assembly shall be sized to provide _____ CFM @ _____ inches static pressure.

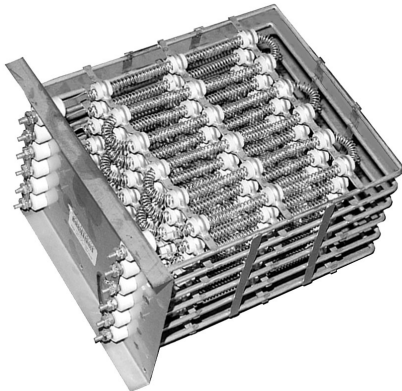
Guide Specifications - Standard Features

Reactivation Blower Motor:

The reactivation heater blower/motor assembly shall be sized to provide _____ CFM @ _____ inches static pressure.

Reactivation Heater

The reactivation heater shall be of sufficient capacity to ensure the complete and continuous reactivation of the desiccant during summer or winter operation of the dehumidifier. The heater shall be selected to satisfy the summer and winter performance requirements per the equipment schedule and shall be completely factory assembled.



The reactivation heater shall be an open nichrome wire element electric resistance type heater. The heater wire elements shall be supported by ceramic insulators and 304 stainless steel framing. The heater shall be mounted in a separate insulated plenum box for safety and energy conservation. Insulation shall be 1 inch thick, high temperature type.

The reactivation heater shall be protected by controls to safely operate the unit. The heater contactor shall be equipped with fused overload protection. Multiple heaters shall be staged not to exceed 48 amps per branch circuit

and circuit protection shall not be greater than 60 amps in accordance with the National Electric Code and UL Standard 1995. Heater wire running from the heater contactor to the heater terminal box shall be rated for 200°C service. A high temperature limit switch requiring a manual reset shall be wired between the contactor and heater and the sensor shall be installed between the heater and the rotor. The overheat device shall be factory set. A red fault indicator light located on the control panel shall illuminate in the event of an overheat occurrence.

Solid state automatic modulation of the heater by a "Zero Firing" Solid State Relay (SSR) and solid state logic system shall be included as standard. This feature shall prevent overheating, provide energy conservation and extend the operating life of the heater element by eliminating wide temperature variations inherent in on/off heater cycling. The control setting shall be factory pre-set to maintain a 120°F (+/- 3°F) reactivation leaving temperature. The solid state power control shall be connected in-line with the electric resistance heater and shall provide proportional temperature control of the heater. The controller shall ensure that a minimum amount of energy is consumed while providing for continuous dehumidification. A cool down purge shall be incorporated to operate the reactivation blower for a minimum of 5 minutes whenever the heater is de-energized by the controls.

Cabinet Construction

The dehumidifier cabinet shall be constructed of 0.125" thick, 5052 grade aluminum for corrosion protection. The cabinet shall be of formed sections, welded, ground

smooth and painted. The cabinet seams shall be sealed to attain unit air leakage of less than 1% of design airflow rate measured at 8" wc negative static pressure. The cabinet shall be painted with an industrial quality high gloss self priming enamel protective coating with an adhesive strength of 2700 psi (on steel using ASTM D4541). The coating shall have a uniform dry film thickness of 3 - 7 mils per coat. The coating shall have a USDA qualification for incidental food contact.

Access panels with full perimeter style gaskets shall be provided on at least one side of the cabinet to allow for service and replacement of all major internal components. Captive fasteners shall be provided on all service/access panels. A plexiglass observation window shall be provided to allow for visual confirmation of rotor rotation without opening the service panel.

The dehumidifier shall be equipped with mounting angles that support the full operating weight of the unit and allow for leveling at installation.

Optional Cabinet Insulation:

Internal cabinet insulation shall be available as a factory installed option in the process air inlet duct and inlet plenum. This option shall be available for applications where the inlet air temperature is below the ambient air dew point temperature. This option shall prevent condensation from forming in the cabinet. This option shall impede heat gain to a low temperature space should the dehumidifier be located within the controlled space.

The insulation shall be flexible, elastomeric thermal insulation rated for use in applications from -40°F to +180°F. It shall be ASTM C 177

Guide Specifications - Standard Features

performance tested at 75°F mean temperature to 0.27 Btu*in/hr*ft²*°F and ASTM E 84-75 tested for flame-spread rating of 25 or less. The insulation shall have an expanded closed cell structure and feature a low transmittance vapor barrier skin on one side to retard the flow of moisture vapor. The insulation shall be cut to size from sheets and affixed to the interior wall panels of the process entering air plenum and the process entering air duct with an approved flexible adhesive that exceeds the operating temperature range of the dehumidifier unit.

Select one of the following cabinet insulation options:

For Inlet Temps Below 55°F:

For applications where inlet air temperatures are less than 55°F, the process inlet area shall be internally insulated with 1/2" thick, closed cell foam insulation.

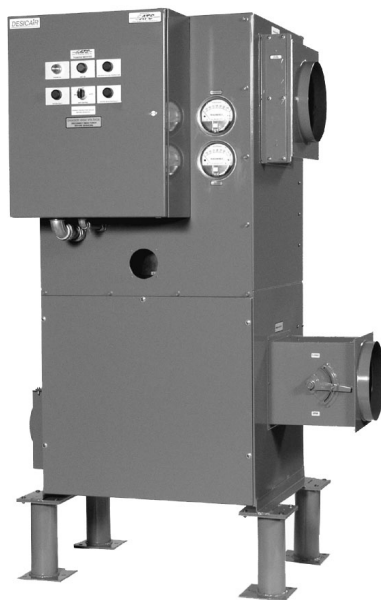
For Inlet Temps Below 45°F:

For applications where inlet air temperatures are less than 45°F, the process inlet area shall be internally insulated with 1" thick, closed cell foam insulation.

Optional Mobile Casters:

Front swivel casters and rear rubber tire wheels shall be provided as a factory installed option. A push bar shall be mounted to allow for easy re-positioning of the unit. The electrical enclosure shall be mounted on the push bar side of the unit to protect the controls and indicator lights from damage and to allow for maneuvering of the unit through narrow passages.

Optional Cabinet Stands:



Above unit shown with optional features

Cabinet stands shall be provided as a field installed option to elevate the dehumidifier cabinet a minimum of 10 1/2 inches above the floor. Four stands shall be provided with fasteners for attaching them to the underside of the cabinet at each of the four corners. The stands shall have holes pre-drilled in them that mate with holes that are pre-drilled in the base of the dehumidifier cabinet.

Dampers

Air flow regulating dampers shall be required for the process air stream and for the reactivation air stream. The dampers shall allow for the proper setting of the required airflow through the dehumidifier. Proper flow shall be determined by setting the static pressure drops across the desiccant rotor to a pre-determined value as shown on static pressure gauges. A Technical Data Sheet which includes the specified pressure drops for each air stream shall be included

with the Installation Operation & Maintenance manual furnished with each unit.



A reactivation air flow balancing damper shall be factory installed inside the dehumidifier cabinet. The reactivation balancing damper shall be a sliding gate type and shall include a positive locking mechanism. A process air balancing damper shall be installed by the contractor in the discharge ductwork.

Optional Process Damper:



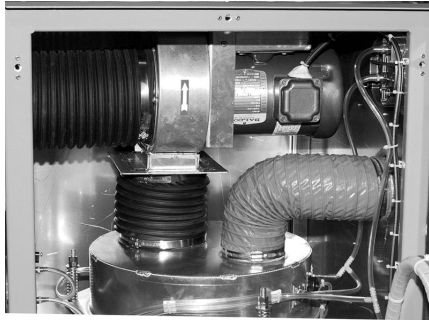
As an option, a process air balancing damper shall be factory installed in the process air discharge opening. The damper shall be mounted on an aluminum shaft with a bronze bushing. An external adjustment arm with a positive locking mechanism shall be provided.

Isolated Air Streams

Process and reactivation air streams shall be internally isolated from contact with blower motors, electrical devices, controls and the rotor drive system to prevent contamination. The isolation shall

Guide Specifications - Standard Features

be accomplished by internally ducting the air paths. The process air shall only contact the filter, ducting, desiccant rotor and blower wheel.



The reactivation air shall only contact the filter, heater, desiccant rotor and blower wheel. The process and reactivation air streams shall be isolated from each other by means of positive one piece seals.

Air Connections

Indoor Air Connections:

Flanged:

Air inlet and outlet connections shall be square or rectangular with turned in interface flanges. Flanges are blank for match drilling in the field by the installing contractor.

Round, Beaded:

As an option, round connections with circumference bead shall be factory installed for flexible ducts.



Round, No Bead:

As an option round, non-beaded connections shall be available for hard ducts.



Outdoor Air Connections:

Process Inlet Louvers:

As an option, the process inlet shall be louvered and include a safety/bird screen for use on systems installed in outdoor locations.

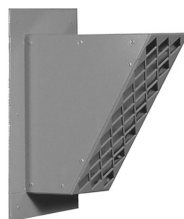


Reactivation Inlet Louvers:

As an option, the reactivation inlet shall be louvered and include a safety/bird screen for use on systems installed in outdoor locations.

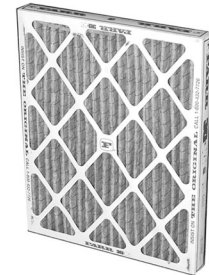
Reactivation Outlet Hood:

As an option, the reactivation air outlet shall be equipped with a weather hood and include a safety/bird screen for use on systems installed in outdoor locations.



Filters

The process and reactivation air inlets shall be furnished with disposable, pleated filters listed by UL as Class (1)(2). The filters shall be rated at an average of 25-30% efficiency per ASHRAE Std 52.1-1992.



The cabinet shall be designed with holding trays that allow the filters to be slid into proper position easily and quickly. Filter access covers shall be equipped with a compressible gasket that forms an air tight seal against the filter to prevent leakage when it is secured in place.

A "dirty filter" alarm contact shall be available as a factory installed option. (See page 3-9)

Electrical System

Wiring practices, branch circuit protection, motor starters, and overload protection shall be in accordance with the National Electric Code. Branch circuit protection shall be provided for motor and control circuits. Branch fused circuit protection shall be provided as required for electric resistance heater circuits and SSR/SCR devices in accordance with the National Electric Code and UL Standard 1995. IEC style motor starters with auxiliary contacts shall be utilized.

All fuses, starters, contactors, etc. shall be panel mounted for easy access in a NEMA 4, UL listed

Guide Specifications - Standard Features

electrical control enclosure. A ground lug connection shall be provided in the electrical enclosure and the enclosure shall be equipped with a hinged mounted cover. Wires shall be numbered at both ends for easy identification. Wire numbers shall correspond with numbers appearing on an electrical drawing to be provided with the unit. The wire harness shall be neatly arranged and tie wrapped.

Optional Rotary Disconnect Switch



A rotary type non fused disconnect shall be provided as a factory installed option. This device shall interrupt the power supply to the dehumidifier to allow for safe service and maintenance activity.

Optional Fused Knife Disconnect Switch



A knife style fused disconnect switch shall be provided as an option for field installation. This device shall interrupt the power

supply to the dehumidifier to allow for safe service and maintenance activity. Replaceable fuses shall be furnished for system overcurrent and ground fault protection.

Optional Non-Fused Knife Disconnect Switch

A knife style non-fused disconnect switch shall be provided as an option for field installation. This device shall interrupt the power supply to the dehumidifier to allow for safe service and maintenance activity.

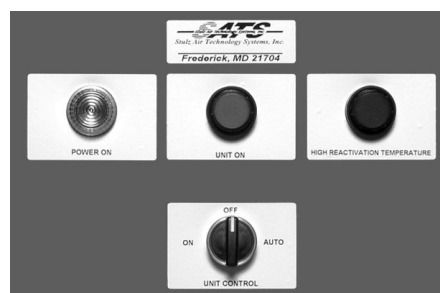
Power Supply

The power service provided by the owner shall be (specify one of the following):

460/3/60
230/3/60
208/3/60
230/1/60
208/1/60

Control Panel

A selector switch shall be mounted on the electrical enclosure door for OFF-ON-AUTO control.



In the "OFF" mode, the dehumidifier control circuit shall be energized with the blower motors, heater, rotor drive motor de-energized. In the "ON" mode, all components shall be energized and operate continuously.

In the "AUTO" mode, the dehumidifier shall be responsive to a control signal provided by a humidistat or other control device. Terminal board connections for control wiring shall be factory installed and clearly marked.

Status Indicator Lights

Status indication lights shall be provided on the control panel. The status indicator lights shall indicate Power On (white), Unit On (green) and Summary Fault (red) as standard. Additional red fault status indicator lights shall be offered as selected options. With the exception of the white, Power On light, the status indicator lights shall include a "Press-To-Test" feature to check bulb operation.

Summary Fault Light:

A Summary Fault light shall be provided when Dry-Tech controllers are utilized. The Summary Fault light shall illuminate red indicating a general fault if any one of the following conditions occur:

- High Reactivation Temperature
- Low Reactivation Temperature
- Rotor Rotation Fault
- Motor Fault
- Process Air Proving Fault
- Reactivation Air Proving Fault

High Reactivation Temperature Fault Light:

A high reactivation temperature fault light shall be provided in lieu of a summary fault light for NRTL labeled units. This illuminates red if the reactivation air temperature entering the rotor is above 340°F or if the air temperature leaving the rotor is above 180°F.

Guide Specifications - Optional Features

Automatic Control Methods

Energy conservation shall be achieved by matching the reactivation heater output to the required moisture removal rate. The dehumidifier shall use a control method that offers optimum reactivation energy efficiency. The capacity control method shall maintain a design control criteria or space condition setpoint for relative humidity. Face and bypass dampers shall not be used for capacity modulation.

Select one of the following control methods:

D-Stat®: The dehumidifier shall cycle on and off (including process blower) in response to a control closure signal from a duct or wall mounted humidistat. The dehumidifier control shall compare the conditioned space humidity to the humidity setpoint. When the measured humidity exceeds setpoint, the dehumidifier cycles on. The dehumidifier cycles off when the measured humidity is below setpoint.

D-Stat II®: The process blower shall remain operating while the reactivation heater and blower are cycled off in response to D-Stat® control. This control method shall provide on/off humidity control while allowing the air to continuously move for sensible cooling or ventilation and to promote uniform humidity throughout the conditioned space.

H-Trac®: Recommended for tight humidity control or to control setpoints below 30% RH. The reactivation heater shall be automatically regulated to provide a constant relative humidity of either the process air or space condition.

The reactivation heater shall respond to a proportional signal from the dehumidifier control to modulate the capacity. The process and reactivation air blowers operate continuously while the controller proportionally regulates the reactivation heater to maintain the setpoint value.

Control Sensors:

Select one of the following control sensors:

Duct Mounted Humidistat: (Shipped loose)

A humidistat shall be provided as an option for field installation in the process air inlet duct when the D-Stat II® control scheme is selected. The humidistat shall be equipped with a mechanically operated dry contact to open or close for cycling the dehumidifier as required. The humidistat shall include clearly marked terminals for connection of a control interconnect cable.



Operating Conditions:

Sensor control range: **30 to 90% RH**
Ambient range: **40 to 125°F**
Switching Differential: **5% RH**

Wall Mounted Humidistat:

A wall mounted humidistat shall be provided as a field installed option when the D-Stat® or D-Stat II® control scheme is selected. The humidistat shall be equipped with a mechanically operated dry contact to open or close for cycling the dehumidifier as required. The wall mounted humidistat shall be adjustable and shall include clearly

marked terminals for connection of a control interconnect cable.



Operating Conditions:

Sensor control range: **30 to 90% RH**
Ambient range: **40 to 125°F**
Switching Differential: **5% RH**

Duct Mounted RH Sensor/Transmitter: (Shipped loose)

A relative humidity sensor/transmitter shall be provided as an option for field installation in the conditioned air inlet or outlet ducts when the H-Trac® control scheme is selected. The sensor/transmitter shall be loop powered from the dehumidifier unit. The humidity sensor/transmitter shall include clearly marked terminals for connection of a control interconnect cable



Operating Conditions:

Sensor control range: **5 to 95% RH**
Ambient range: **-40 to 120°F**
Control range: **+/-2% RH**

Wall Mounted RH Sensor/Transmitter:

A wall mounted relative humidity sensor/transmitter shall be provided as a field installed option when the H-Trac® control scheme is

Guide Specifications - Optional Features

selected. The sensor/transmitter shall be loop powered from the dehumidifier unit. The wall mounted RH sensor/transmitter shall include clearly marked terminals for connection of a control interconnect cable.



Operating Conditions:
Sensor control range: **5 to 95% RH**
Ambient range: **-40 to 120°F**
Control range: **+/-2% RH**

Customer Interface Terminals

A customer interface terminal block shall be factory installed in the control enclosure. The terminal block shall have clearly marked positions for all field installed control wire connections. The terminal block labels shall cross reference to labeling on an electrical drawing supplied by the manufacturer. Terminal positions for customer interface wiring shall be available for all remote control interface and status monitoring options.

Process Blower Interlock Contact:

A dry contact switch shall be provided to indicate the process blower operation. The dry contact closes when the process blower is turned on. It can be used to indicate unit operating status or to start and stop auxiliary equipment such as a circulating fan.

Remote Start/Stop Contact:

An operating circuit shall be provided with interface terminal positions to connect a customer furnished switching control device.

It shall be used to start and stop the unit when the unit selector switch is in the Auto position.

Solid State Controllers

A user friendly solid state controller shall be provided that offers precision humidity management. The controller shall be protected in a weather resistant enclosure which is factory installed on the dehumidifier cabinet. It shall be capable of operating the capacity control method as specified. The controller shall offer the functions and features based on the specified requirements of the project.

Select one of the following types of controllers based on the conformance rating required by the project:

Controller for Non-NRTL Labeled Dehumidifiers:

A Dry-Tech controller shall be provided. The controller shall be factory configured to utilize one of the following control methods to regulate the system capacity:

*D-Stat®
D-Stat II®*

The controller shall be capable of monitoring and annunciating system status and fault conditions as listed below:

- Process Blower On
- Reactivation Blower On
- Reactivation Heater On
- Software Running
- Summary Fault
- D-Stat Control Sensor Signal
- Remote Start On
- Process Air Proving Fault
- Reactivation Air Proving Fault
- Rotor Rotation Fault
- Dirty Process Air Filter (optional)
- Dirty React. Air filter (optional)
- High Reactivation Temperature
- Low Reactivation Temperature

Controller for NRTL Labeled Dehumidifiers:

A controller shall be provided for units requiring NRTL labeling. The controller shall be factory configured to utilize one of the following control methods to regulate the system capacity:

*D-Stat®
D-Stat II®
H-Trac®*

Summary Fault Detection Package

(For NRTL labeled dehumidifiers)
An optional summary fault detection package shall be offered for dehumidifiers requiring NRTL labeling. The summary fault detection package shall consist of a summary fault dry contact relay and extra fault status indicator lights mounted on the control panel in addition to the high reactivation temperature fault light.

Summary Fault Dry Contact Relay:

A dry contact relay shall be provided with customer interface terminals for indicating a summary fault condition. The relay contacts shall be configurable to operate as normally open or as normally closed. The relay contacts shall actuate in conjunction with the illumination of a control panel fault indicator light if a monitored fault condition occurs. Monitored fault conditions shall include overheat fault, rotor rotation fault, a fault with the process blower motor or the reactivation blower motor.

Note: A summary fault contact is provided as standard with Dry-Tech controllers.

Guide Specifications - Optional Features

Fault Lights:

Additional fault status indicator lights shall be provided on the dehumidifier control panel when the Summary Fault Detection Package is selected. The illumination of a fault light shall occur in conjunction with the actuation of the summary fault relay contact.

Rotor Rotation Fault Light:

Illuminates red if the rotor has not made a complete revolution within a specified period of time.

Motor Fault Light:

Illuminates red if there is a fault with the process blower motor or reactivation blower motor.

Status Monitoring Contacts

Optional dry status switch contacts shall be offered for remote monitoring of key operating conditions. The status contacts shall actuate in conjunction with assigned status indicator lights or LED's as applicable. Customer interface terminal positions for the dry contacts shall be located inside the control enclosure.

Process Air Proving Contact:

A dry contact, air proving switch shall be provided to indicate a process airflow fault condition. The dry contact shall close when the process air proving switch has detected sufficient airflow. The dry contact shall return to its normal (open) position if a loss of process airflow is detected.

Reactivation Air Proving Contact:

A dry contact, air proving switch shall be provided to indicate a reactivation airflow fault condition. The dry contact shall close when

the reactivation air proving switch has detected sufficient airflow. The dry contact shall return to its normal (open) position if a loss of reactivation airflow is detected.

Dirty Filter Indication Contact:

A dry contact relay shall be provided to indicate a dirty filter condition. The dry contact shall close when the differential pressure across the process or reactivation air filter has reached a predetermined value indicating that the filter should be changed.

Safety Features

Emergency Stop Switch:



An emergency stop switch shall be provided on the door of the control enclosure. The emergency stop switch shall disconnect control power from the unit contactors causing them to open to cease unit operation. The emergency stop switch shall be operated by means of a red colored, push button actuator. The emergency stop switch must be manually reset to enable the dehumidifier to resume normal operation.

Voltage Sensor:

(Single Phase)

A voltage sensor shall be provided to protect the unit motors when single phase operation is selected. The voltage sensor shall interrupt control power in the event of low supply line voltage. The voltage sensor shall automatically reset when the fault condition is corrected.

Phase/Voltage Monitor:

(Three Phase)

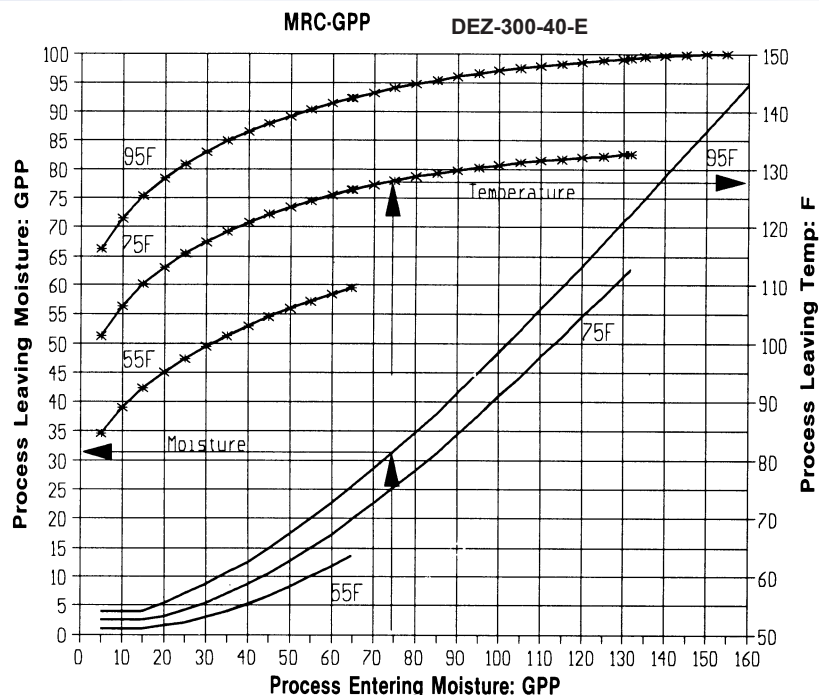
A phase monitor shall be provided to protect the unit motors when three phase power is selected. The phase monitor will interrupt control power in the event of an incorrect phase sequence, loss of a phase or a voltage unbalance. The phase/voltage sensor shall automatically reset when the fault condition is corrected.

Product Warranty

Stulz Air Technology System, Inc. (SATS), warrants to the original buyer of its products that the goods are free from defects in material and workmanship. SATS obligation under this warranty is to repair or replace, at its option, free of charge to the customer, any part or parts which are determined by SATS to be defective for a period of 24 months from date of shipment when a completed start-up form has been submitted to SATS within 90 days from shipment. In the event that a completed start-up form is not received by SATS within 90 days from shipment, the company's obligation will be for a period of 12 months from date of shipment. Parts replaced under -warranty are warranted for a period of 90 days from shipment or for the remainder of the Standard 1-year warranty period, whichever is greater.

SATS warranty does not cover failures caused by improper installation, abuse, misuse, misapplication, improper or lack of maintenance, negligence, accident, normal deterioration (including wear and tear), or the use of improper parts or improper repair. Purchaser's remedies are limited to replacement or repair of non-conforming materials in accordance with the written warranty. This warranty does not include costs for transportation, costs for removal or reinstallation of equipment or labor for repairs or replacement made in the field. If any sample was shown to the buyer, such sample was used merely to illustrate the general type and quality of the product, and not to represent that the equipment would necessarily conform to the sample. This is the only warranty given by the seller, and such warranty is only given to buyers for commercial or industrial purposes. This warranty is not enforceable until the invoice(s) is paid in full.

Performance Curves - DEZ-300-40-E



Moisture Removal Capacity

Grains Per Pound (GPP)

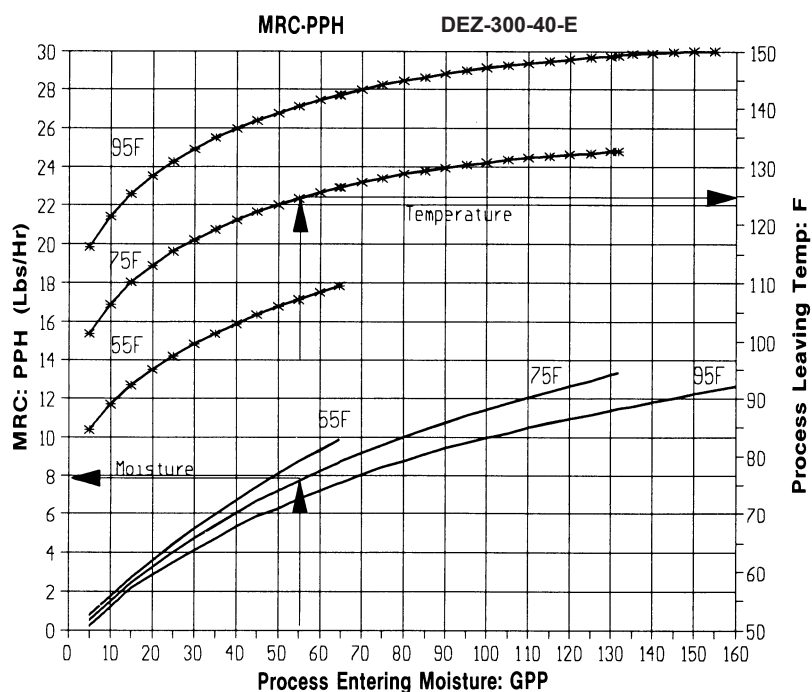
1. Find the correct "Process Entering Moisture" (humidity) value in grains per pound (GPP) on the x-axis of the MRC-GPP performance graph.
2. Move vertically in a straight line to intersect the curve (lower set) closest to the entering air temperature. Interpolate as required.
3. Move horizontally to the left and intersect the scale marked "Process Leaving Moisture". The value at this point represents the moisture/humidity leaving the dehumidifier in grains per pound.

Process Leaving Temperature

1. Find the correct process "Process Entering Moisture" (humidity) value in grains per pound (GPP) on the x-axis of either performance graph.
2. Move vertically in a straight line to intersect the curve (upper set) closest to the entering air temperature.
3. Move horizontally to the right and intersect the scale marked "Process Leaving Temp". The value at this point represents the air temperature leaving the dehumidifier in °F.

Note:

Process air leaving temperatures as shown are at maximum values at standard full rated heater output. The actual leaving temperature will be lower whenever the heater output is below full rated output. The condition will occur during heater modulation cycles due to partial loading of the dehumidifier.

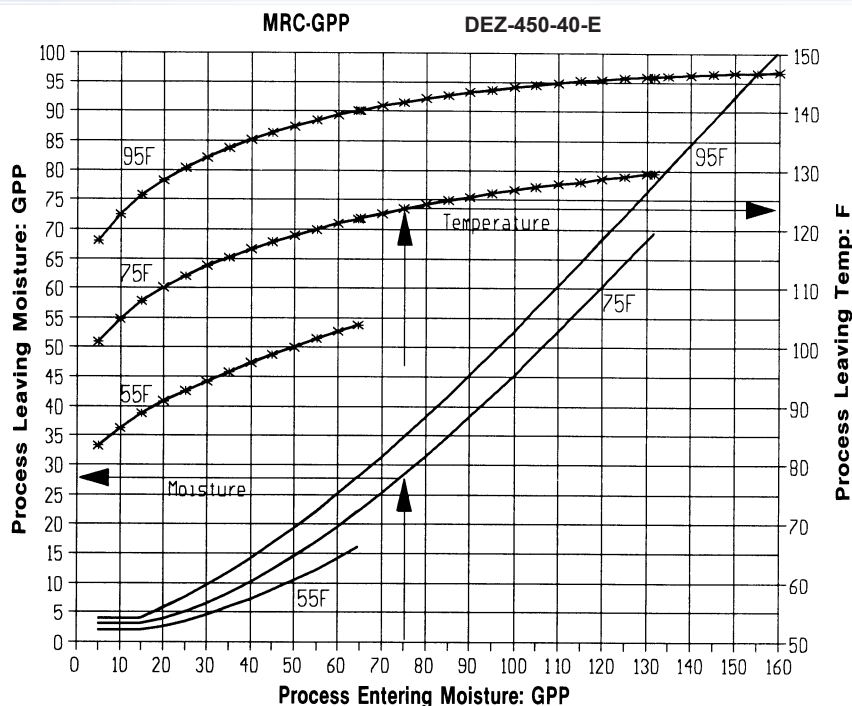


Moisture Removal Capacity

Pounds Per Hour (PPH)

1. Find the correct "Process Entering Moisture" (humidity) value in grains per pound (GPP) on the x-axis of the MRC-PPH performance graph.
2. Move vertically in a straight line to intersect the curve (lower set) closest to the entering air temperature. Interpolate as required.
3. Move horizontally to the left and intersect the scale marked "MRC: PPH (Lbs/Hr)". The value at this point represents the moisture removal capacity of the dehumidifier in pounds per hour (PPH).

Performance Curves - DEZ-450-40-E



Moisture Removal Capacity

Grains Per Pound (GPP)

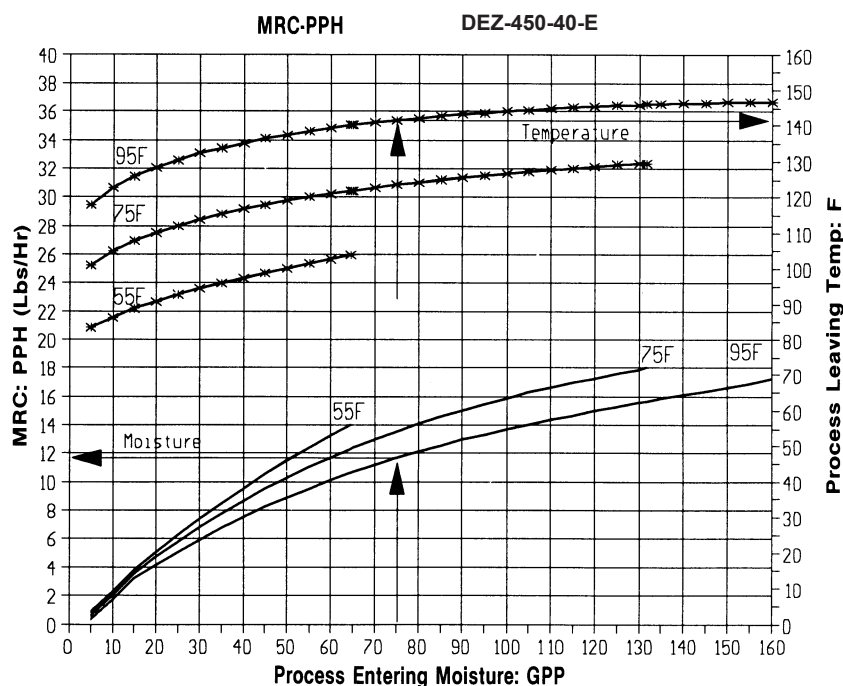
1. Find the correct "Process Entering Moisture" (humidity) value in grains per pound (GPP) on the x-axis of the MRC-GPP performance graph.
2. Move vertically in a straight line to intersect the curve (lower set) closest to the entering air temperature. Interpolate as required.
3. Move horizontally to the left and intersect the scale marked "Process Leaving Moisture". The value at this point represents the moisture/humidity leaving the dehumidifier in grains per pound.

Process Leaving Temperature

1. Find the correct process "Process Entering Moisture" (humidity) value in grains per pound (GPP) on the x-axis of either performance graph.
2. Move vertically in a straight line to intersect the curve (upper set) closest to the entering air temperature.
3. Move horizontally to the right and intersect the scale marked "Process Leaving Temp". The value at this point represents the air temperature leaving the dehumidifier in °F.

Note:

Process air leaving temperatures as shown are at maximum values at standard full rated heater output. The actual leaving temperature will be lower whenever the heater output is below full rated output. The condition will occur during heater modulation cycles due to partial loading of the dehumidifier.

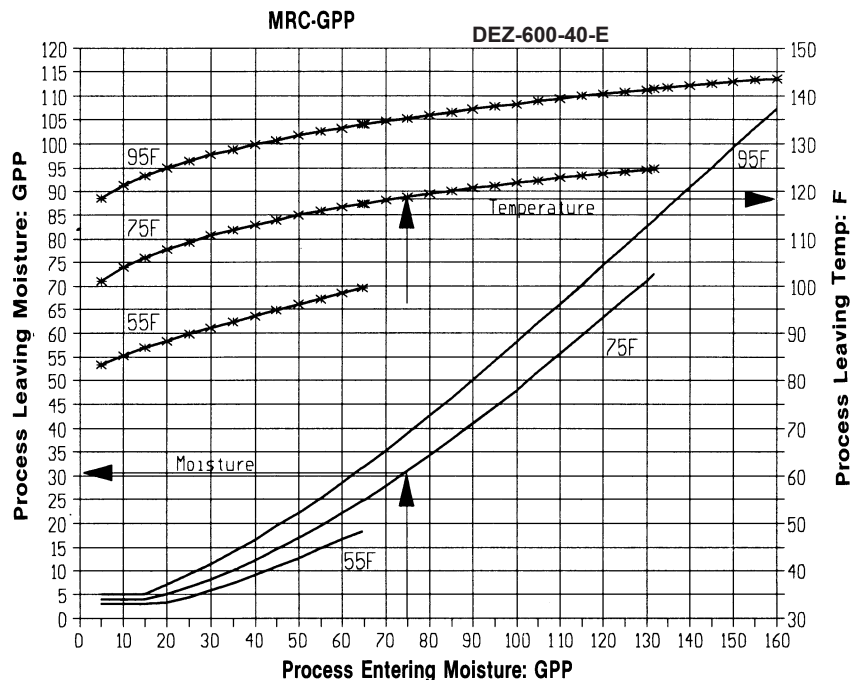


Moisture Removal Capacity

Pounds Per Hour (PPH)

1. Find the correct "Process Entering Moisture" (humidity) value in grains per pound (GPP) on the x-axis of the MRC-PPH performance graph.
2. Move vertically in a straight line to intersect the curve (lower set) closest to the entering air temperature. Interpolate as required.
3. Move horizontally to the left and intersect the scale marked "MRC: PPH (Lbs/Hr)". The value at this point represents the moisture removal capacity of the dehumidifier in pounds per hour (PPH).

Performance Curves - DEZ-600-40-E



Moisture Removal Capacity

Grains Per Pound (GPP)

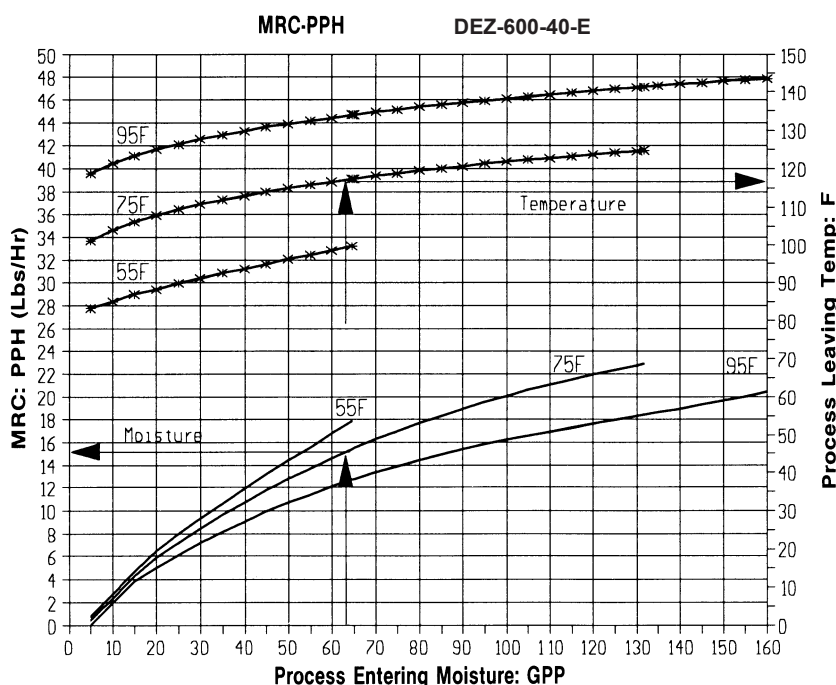
1. Find the correct "Process Entering Moisture" (humidity) value in grains per pound (GPP) on the x-axis of the MRC-GPP performance graph.
2. Move vertically in a straight line to intersect the curve (lower set) closest to the entering air temperature. Interpolate as required.
3. Move horizontally to the left and intersect the scale marked "Process Leaving Moisture". The value at this point represents the moisture/humidity leaving the dehumidifier in grains per pound.

Process Leaving Temperature

1. Find the correct process "Process Entering Moisture" (humidity) value in grains per pound (GPP) on the x-axis of either performance graph.
2. Move vertically in a straight line to intersect the curve (upper set) closest to the entering air temperature.
3. Move horizontally to the right and intersect the scale marked "Process Leaving Temp". The value at this point represents the air temperature leaving the dehumidifier in °F.

Note:

Process air leaving temperatures as shown are at maximum values at standard full rated heater output. The actual leaving temperature will be lower whenever the heater output is below full rated output. The condition will occur during heater modulation cycles due to partial loading of the dehumidifier.



Moisture Removal Capacity

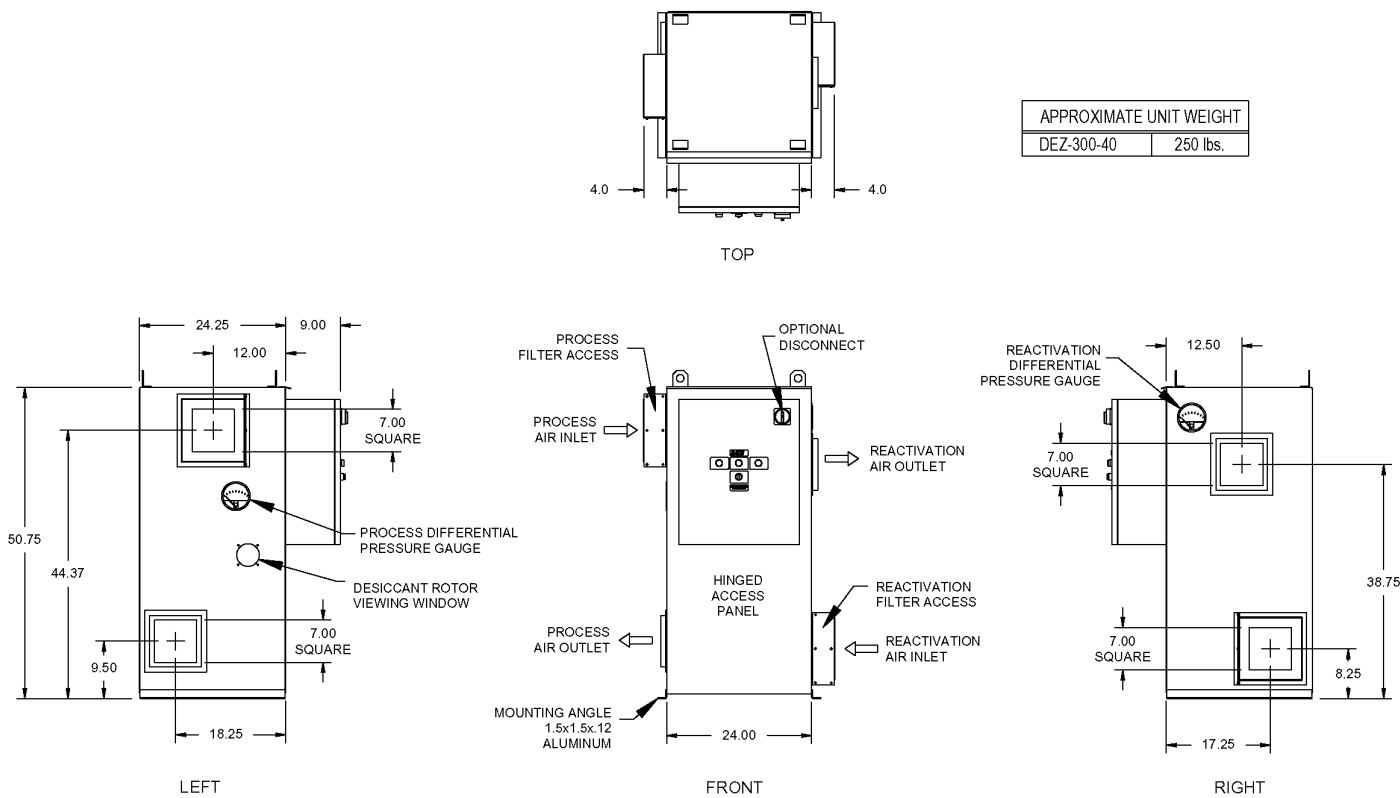
Pounds Per Hour (PPH)

1. Find the correct "Process Entering Moisture" (humidity) value in grains per pound (GPP) on the x-axis of the MRC-PPH performance graph.
2. Move vertically in a straight line to intersect the curve (lower set) closest to the entering air temperature. Interpolate as required.
3. Move horizontally to the left and intersect the scale marked "MRC: PPH (Lbs/Hr)". The value at this point represents the moisture removal capacity of the dehumidifier in pounds per hour (PPH).

Dimensional Data - DEZ-300-40-E

DEZ-300-40-E - TYPICAL CONFIGURATION

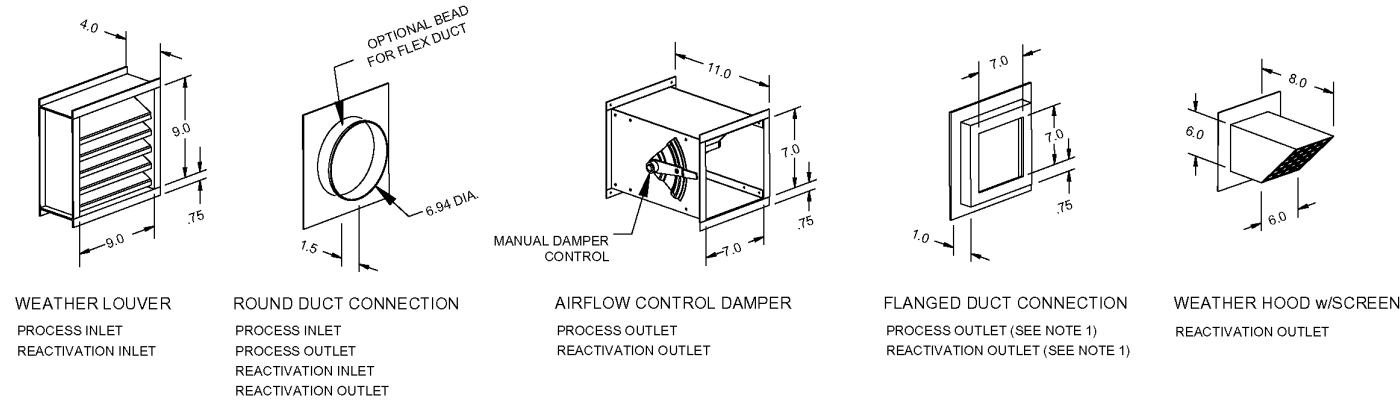
(FLANGED INLETS, FLANGED OUTLETS, INTERNAL SLIDEGATE FOR REACTIVATION AIRFLOW CONTROL, NO PROCESS AIRFLOW CONTROL DAMPER)



APPROXIMATE UNIT WEIGHT	
DEZ-300-40	250 lbs.

ALL DIMENSIONS ARE IN INCHES

DEZ-300-40-E - INLET & OUTLET OPTIONS



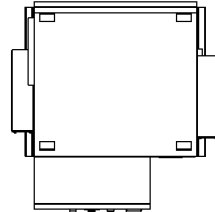
ALL DIMENSIONS ARE IN INCHES

- NOTES:
- (1) ALL OUTLET OPTIONS, EXCEPT THE FLANGED DUCT CONNECTION, CAN BE USED IN ADDITION TO THE EXTERNAL DAMPER OPTIONS. OUTLET FLANGE DUCT CONNECTIONS ARE ONLY USED WHEN NO OTHER OUTLET OPTION IS SELECTED.
- (2) ALL INLET OPTIONS MOUNT CENTERED ON THE RESPECTIVE FILTER BOX.

Dimensional Data - DEZ-450/600-40-E

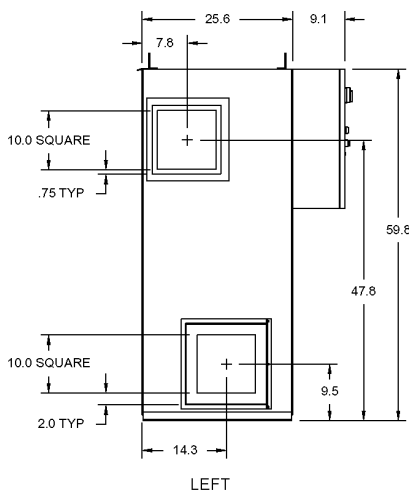
DEZ-450/600-40-E - TYPICAL CONFIGURATION

(FLANGED INLETS, FLANGED OUTLETS, INTERNAL SLIDE GATE FOR REACTIVATION AIRFLOW CONTROL, NO PROCESS AIRFLOW CONTROL DAMPER)

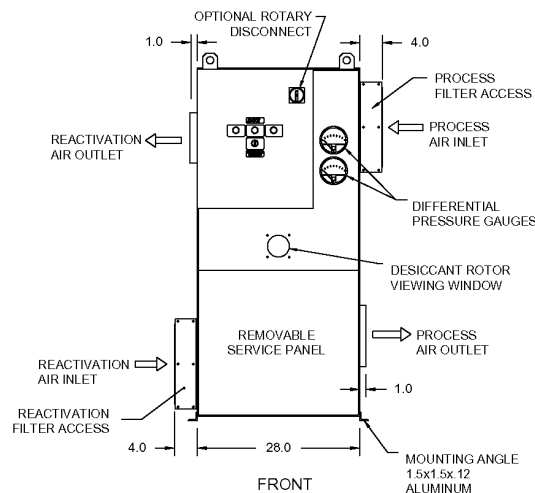


TOP

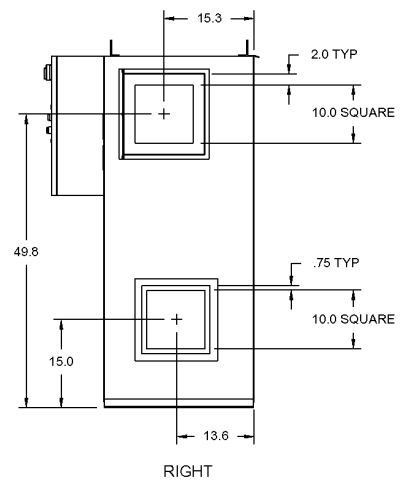
APPROXIMATE UNIT WEIGHT	
DEZ-450/600-40	330 lbs.



LEFT



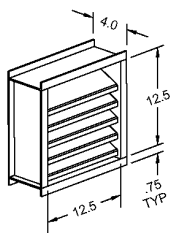
FRONT



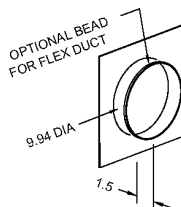
RIGHT

ALL DIMENSIONS ARE IN INCHES

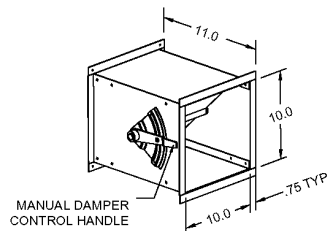
DEZ-450/600-40 - INLET & OUTLET OPTIONS



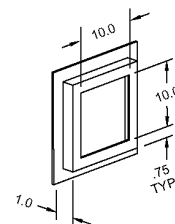
WEATHER LOUVER
PROCESS INLET
REACTIVATION INLET



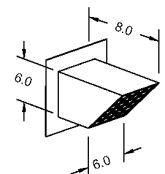
ROUND DUCT CONNECTION
PROCESS INLET
PROCESS OUTLET
REACTIVATION INLET
REACTIVATION OUTLET



AIRFLOW CONTROL DAMPER
PROCESS OUTLET
REACTIVATION OUTLET



FLANGED DUCT CONNECTION
PROCESS OUTLET (SEE NOTE 1)
REACTIVATION OUTLET (SEE NOTE 1)



WEATHER HOOD w/SCREEN
REACTIVATION OUTLET

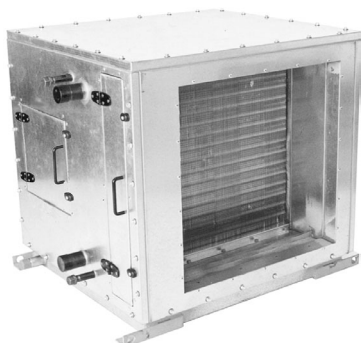
ALL DIMENSIONS ARE IN INCHES

NOTES:

- (1) ALL OUTLET OPTIONS, EXCEPT THE FLANGED DUCT CONNECTION, CAN BE USED IN ADDITION TO THE EXTERNAL DAMPER OPTIONS. OUTLET FLANGE DUCT CONNECTIONS ARE ONLY USED WHEN NO OTHER OUTLET OPTION IS SELECTED.
- (2) ALL INLET OPTIONS MOUNT CENTERED ON THE RESPECTIVE FILTER BOX.

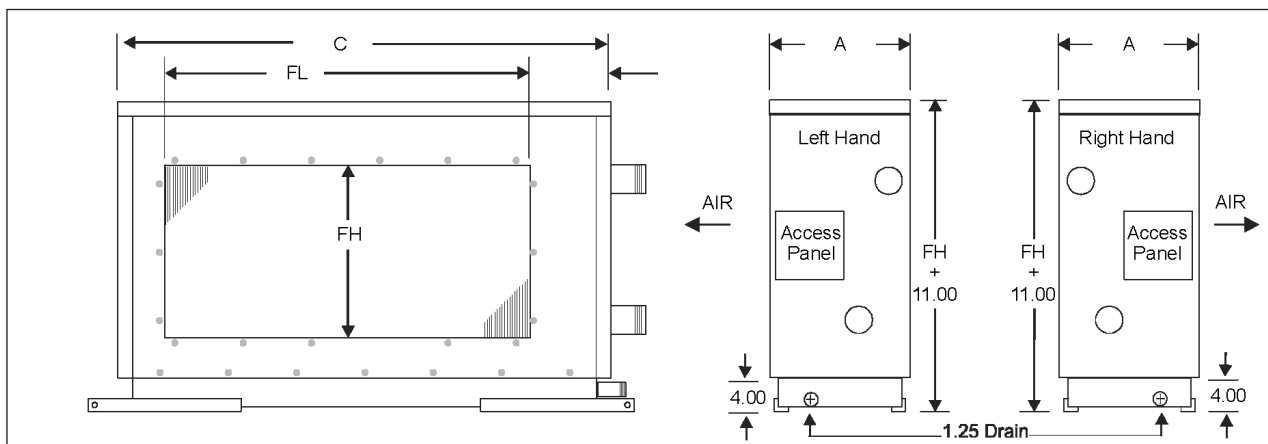
Duct Mounted Accessories

SATS offers duct mounted accessories for further conditioning the process air. Some applications may require control of temperature conditions as well as relative humidity levels. Duct mounted accessories are matched to the customer's requirements for temperature conditioning the supply air and then integrated with the dehumidification system. Duct mounted accessories may be controlled by the DESICAiR® dehumidifier controller or by an external control system.



A Modular Auxiliary Removable Coil (MARC) unit can be furnished in the return air stream or the process air stream as needed for your application. A MARC cased coil unit holds cooling coils and/or heating coils for pre or post cooling/heating the process air. It replaces coil sections in existing air handlers and is well suited for applications in tight spaces or where modular construction is required.

MARC unit cabinets may be constructed with either 16 gauge galvanized steel or 304 stainless steel. Double wall construction is available as an option. A convenient access panel is provided for easy coil removal. The coils are constructed using a variety of optional materials making them suitable for any application. Tubing is provided in copper, cupronickel, stainless steel, carbon steel or admiralty brass depending on the needs of the application. A stainless steel drain pan is included for the collection of condensation. Contact your SATS DESICAiR® sales representative for information on including this option with your dehumidification system.



STANDARD MATERIALS OF CONSTRUCTION	
Cabinet	0.058" Galvanized Steel
Base	0.138" Galvanized Steel
Drain Pan	0.060" Stainless Steel
Drain	Sch. 40 Stainless Steel
Insulation	0.75" x 1.50" Density
Lifting Lugs	0.25" x 1.50" x 2.00" Angle Iron

OPTIONAL FEATURES	
Casing Material - 16 Gauge Galv. or 304 St. Steel	
Cabinet - Single or Double Wall Construction	
Internal Filter Rack w/ hinged access door	
Split Back Panel For Coil Removal	
External Vent & Extended Drain	



SALES

Globally close to you.

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