STULZ

CLIMATE. CUSTOMIZED.



CyberPack

Engineering Manual
42 - 105 kW

Our Mission:

Driving innovation in our industry, providing highest quality environmental control products, superior technology, customer solutions and exceptional customer service while being a socially and environmentally responsible and ethical company.

STULZ is dedicated to providing innovative solutions for critical temperature and humidity control needs. STULZ designs and manufactures specialized, energy effi cient, environmental control equipment. STULZ serves a diverse marketplace; our customers represent a variety of industries including telecommunications, information technology, medical, fi nancial, educational, industrial process and government. Our world-class "island" manufacturing processes take place in a

modern, 218,000 ft^2 facility located in Frederick, MD USA. STULZ 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.

This commitment to excellence, along with fast lead times and outstanding customer service, make STULZ the perfect choice for all your environmental control needs.

Solutions that help you reach your goals.

Precision Air Conditioning

- Ceiling, Row & Floor Mounted from 1-200 tons
- Air, Water, Glycol, Chilled Water
- Free Cooling
- Alternate Water Source

Ultrasonic Humidifiers

- Duct, AHU, Wall Mounted & Stand-alone
- Clean, Energy Efficient
- Evaporative Cooling

ISO-9001 Quality Registered

STULZ is committed to satisfying customer expectations by meeting and exceeding requirements. Our Quality Policy ensures that every Employee is committed to Customer Satisfaction, Teamwork and utilizing Continuous Process Improvement methods in order to deliver an exceptional product. We continually measure our performance to improve the effectiveness of our quality management system.

STULZ *CyberPack* packaged rooftop air conditioning units provide precision temperature and humidity control for mission critical areas where continuous 24 hours per day, 365 days per year operation is required. Designed for continuous operation, ***CyberPack*** systems are self contained, direct expansion cooling units. The units are designed with a range of options to handle both precision and comfort cooling applications.

Typical applications include:

INDUSTRIES:

- Internet / Web Hosting
- Telecommunications
- Financial / Banking
- Insurance
- Airlines / Mass Transit
- Legal Services
- Entertainment
- Government
- Colleges / Universities

APPLICATIONS:

- Data Centers
- Computer / LAN Rooms
- Telecommunications Rooms
- Co-location Centers
- ISP (Internet Service Providers)
- ASP (Applications Service Providers)

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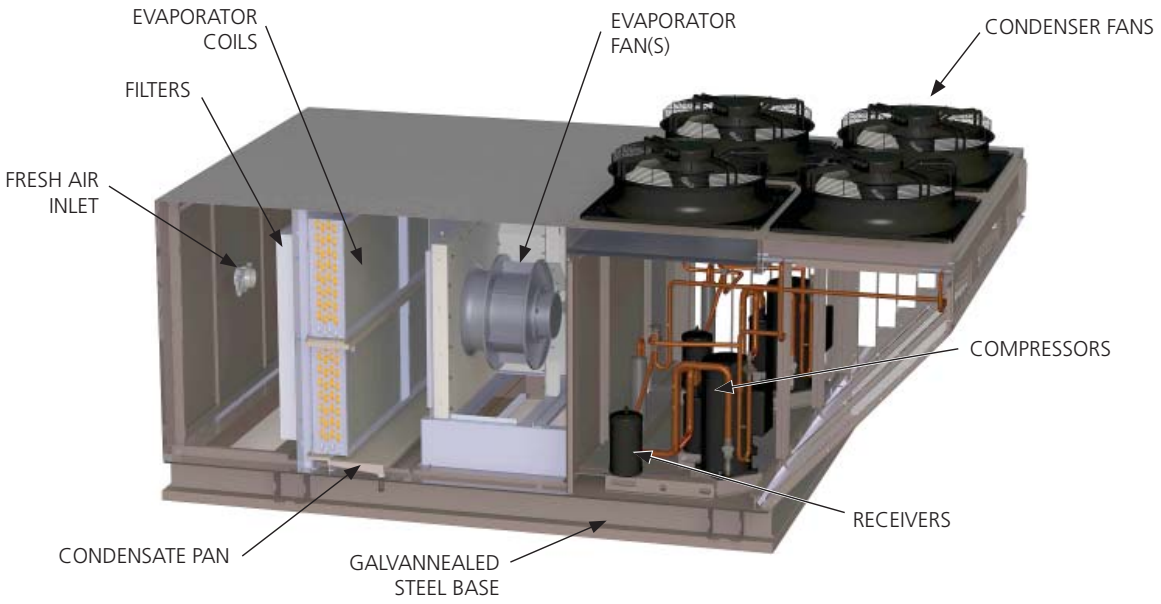
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CyberPack Interior View
(Model ASC-30A-DX shown)

Model Nomenclature

ASC - 15C - DX

ASC = Packaged DX System

Nominal Capacity

12 = Nominal 12 tons
13 = Nominal 13 tons
15 = Nominal 15 tons
20 = Nominal 20 tons
25 = Nominal 25 tons
30 = Nominal 30 tons

Cabinet Size

A = Nominal 20 - 30 tons
C = Nominal 12 - 15 tons

Primary Cooling Method

DX = Direct Expansion

STULZ ***CyberPack*** systems are designed to be the solution to your precision air conditioning requirements. CyberPack systems are available with up to 105 kW cooling capacity with up to 12,000 CFM nominal airflow. CyberPack direct expansion refrigerant systems utilize multiple independent refrigerant circuits, each packaged with an air-cooled condensing unit as the primary cooling source. CyberPack units are also available with optional air-side economizer cooling. STULZ *E²* series controller stages refrigerant circuits and/or dampers and manages fan speed, as needed, to precisely control temperature and humidity with the lowest energy usage. Efficiently designed for convenient service access, CyberPack self-contained systems can be easily installed on the roof of the space to be conditioned.



CyberPack
(Model ASC-30A-DX shown)

Packaged Rooftop Air Conditioner CyberPack Systems Product Design Features and Options

Standard Design Features

- Heavy-duty Welded Aluminum Cabinet with 1" Acoustical/Thermal Insulation
- Factory Assembled, Self-contained on Galvannealed Steel Skid Base
- Adjustable Fresh Air Inlet
- Horizontal-flow Air Pattern with Bottom Supply and Return
- Hinged Access Doors on Front of Cabinet
- Louvered Access Panels For Refrigeration Components
- Highly Efficient EC (Electronically Commutated) Fans
- Two Independent Cooling Circuits with Highly Reliable Scroll Compressors
- Environmentally Friendly R410A Refrigerant
- Ambient Operation to -30°F with Flooded Head Pressure Control
- Refrigerant Circuits Fully Charged and Tested Before Shipment
- Fully Integrated STULZ *E²* Series System Controller with Operator Interface Display
- Functional Operations: Cooling, Dehumidification and Filtration
- 4" Thick, MERV 8 Cartridge Air Filters
- Main Power, Non-Fused Disconnect Switch
- Modular Motor Controllers (with Motor Circuit Breakers)
- Supply and Return Temperature & Humidity Sensors

Available Options

- Direct Air-Side Economizer with Outside Air Sensor (Exhaust Relief by Others)
- MERV 11, 14 Filtration
- Power Usage Meter
- Firestat
- Smoke Detector
- Spot Type Water Leak Detector(s)
- Utility Outlet Receptacle
- Snap Acting Hot Gas Bypass
- Electric Reheat
- Remote BMS Communications
- Factory Start-up with 2-Year Parts Warranty
- Extended Warranty Options Available On Unit and Compressors

24/7 Year Round Operation

CyberPack systems are designed for year-round, 24 hrs-a-day A/C operation in extreme environmental conditions.

Quiet Operation

Low noise scroll compressors coupled with EC fans and acoustically lined cabinets provide quiet operation.

Non-Proprietary Parts

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

Rugged Design

CyberPack systems are constructed with a welded, corrosion resistant aluminum cabinet on a galvannealed steel mounting base. The exterior of the cabinet and base are coated with a durable powder coat finish to further protect against corrosion. The interior of the cabinet is lined with 1" elastomeric foam to reduce noise and minimize thermal losses.

Hinged access doors with positive latching handles are provided on the front for easy access to filters and electrical components. Operator controls are conveniently located inside the electric box and are accessed from the front. The compressors, receivers and condensers are isolated from the interior of the cabinet and are easily accessed behind removable louvered panels that protect the components from direct sun and allow air flow.

Electronically Commutated (EC) Fans

Maintenance free, highly reliable EC (Electronically Commutated) Fans offer considerable cost savings and long life. Direct drive EC Fans do not use drive belts so belt abrasion dust is eliminated, as is routine belt maintenance.

Fan speed is variable and continuously adjusted via a signal from the system controller without the use of Variable Frequency Drives (VFD). EC Fans offer clean, energy efficient, quiet and low vibration operation.

Modular Motor Controllers

CyberPack systems incorporate modular motor controllers with motor circuit breakers in lieu of replaceable fuses, eliminating the need for motor fusing.

CyberPack

Air Filtration

CyberPack systems include high efficiency, disposable fi lters which are easily accessed through a hinged access door on the front of the cabinet. MERV 8 filters are provided as standard. Optional MERV 11 or MERV 14 rated fi lters, offering higher levels of air fi ltration, are available.

Dual Refrigeration Circuits

CyberPack systems incorporate scroll compressor technology. Dual compressors are staged for highly energy effi cient system operation. The refrigerant circuits include fl ooded head pressure control and a receiver is provided for each circuit. Evaporator coils are equipped with a stainless steel condensate pan which drains outside of the cabinet.

No refrigerant piping in the fi eld is required. CyberPack systems are piped, fully charged and tested at the factory before shipment.

Scroll Compressors

Highly reliable scroll compressors are utilized in CyberPack systems. With fewer moving parts, scroll compressors have demonstrated superior durability. Scroll compressors provide higher effi ciency, higher reliability and quieter operation than other compressor technologies.

Air Cooled Condensers

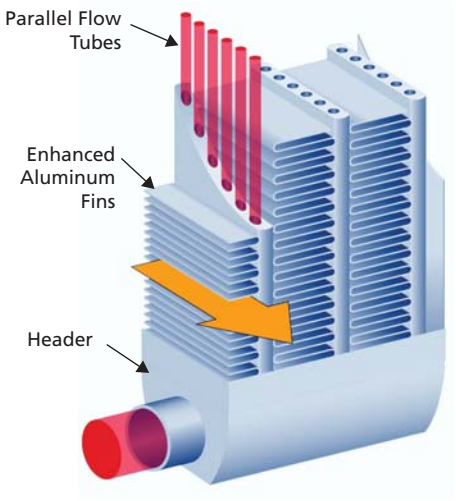
The integrally mounted air cooled condensers are high efficiency state-of-the-art condensers utilizing microchannel coils for greater total heat rejection. A condensing unit for each refrigeration circuit is located at the end of the cabinet. Microchannel coils in the condensing units are all-aluminum construction with microchannel fins.

The condensing units are equipped with high efficiency EC axial fans. The fans utilize corrosion resistant, multi-blade impellers designed for high aerodynamic efficiency, which results in lower power consumption, lower noise levels and longer life.

Microchannel Condenser Coils

Microchannel coils are constructed of brazed aluminum high performance fi ns to provide low air-side pressure drop and high heat transfer. Microchannel condenser coils provide the same heat rejection as standard condenser coils, but with a smaller footprint and require less refrigerant. In general, Microchannel air cooled condensers provide the same heat rejection as a standard condenser, but with up to:

- 20% less refrigerant
- 40% smaller footprint
- 50% lighter weight



Microchannel Design

Microprocessor Control

CyberPack systems utilize the highly versatile and flexible STULZ *E²* series controls for precision temperature and/or humidity control. Designed primarily for STULZ precision air conditioners, STULZ *E²* Controllers offer a wide range of expanded control functions and alarms.

The STULZ *E²* Controller features a "menu-driven" operating environment to allow system setup and operation via an easy to read user interface display panel which is typically mounted inside the electrical enclosure.

Power Usage Meter (Optional)

A power meter is used to monitor real-time power consumption data. A display screen may be called up in the *E²* controller user interface to view the data. The power consumption data may also be viewed via a BMS interface to the controller.

Product Features Index - Packaged Rooftop Air Conditioner

Model	ASC-12C/13C/15C	ASC-20A/25A/30A
SELECTED FEATURES		
CONTROLS		
2-Stage Cooling Mode	Standard	Standard
Air-Side Economizer (Exhaust by Others)	Optional	Optional
Microprocessor with Backlit LCD User Interface	Standard	Standard
BMS Interface	Optional	Optional
CABINET		
Aluminum Construction, Powder Coated Finish	Standard	Standard
Stainless Steel Condensate Drain Pan	Standard	Standard
1" Thick, R4.2 Rated Thermal & Sound Insulation	Standard	Standard
FILTERS		
4", MERV 8 Rated Pleated Filters	Standard	Standard
4", MERV 11 Rated Pleated Filters	Optional	Optional
4", MERV 14 Rated Pleated Filters	Optional	Optional
DX REFRIGERATION CIRCUITS		
R410A Refrigerant	Standard	Standard
Dual Scroll Compressors with Rotalock Service Valves	Standard	Standard
High Efficiency Aluminum Fin/ Copper Tube Coils	Standard	Standard
Refrigerant Sight Glasses & Filter/ Drier Strainers	Standard	Standard
AIR COOLED CONDENSER		
Microchannel Coils	Standard	Standard
Flooded Head Pressure Control with Receivers Rated Down to -30°F Ambient	Standard	Standard
Axial Fans with EC Motors	Standard	Standard
SUPPLY FANS / MOTORS		
Backward Inclined, Plenum Style Fan, With an EC Motor	Standard	Standard
ELECTRICAL		
3-Phase Power Supply	-- See Electrical Table --	
Multi-Voltage Control Transformer (24V Class 2)	Standard	Standard
Modular Motor Controllers with Integral Circuit Breakers	Standard	Standard
Power Usage Meter	Optional	Optional
Utility Receptacle	Optional	Optional
SAFETY FEATURES		
Local & Remote Alarms	Standard	Standard
Main Power Non-Fused Disconnect Switch, Unit Mounted	Standard	Standard
High/ Low Refrigerant Pressure Switches	Standard	Standard
Motor Overload Protection	Standard	Standard
Smoke Detection	Optional	Optional
Firestat	Optional	Optional
Water Detector: Spot Type	Optional	Optional
Water Detector: Dual Spot Type	Optional	Optional
Water Detector: Strip Type	Optional	Optional

Technical Specifications and Electrical Data - CyberPack

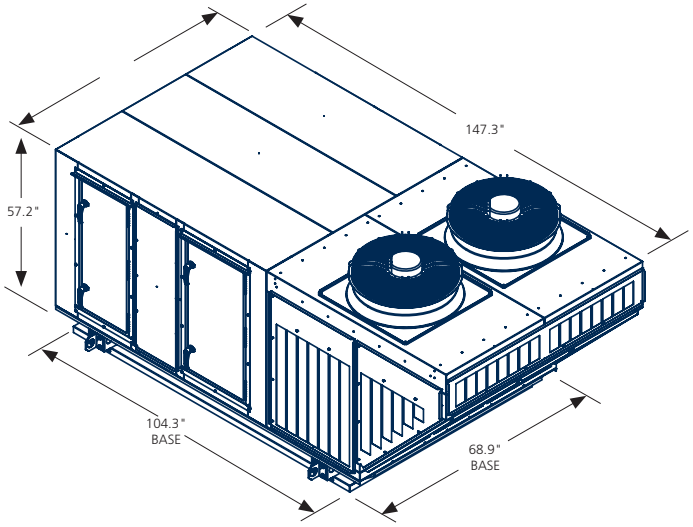
Model: ASC	12C-DX	13C-DX	15C-DX	20A-DX	25A-DX	30A-DX
NET DX COOLING CAPACITY BASED ON 95°F AMBIENT CONDITIONS (Includes Motor Heat @ Rated CFM & ESP)						
105°FDB/70.7°FWB, 17% RH, 52°FDP						
Supply Airflow	5,500	6,000	6,000	9,000	12,000	12,000
External Static Pressure (ESP)	0.35	0.35	0.35	0.45	0.45	0.45
Total, kW (MBH)	52.6 (179)	56.6 (193)	60.3 (206)	87.9 (300)	111.0 (379)	120.4 (411)
Sensible kW (MBH)	52.6 (179)	56.6 (193)	60.3 (206)	87.9 (300)	111.0 (379)	120.4 (411)
95°FDB/67.7°FWB, 24% RH, 52°FDP						
Supply Airflow	6,000	6,000	6,000	12,000	12,000	12,000
External Static Pressure (ESP)	0.35	0.35	0.35	0.45	0.45	0.45
Total, kW (MBH)	48.0 (164)	50.7 (173)	54.5 (186)	84.1 (287)	99.6 (340)	108.2 (369)
Sensible kW (MBH)	48.0 (164)	50.7 (173)	54.5 (186)	84.1 (287)	99.6 (340)	108.2 (369)
85°FDB/64.4°FWB, 32% RH, 52°FDP						
Supply Airflow	6,000	6,000	6,000	12,000	12,000	12,000
External Static Pressure (ESP)	0.35	0.35	0.35	0.45	0.45	0.45
Total, kW (MBH)	42.6 (145)	44.9 (153)	48.7 (166)	74.1 (253)	88.5 (302)	96.5 (329)
Sensible kW (MBH)	42.6 (145)	44.9 (153)	48.7 (166)	74.1 (253)	88.5 (302)	96.5 (329)
80°FDB/67°FWB, 51.1% RH, 60°FDP						
Supply Airflow	5,300	5,600	6,000	9,000	11,000	12,000
External Static Pressure (ESP)	0.35	0.35	0.35	0.45	0.45	0.45
Total, kW (MBH)	41.9 (143)	45.0 (154)	49.9 (170)	70.5 (240)	88.5 (302)	98.9 (337)
Sensible kW (MBH)	30.5 (104)	31.5 (108)	32.5 (111)	54.2 (185)	65.3 (223)	68.6 (234)
Calculated EER	12.0	11.5	11.1	11.2	10.6	10.0
Backward Inclined Direct Drive EC Fan						
Nominal Power each Supply Fan, hp	4.2	4.2	4.2	4.2	4.2	4.2
Quantity	1	1	1	2	2	2
Evaporator Coil						
Rows	4	4	4	4	4	4
Face Area	15.6	15.6	15.6	23.8	23.8	23.8
Scroll Compressors						
Number of Scroll Compressors	2	2	2	2	2	2
Condenser Fans						
Nominal Power each Condenser Fan	3.8	3.8	3.8	3.8	3.8	3.8
Quantity	2	2	2	4	4	4
Filter						
Nominal Size (H" x W" x D")	20 x 20 x 4	20 x 20 x 4	20 x 20 x 4	20 x 20 x 4	20 x 20 x 4	20 x 20 x 4
Quantity	6	6	6	8	8	8
Condensate Drain						
in. MPT	3/4 (2)	3/4 (2)	3/4 (2)	3/4 (2)	3/4 (2)	3/4 (2)
Physical Data						
Approximate Unit Dimensions* (L" x W" x H")	147 x 74 x 70	147 x 74 x 70	147 x 74 x 70	150 x 88 x 70	150 x 88 x 70	150 x 88 x 70
Approximate Unit Weight (lbs)	2,150	2,150	2,150	3,100	3,100	3,100

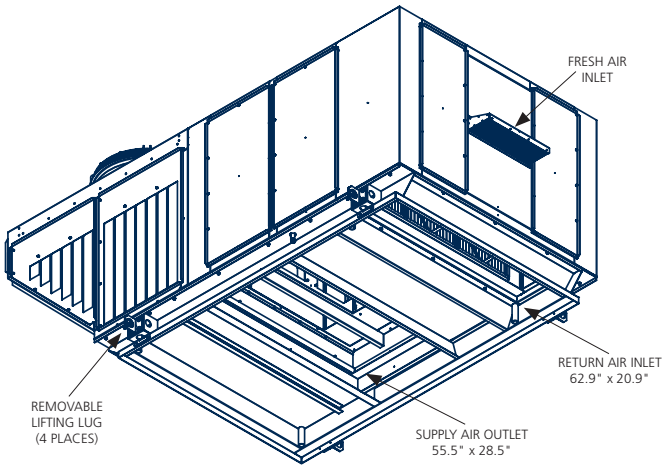
* Unit weight and dimensions do not include economizer option

Model	ASC-12C-DX			ASC-13C-DX			ASC-15C-DX			ASC-20A-DX			ASC-25A-DX			ASC-30A-DX		
	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS	FLA	MCA	MFS
Cooling without Heat																		
208/3/60	Consult Factory			Consult Factory			Consult Factory			Consult Factory			Consult Factory			Consult Factory		
460/3/60	27.6	34.0	40.0	29.6	36.0	45.0	33.8	41.0	50.0	51.2	61.4	70.0	58.2	65.6	80.0	64.4	75.8	90.0
575/3/60	23.0	27.0	30.0	24.2	27.7	35.0	28.4	32.0	40.0	41.6	47.7	50.0	49.0	53.3	60.0	56.0	65.0	80.0
Cooling with 12 kW Heater																		
208/3/60	Consult Factory			Consult Factory			Consult Factory			Consult Factory			Consult Factory			Consult Factory		
460/3/60	42.7	49.1	50.0	44.7	51.1	60.0	48.9	56.1	60.0	66.3	76.4	90.0	73.3	80.7	90.0	79.5	90.8	110.0
575/3/60	35.0	39.1	45.0	36.2	39.7	45.0	40.4	44.0	50.0	53.7	59.7	70.0	61.1	65.3	70.0	68.1	77.0	90.0
Cooling with 24 kW Heater																		
208/3/60	N/A									Consult Factory			Consult Factory			Consult Factory		
460/3/60	N/A									81.3	91.5	100.0	88.3	95.8	110.0	94.5	105.9	125.0
575/3/60	N/A									65.7	71.8	80.0	73.1	77.4	90.0	80.1	89.1	100.0

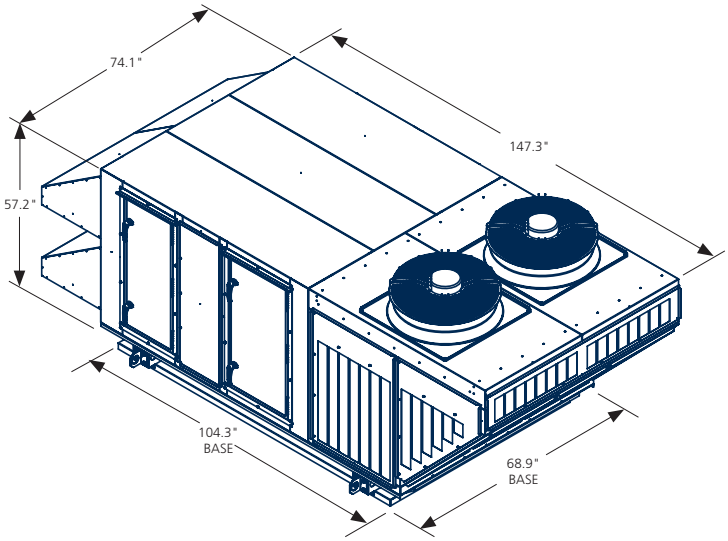
Dimensional Data - Packaged Rooftop Air Conditioner

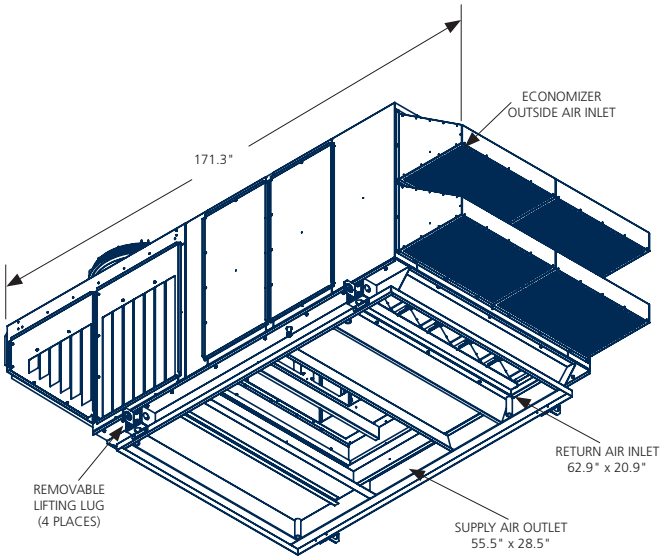
ASC-12C/13C/15C-DX
DX Cooled with Fresh Air Inlet





ASC-12C/13C/15C-DX
DX Cooled with Air-Side Economizer

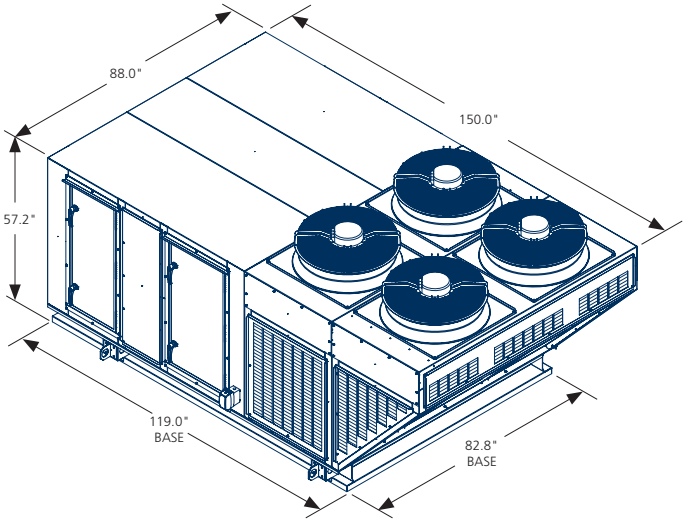


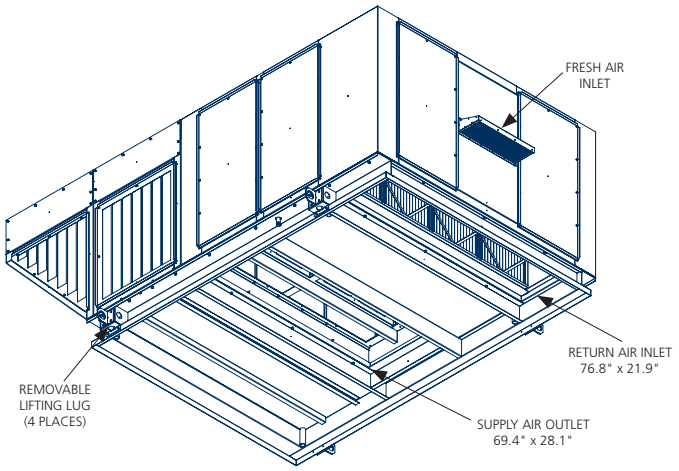


Note: Economizer operation requires exhaust air relief to be provided by others.

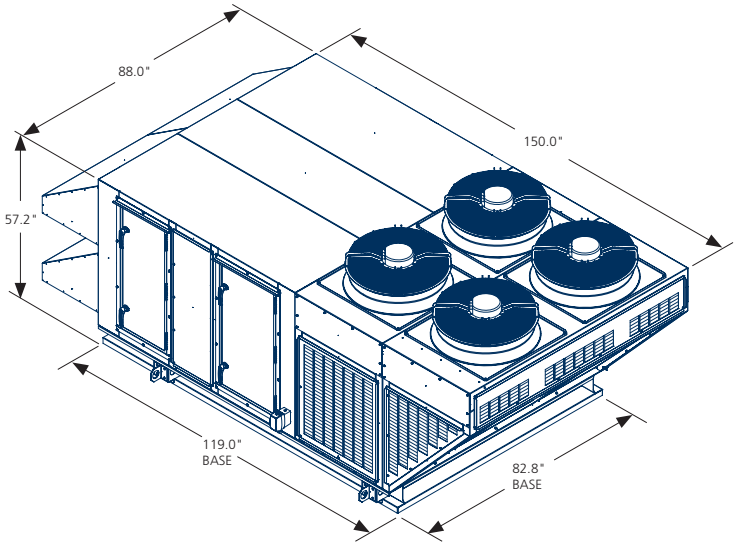
Dimensional Data - CyberPack

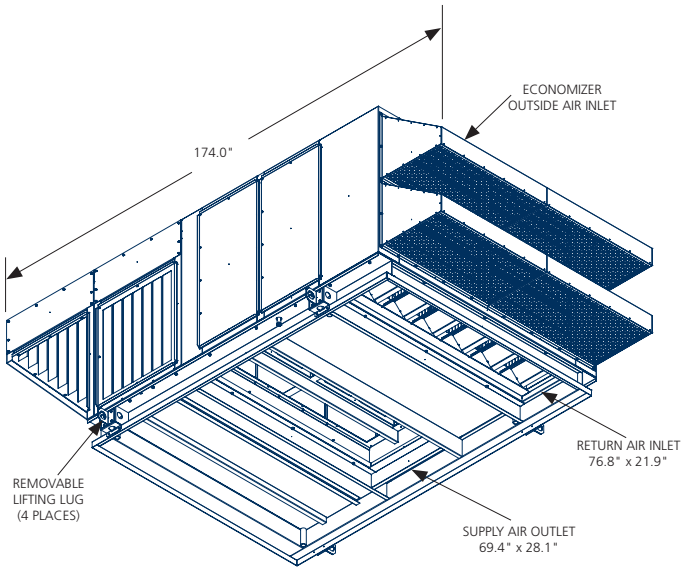
ASC-20A/25A/30A-DX
DX Cooled with Fresh Air Inlet





ASC-20A/25A/30A-DX
DX Cooled with Air-Side Economizer





Note: Economizer operation requires exhaust air relief to be provided by others.

Product Guide Specifications
STULZ CyberPack Series
42 - 105 kW
Packaged Rooftop Air Conditioner

SUMMARY

This specification describes requirements for a precision environmental control system. The CyberPack shall provide precision temperature and/or humidity control for computer rooms or rooms containing telecommunications or other highly-sensitive heat load equipment where continuous 24 hour a day, 365 days a year air conditioning is required. CyberPack systems free up floor space. The units are designed with a wide range of options to handle both precision and comfort cooling applications.

DESIGN REQUIREMENTS

The environmental control system shall be a CyberPack factory-assembled unit. The unit shall be designed for rooftop installation, requiring access through hinged or removable access panels.

Each system shall be capable of handling ___CFM. The unit shall have a total cooling capacity of ___kW/MBH, and a sensible cooling capacity of ___kW/MBH based on entering air conditions of ___°F dry bulb and ___°F wet bulb. The main fan motors shall be ___HP. The unit shall have a power supply of ___volts___/phase/___frequency.

QUALITY ASSURANCE

The manufacturer shall maintain a set of international standards of quality management to ensure product quality. Prior to shipment, each system shall be subject to complete operational and functional testing based on predefined procedures. The air conditioner manufacturer shall be ISO 9001 certified. The air conditioner manufacturer shall have a minimum of 20 years of experience in the design and fabrication of similar equipment.

CABINET

The CyberPack unit cabinet shall be constructed of formed 5052 grade aluminum for corrosion protection. The cabinet shall be of formed sections, welded, and ground smooth. The exterior shall be finished with a weather and UV resistant coating. Unit air leakage shall be less than 1% of design airflow rate measured at rated unit static pressure.

The cabinet interior shall be insulated with 1" thick closed cell elastomeric insulation providing a minimum R-value of 4.2. This thickness provides greater insulation value than lesser insulations which results in less energy lost through the cabinet. As opposed to fiberglass insulation with facing that can easily tear, there are no glass fibers which can enter the airstream.

Air Filtration

All units shall be supplied with disposable air filters classified as UL 900 or UL 586. Filters shall be 4" deep (nominal). Filters shall be pleated with a Minimum Efficiency Reporting Value (MERV) of 8. Filters shall be accessible through the front of the unit.

Optional: Filters rated up to MERV 14 shall be available.

MECHANICAL COMPONENTS

Supply Fans

The blower(s) shall be direct driven, single inlet, backward curved centrifugal fan with an electronically commutated motor for maintenance free operation. The motor shall include: Integrated electronic control board and direct microprocessor control signaling for fan speed control, soft-starting capabilities, and integrated current limitations. Each fan shall be low noise and low vibration and have an anti-corrosive aluminum impeller. Each fan impeller shall be dynamically and statically balanced in two planes to minimize vibration during operation.

CyberPack

DX REFRIGERATION SYSTEM

Refrigeration System

All piping and components contained within the refrigeration system shall be rated for use with R410A refrigerant. Each refrigeration circuit shall include, as a minimum, a refrigerant dryer/strainer, sight glass with moisture detector, condenser coil, thermal expansion valve, evaporator coil, compressor, high pressure switch with manual reset, and a low pressure switch with automatic reset.

Evaporator Coils

Cooling coils shall be fabricated of seamless drawn copper tubes, mechanically bonded to aluminum fins (that have an enhanced design for maximum heat transfer) and encased in a galvanized steel frame. Nominal face velocity shall not be more than 500 ft./min. at maximum rated airflow.

Coils shall be provided with a stainless steel drain pan extending beyond the leaving coil face. Cooling coil drain pans shall be sloped in the direction of airflow. A condensate drain line shall be piped to the cabinet exterior for field connection of a trap (provided by others). Evaporator coils shall be leak tested using pressurized dry nitrogen at the factory. The air conditioner shall ship with a refrigerant charge of R-410A.

Condenser Fans

Condenser fans shall be axial, direct drive with electronically commutated (EC) motors. Fan speed is variable without the need for an external variable frequency drive. Fan speed is modulated in response to refrigerant head pressure. The EC condenser fan shall contain permanently lubricated ball bearings. Fans requiring re-greasing shall not be acceptable.

Condenser Coils

Condenser coils are microchannel type to provide greater capacity, greater efficiency, and require less refrigerant. Flooded head pressure control is provided for operating to -30F ambient. Liquid receivers and compressor crankcase heaters are included.

Scroll Compressor

The compressors shall be a high efficiency, high reliability and low noise scroll compressor. The compressor shall be complete with internal vibration isolation, internal thermal overloads, an internal pressure relief valve, an internal discharge gas vibration eliminator, and external vibration mounting isolation.

Snap-Acting Hot Gas Bypass (Optional)

The CyberPack system shall incorporate a snap acting hot gas bypass system to provide modulation of the unit's cooling capacity and evaporator coil freeze protection under low load conditions.

ELECTRICAL SYSTEM

The electrical system shall be factory wired in accordance with NFPA 70 (NEC). A single point power connection shall be provided for main power. In accordance with NEC Class II requirements, the control circuit shall be 24VAC and wiring shall not be smaller than 24 AWG. Each wire shall end with a service loop and be neatly secured and labeled in accordance with the unit electrical drawing. Components in the electrical enclosure shall be labeled in accordance with the electrical drawing.

Each high voltage circuit shall be individually protected on all three phases. Fan motors and compressors shall have thermal and short circuit protection.

Main Power Service Switch

The CyberPack system shall be provided with a unit mounted main power, non-fused service switch.

Remote Stop/Start Contacts

Included in the system's electrical control circuit shall be a 2-pin terminal connection for remote stop/start of the CyberPack.

Power Usage Meter (Optional)

A power meter is used to monitor real-time power consumption data. A display screen may be called up in the *E²* controller user interface to view the data. The power consumption data may also be viewed via a BMS interface to the controller.

Utility Receptacle (Optional)

A 120VAC, 20A utility receptacle shall be provided and mounted on the CyberPack exterior. The receptacle shall be GFCI and includes a weather proof cover. 120VAC power shall be provided by others.

CONTROLS

All functions of the air conditioner shall be controlled by a factory installed STULZ *E²* Series controller. The control program shall be specific to the air conditioner and include user-adjustable setpoints and tuning. STULZ *E²* Controller includes supply and return temp/RH sensors shipped loose.

E² Series Controller Description

General

The advanced microprocessor based STULZ *E²* series controller shall be equipped with flexible software capable of meeting the specific needs of the application. The setpoints shall be default and their ranges shall be easily viewed and adjusted from the user interface display. The program and operating parameters shall be permanently stored on a non-volatile system in the event of power failure.

The controller shall be designed to manage temperature and relative humidity (RH) levels to a user defined setpoint via control output signals to the DX system.

The controller shall receive inputs for measurable control conditions (temperature, relative humidity, and dew point) via return air or room mounted sensors. The internal logic shall then determine if the conditions require cooling or dehumidification. Control setpoints shall be established to maintain design conditions of the installation. The controller shall respond accordingly to changes in these conditions and control the output/demand for the appropriate mode of operation until user defined conditions are achieved.

Field Configurable

The program for the STULZ *E²* series controller shall be field configurable, allowing the operator the capability of selecting control setpoints specific to the application. Operator interface for the STULZ *E²* Controller is provided via a user interface display panel. The display panel shall have a backlit LCD graphical display, and function keys, giving the user complete control and monitoring capability of the precision cooling system. The menu driven interface shall provide users the ability to scroll through and enter various menu screens.

Password Protection

Access to the Info Menu, Alarms Log, and the ability to monitor room conditions shall be allowed without the use of a password. Modifications to the control setpoints shall require the use of a password. The controller shall be programmed to recognize predetermined security levels before allowing access to display screens containing critical variables. Three secured menu levels (Control, Service and Factory) shall support unique passwords that must be entered to access the menu screens so only authorized personnel may perform modifications to the settings.

Restorable Parameters/Factory Defaults

Upon initial start-up, the air conditioning system shall operate using the setpoints programmed by the factory. The customer may enter new operating parameters in the control menu and the system shall then operate accordingly. The new setpoints may be stored as, "Customer Default Setpoints". The primary setpoints entered by the factory still remain stored in the controller's memory as "Factory Setpoints". The setpoints for the system may be re-adjusted in the Control menu at any time. If it becomes necessary, the customer may restore the setpoints back to the Customer Default setpoint values or to the original Factory (primary) setpoint values.

Alarms

Alarm conditions shall activate a red LED indicator that backlights the alarm function key. As an option, an alarm condition may also be enunciated by an audible alarm signal. An alarm is acknowledged by pressing the alarm key. This calls up alarm display screens that provide a text message detailing the alarm conditions. After an alarm condition is corrected, the alarm can be cleared by pressing the alarm key.

Small Bezel Display Panel

The small bezel user interface display panel features an easy to read, backlit liquid-crystal alphanumeric display equipped with contrast adjustment and LED illuminated function keys. The screens that appear on the user interface display panel present data that originates from the controller I/O module. The controller is operated via a 6-key menu-driven loop structure and offers an alarm log plus four different interface menu levels to the operator: Information, Control, Service, and Factory. These menus permit the user to easily view, control, and configure operating parameters for the air conditioning unit.

Air-Side Economizer (Optional)

The CyberPack system shall be equipped with a unique air-side economizer for applications utilizing outdoor Air-Side Economizing. The STULZ Air-Side Economizer package shall include return air and outside air dampers, outdoor temperature and humidity sensor, remote space return air sensor, and supply air sensor for proper control during economizer operation. Control settings shall be included for both temperature and humidity properties of the outdoor air. A damper signal lockout shall be included if the outdoor air conditions reach user adjustable limits.

The economizing damper signal shall allow a minimum output setting for minimum outside air control to meet ventilation requirements.

Exhaust relief is not included and must be provided by others to prevent over-pressurizing the controlled space.

BMS Interface (Optional)

The STULZ *E²* series controller shall incorporate a 10 Mbps communication interface port that can be field connected through a serial interface to a Building Management System via Modbus, BACnet, SNMP, or HTTP as configured by the factory. A controller interfaced to a network must be configured for BMS communication.

STULZ *E²* Constant Contact (Optional)

The control package shall include a STULZ Constant Contact short term power supply for the STULZ *E²* series controller to allow the controller to manage the power transfer switch from one primary power source to another while maintaining communications with an active monitoring system. The *E²* Constant Contact shall permit a minimum of one minute ride thru period. The Constant Contact shall include LED indications for presence of power, low charge indication, and minimum backup time.

SAFETY FEATURES

Smoke Detection (Optional)

A photo-electric smoke detector shall be factory installed and wired in the return air section of the CyberPack system. The photo-electric detector shall include built-in circuitry that performs a functional test of all detection circuits at least once every 40 seconds without the need for generating smoke. The UL listed velocity range shall be 0-3000 fpm. The air conditioner shall shut down upon sensing smoke in the return air stream.

Firestat (Optional)

The air conditioner shall be provided with a factory mounted and wired firestat. The firestat shall shut down the air conditioner upon sensing air temperatures that indicate a fire.

Remote Water Detector: Spot Type (Optional)

A remote single-point water and leak detector shall be factory supplied and shall ship separately for field installation. Upon sensing a water leak, the normally-closed water detector control circuit shall open, thereby shutting down the CyberPack system's water producing components.

Remote Water Detector: Dual Spot Type (Optional)

Quantity 2-(two) remote single point water/leak detector shall be factory supplied and shall ship separately for field installation. Upon sensing a water leak, the normally-closed water detector control circuit shall open, thereby shutting down the CyberPack's water producing components.

Remote Water Detector: Strip Type (Optional)

A 20 foot (6 m) long remote strip/cable-type water and leak detector shall be provided for remote field installation. Upon sensing a water leak, the normally-closed water detector control circuit shall open, thereby shutting down the CyberPack system's water producing components.



North American Headquarters

STULZ Air Technology Systems, Inc.

1572 Tilco Drive | Frederick, MD 21704

301.620.2033 | Fax: 301.662.5487 | info@stulz-ats.com

Technical Support: 888.529.1266

www.stulz-usa.com

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