

# 4ESTAIR HANDLING UNITS with 5CKL-DAHU and 5CKL-HAHU

**DESIRED TEMPERATURE PROPER HUMIDITY CLEAN and QUIET ENVIRONMENT** 



# **FEATURES and BENEFITS**



# **Easy Capacity Selection:**

The 19 models with flow rates from 500 m<sup>3</sup>/h to 200.000 m<sup>3</sup>/h offer our customers a wide selection range. Close capacity intervals let you select the accurate flow rate for your design while the high flow rates offer economic selection flexibility.

# **Maximization of the Operational Efficiency:**

Units driven with frequency drives let the end user change the operation range according to the need. 4EST units are designed with a wide operational range providing a full satisfaction in case of any changes on demand.

# **Fits All Locations:**

While modular design of 4EST provides easy allocation, also mounting on site option makes every unit possible to fit every location. Mounting on site option starts with manufacturing the parts and sending them to site. Ready parts and equipments are mounted at site by our team. This option lets the customer put the units in mechanical rooms which are enclosed and impossible to carry from within the openings/doors.

# **Custom Production for Special Requirements:**

Upon request from the customer non-standard designs and dimensions are also possible for their satisfaction.

# **Profiles:**

They are made from aluminum for its light weight and extra corrosion resistance.

# Side Panels:

RAL9002 standardized side panels are composed of film coated galvanized sheet metal exterior walls and galvanized (stainless steel upon request) interior walls fully sealed in a closed structure. 70kg/m<sup>3</sup> rockwool is used between the walls of the panel with different thicknesses to provide heat and sound insulation. The panels are mounted tightly on to the structure with neoprene gaskets on the inside and outside to assure a leak-proof construction. The connections are made either by bolts or by special fitted joints.

# **Door Handles:**

Non-projecting door handles let the unit stay in the size limits as declared while reducing the risk of getting damaged. Endurable design and ability to be locked gives the customer full confidence regarding the access.

# Hidden Cables & Collective Cable Connecter:

For prewired units and packaged solutions, 4EST units have a unique cabling style which protects the cables from any complications and provides simplicity. All modules are connected with special connecters holding all internal cables together collectively.



# FEATURES and BENEFITS



# 4EST - High Performance & Energy Efficiency

Classification of thermal transmittance U of the casing of unit.

Thermal Transmittance (U) W x m <sup>-2</sup> x K <sup>-1</sup>
U ≤ 0,5
0,5 < U ≤ 1,0
$1,0 < U \le 1,4$
1,4 < U ≤ 2,0
No Requirements

Classification of thermal bridging factor of the casing.

÷

Thermal Bridging Factor (k <sub>b</sub> )
0,75 < k <sub>b</sub>
0,60 ≤ k <sub>b</sub> < 0,75
$0,45 \le k_{b} < 0,60$
$0.3 \le k_{b} < 0.45$
No Requirements

Casing air leakage classes of unit, 400 Pa Negative Pressure and 700 Pa Positive Pressure.

Leakage Class of Casing	Maximum Air Leakage Rate (I x s <sup>-1</sup> x m <sup>-2</sup> )	Maximum Air Leakage Rate (I x s <sup>-1</sup> x m <sup>-2</sup> )	Filter Class		
L1 🐫 4est	0,15	0.22	superor to F9		
L2	0,44	0,63	F8 to F9		
L3	1,32	1,9	G1 to F7		

Casing strength classification of unit. Acoustic insulation of the casing.

Class	Maximum Relative Deflecton (mm x $m^{-1}$ )	Octave Bands	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	800 Hz
D1	4 🖙 4EST	_							
D2	10	Test	18 dD	27	26	22	27	34	40
D3	exceeding 10	Results	uВ	uВ	αB	uВ	uВ	uВ	aв

### **ErP - Tightened Efficiency Requirements**

ErP - Tier			ErP 2016	ErP 2018		
Heat recovery system (HRS) with thermal by-pass facility			required	required		
Thermal dry eciency	Run-Around-	Coils HRS	63	68		
(EN 308) n <sub>t</sub> [%]	Other HRS		67	73		
	Run-Around-	q < 2 m³/s	1.700 + E - 300 x q / 2-F	1.600 + E - 300 x q / 2-F		
Internal SFP value	Coils HRS	q≥2 m³/s	1.400 + E - F	1.300 + E - F		
(reference configuration) SFP int-max [W/(m³/s)]	Other HRS	q < 2 m³/s	1.200 + E - 300 x q/2-F	1.100 + E - 300 x q / 2-F		
		q≥2 m³/s	900 + E - F	800 + E - F		
Eiciency bonus E Heat	Run-Around-Coils HRS		(n <sub>t</sub> - 63) x 30	(n <sub>t</sub> - 68) x 30		
recovery system [W/(m <sup>3</sup> /s)]	Other HRS		(n <sub>t</sub> - 67) x 30	(n <sub>t</sub> - 73) x 30		
	Reference co	nfiguration	0	0		
Filter correction F	Filter M5 is missing		160	150		
[W/(m³/s)]	Filter F7 is missing		200	190		
	Filter M5 + F7 a	are missing	360	340		
Variable speed drive from ventilator			required	required		
Filter pressure switch			-	required		





# O Plate Heat Exchanger

Energy is saved by exchanging heat between fresh air and exhaust air without mixing them. Fresh air and exhaust air remain in separate systems. By transferring the energy carried by the exhaust air to the fresh air, the fresh air temperature increases towards the coil outlet temperature in winter. The opposite occurs in summer. The counterflow heat exchanger is made from high quality aluminum or stainless steel. By-pass dampers and stainless steel condense trays are standard equipments for these module. Its efficiency is important since it determines coil entering temperatures. Therefore, it should be selected well according to design conditions.



# O Rotary Heat Recovery

It can also be called as thermal wheel, where it places within supply and exhaust air flow direction. In the first half of rotation, heat is transferred to thermal wheel's heat absorbing materials and it gives heat in the second rotation part to the side which has lower energy. Rotary's wheel is specially designed with containing a matrix distribution in order to increase heat transfer area and efficiency. Thermal wheel is usually made with galvanized steel or aluminum. It can be coated with epoxy for conditions where high corrosion resistance is required. There are three types of thermal wheel.

Condensation Type: Usually used for sensible energy recovery. Exhaust air flow's temperature through thewheel should be cooled down below dew point for humidity transfer.

Enthalpy Type: It is available for higher energy transfer due to having hygroscopic surface. Latent energy transfer is possible, but not as much as comply with sorption type.

Sorption Type: Higher sensible and latent energy transfer is possible due to high hygroscopic coating.



# O Heat Recovery with Two Heat Exchanger

It consists of finned tubes placed in the fresh air and exhaust air chambers together with the pump that circulates water in the tubes. Copper tubes with aluminum fins and stainless steel condense trays are standard equipment for this module. Fluid flow rate is controlled by valves. In order to avoid the risk of freezing, specific amount of glycol can be mixed with water. Also, frost protection thermostats can be used for this process.



### **O** Plug Fan Module

This is a centrifugal fan with an impeller with backward curved blades. Impeller part is directly placed on the motor shaft. Since there are no belts involved in the mechanism, problems caused by it also reduced. It can cover up to 90.000 m<sup>3</sup>/h and 3.000 Pa total pressure. Sound level is lower during operating conditions, since it doesn't guide air into the ducts directly. Rails holding the fan are connected to the frame with springs or rubber insulators. Fan outlet is connected to the module outlet via flexible elements. The electric motors are 2, 4, or 6 poled (1000, 1500, 3000rpm), 400V, 50Hz, IP 55protection class depending on the demand.

### **ACCESSORY EQUIPMENTS for FAN MODULE:**

- Emergency Shut-O Button: Kill Stop Direct Power Cut Off
- Gland For Power Cable: Glands for cable cross sections without leakage
- DPT Flow Meter: Differential pressure transmitter processing signal and showing volume flow rate

and an inlet pressure with a digital screen

- Differential Pressure Switch: Switch that gives and/or cuts signal when the pressure limit is exceeded
- Differential Pressure Gauge: Gauge that shows the initial pressure difference between two set points
- Belt & Pulley Guard: Safety guard for rotating elements
- Fan Guard: Safety guard for fan rotor
- Door Guard: Safety guard in case of door failures
- Flexible Connection: Flexible connection elements for AHU inlet AHU outlet fan outlet
- Maintenance Switch: Maintenance switch just to cut off fan electricity temporarily during maintenance
- Anti Condansate Heater for Motor
- Termistor
- Variable Frequency Driver





# Belt Driven Fan Module

This module contains a blower or an exhaust fan placed on supports which can slide on rails using vibration absorber. All fans are certified and their optimum operation points are specified on the computer program. To prevent conduction of vibration and noise created during operation onto the frame, rails are connected to the frame with springs or rubber insulators. Fan outlet is connected to the module outlet via flexible elements. The fans are driven utilizing belt and pulley systems. The pulleys are mounted onto the shaft by using conical fittings. The belt tension system is designed to easy access. The electric motors are 2, 4, or 6 poled (1000, 1500, 3000rpm), 400V, 50Hz, IP 55 protection class depending on the fan specification. Variable speed, direct-coupled motor-fan combinations are also available upon request. All rotary parts used in the module are dynamically balanced.



### **O** Heating Coil Module

Depending on the capacity and operational conditions, heating coils are placed in this module. The coils which used with steam or hot water are made of copper tubes with aluminum fins. Steel tube/steel fin, stainless steel or galvanized steel finless tubes or electrical resistance heaters can be utilized optionally. The heat exchanger is designed to achieve the optimum pressure drop on both air and water sides. Usually heating coils' headers are equipped with carbon steel pipes whereas steam coils' headers are copper. Water inlet sides for heating coils are from lower part of it whereas steam inlet is upper part of the steam coil. Supply air faces with exiting water/steam in order to gain energy for higher efficiency from heat transfer process. Air velocity on coil can exceed 3 m/s if there is no cooling coil after it. All coils are selected with certified softwares and suitable to work under gauge pressure of 13 bar. Test pressure is 20 bar.

### ACCESSORY EQUIPMENTS for COIL MODULE:

- Ball Drainage Siphon: U trap for drainage, working with water gauge pressure principle avoiding the drainage water to go one-way only

- Anti Frost Thermostat: Thermostat which avoids any possible occasions by freezing



# O Cooling Coil Module

As air move through a cooling coil, heat transfer process begins. Air loses its heat while going through the surface area of the coil. The amount of heat loss depends on the length of the coil. The coils are made of copper tubes with aluminum fins. The headers of cold water coils are usually made of carbon steel and copper for hygiene coils. Proper maintenance of cooling coils should be made periodically. Frost protection thermostat should be equipped with the cooling coil where winter conditions are below 5°C. A separator is used when the face velocity of the cooling exceeds 2 m/s. Separators are designed and produced to catch the maximum amount of water. Separators are made of mechanically and thermally high-strength ABS material. Supports for the separator and the condense tray are made from stainless steel. All the coils are selected with certified software and suitable to work under gauge pressure of 13 bar. Test pressure is 20 bar.



# O Electric Heater Module

Electric heaters are generally used for units which has constant flow. It has staged structure and should be provided with safety thermostat. Electric heater modules shouldn't be used for air flow rates higher than 30.000 m<sup>3</sup>/h in order to avoid high electric energy usage. Cabling and controlling the unit is highly important during the installation.

### **ACCESSORY EQUIPMENTS for ELECTRICAL HEATER MODULE:**

- Gland For Power Cable: Glands for cable cross sections without leakage
- Overheat Thermostat: Thermostat which avoids any possible occasions by overheating
- Safety Thermostat: Emergency cut off thermostat for electrical heater to avoid any possible fires





# High Pressured Humidifier (Fog/Spray System)

Inlet frame of this module, which holds on the nozzles, is made from stainless steel. Dimensions can vary upon desired design conditions. It is possible to go up to 78 l/h to 8100 l/h by using several pumps and compressors. Solenoid valves are used to enable desired capacity.

Although the general operation pressure is about 80 bar, nozzles are tested at a pressure of 150 bar. Controlling of this module can be achieved with fixed or variable electronic card. It is also possible to control humidification process with a dry contact output.

# **ACCESSORY EQUIPMENTS for HUMIDIFIER MODULE:**

- Humidifier Cabinet: Cabinet for external humidifier units



# Steam Humidifier Module

Steam supplied from self-generator humidifier is mixed with air to keep under control the required humidity. Stainless steel condense trays are standard equipment for this module.

# ACCESSORY EQUIPMENTS for STEAM MOISTURE MODULE:

- Humidification Cabinet: Steam generator humidifiers for external environment devices.



# Sound Attenuator Module

Silencers are designed with respect to sound absorption levels that are placed in this module. Consists of rock wool filling material covered with glass-mat mounted into the galvanized frame. Sound attenuation is achieved on the return, exhaust and supply sides through suitable pitch and length. Air inlet sides are specially designed to form a laminar flow distribution.



# Supply Module with One Damper

They are used for adjusting air flow rate by increasing/decreasing total pressure. They are manufactured with galvanized frames. Damper blades are produced from special alloy aluminum profiles having an aerodynamic form to reduce drag and leakage.

Neoprene gaskets and by-pass elements are used in order to minimize air leakage. Dampers can be linkage type instead of rotating gear aluminum frame type upon request. Damper blades can be driven easily by servomotors or rotated manually. The blades can move parallel or against each other for both configurations.



# Mixing Modules with Two Dampers

Designed to save energy by mixing the required amount of fresh air and return air. The economic comfort conditions are reached using a smaller heat exchanger by decreasing the air temperature difference between the heat exchanger inlet and outlet. Includes exhaust, fresh and return air dampers functioning together to regulate the mixture ratio.

Dampers can be placed on any side, on the outside or the inside to save place. Control system of this mechanism is vital due to arrangement of fresh air/internal air percentage.





### O Mixing Modules with Three Dampers

They are also designed to save energy such as modules with two dampers. The only difference is that two fans are needed when mixing module with three dampers are used. One is for exhaust and one is for fresh air. The third damper, which is at the connection point between two modules, is the mixing area. Third damper's air velocity can exceed supply damper's air velocity at the surface. It should also be noted that it is needed to select supply module's damper as %100 fresh air during the designing process.

### **ACCESSORY EQUIPMENTS for DAMPER MODULE:**

- Flexible Connection: Flexible connection elements for AHU inlet AHU outlet fan outlet
- Roof Curb: Waterproof solutions for dampers on external units

- Electrical Damper Heater: Anti-Frost solution for extreme low-temperature conditions. In temperature below 0°C, damper blades face frosting issue which causes failure in case of the damper is closed/blades in contact. In order to avoid this problem, damper blades should be heated. Heating the air entering the damper face is not self-sufficient due to lack of face area and requiring lots of energy. Heating up the blades helps to avoid the frosting by fusion, so the requiring energy is lesser compared to any other solution. Special damper blades made of aluminum are used with special shallow shaft and hinges allowing to be heated from inside. Adjustable  $\Delta$ T thermostat and connector box are provided and mounted on the unit. The power/energy consumption is calculated (Blade length \* Row count \* 30 watts) and showed on the control box. The system is capable of working down to -48°C.

- Damper Motor
- Louvre: AHU inlet/outlet louvres

- Sand Trap Louvre: Units located in places which takes air from an environment with a lot of dirt/dust leads the filtering system not to function properly. In order to protect the filters from dust, sand traps are used at fresh air inlets providing dust free air through the unit.



### • Filter Module

The filter module is used to remove unwanted particles and odors from the conditioned space. Filter frames are produced with proper dimensions to fit the internal sections of the unit then sealed with gaskets and spring type retainers. Frames are sealed tightly before mounting into the module.

Depending on the application, single or multi-stage removable filters with different efficiencies can be used. For panel-bag combination applications, mounting both filters into the same frame saves space and simplifies maintenance. The face velocity at the cooling coil and the filter determine the air handling unit model to be selected.

Filter elements are mounted into the standard frames containing gaskets. With the help of the tightening retainer used on the frames, each filter cassette can be assembled or disassembled independently. Filter frames are positioned perpendicular to the airflow direction in the unit. Special filters such as HEPA, carbon, metallic etc. can be used upon request.

Differential pressure gauges reading the pressure drop across the filter are optional on these modules. Leakage and noise due to vibration in sliding cassette type filters are prevented, thanks to strong assembly of each filter element to the frame.

### **ACCESSORY EQUIPMENTS for FILTER MODULE:**

- Differential Pressure Switch: Switch that gives and/or cuts signal when the pressure set is exceeded
- Differential Pressure Gauge: Gauge that shows the initial pressure difference between two set points



Where something more special is required, we have full

individual requirements.

technical support in our sales offices and at our factory where

non-standard layouts and configurations can be designed to

# **QUICK SELECTIONS**



right to change dimensions

and flow rate values

respect to product

without prior notice in

developement & tailor

\_ \_ \_

made non-standart units.





• Plug Fan EC Fan Standard Plug Fan

 Double Inlet Centrifugal Backward Curved Blade Forward Curved Blade

# **CONTROL MODULE** (MMC & DDC PANEL)

 Star - Delta Starter Frequency Inverter

. . .

# MOTOR

. . . . . . . . . .

• IE 2 IE 3 IE 4 EC



# **4EST Air Handling Unit QUICK SELECTION - SALES LEAFLET**



# PACKAGED AIR HANDLING UNITS

**CAN** KlimaTeknik

HAN

Automated control solutions provide a wide range of advantages to the end user. The compact MCC & DDC panel packages are all-in-one plug and play solutions that provides easy installation, less space while providing high performance & high energy efficiency

Automated HVAC System advantages

Can Klima control equipments and automation softwares are integrated and used create efficient automation environment. The unit interprets the data transmitted from the sensors and adjust the conditions of the air until satisfying the necessary needs. Optional frequency control provides a wide operating range with high efficiency.





# **CAN KLİMA TEKNİK™ Controls**

open, mobile, flexible, and scalable



# **4EST** 4EST Air Handling Unit

**QUICK SELECTION - SALES LEAFLET** 

 $\left| + + + + + + + \right|$ 

3.560

4.160

4.460

4.760

5.260

2.260

2.260

2.260

2.260

2.260

43.200

51.500

55.500

60.000

68.000

54.000

64.260

69.390

74.520

84.780

69.120

82.252

88.819

95.385

108.518

6

7,14

7,72

8,29

9,43

7,36

8,68

9,34

10,01

11,33

1.060

1.060

1.060

1.060

1.060

1.060

1.060

1.060

1.060

1.060

2.260

2.260

2.260

2.260

2.260

**4EST** 350x230

4EST 410x230

**4EST** 440x230

4EST 470x230

**4EST** 540x230

**MODULE LENGHT** 

### L (mm) AHU Internal Supply Module Supply Module Mixing module Flow rate based on surface **Coil Cross** Filter External with one with three with two Filter Free Area velocity of heat exchangers m<sup>3</sup>/h Section Arrangement Dimensions damper dampers dampers MODEL Н Α V=2/s V=2,5m/s V=3,2m/s 🗆 610 x 305 M2 PB M1 М3 (mm<sup>2</sup>) (mm<sup>2</sup>) 🗌 610 x 610 [m³/h] [m³/h] [m³/h] (mm) (mm) 4EST 080x080 760 760 1.650 2.000 2.650 0,22 0,41 660 660 1.360 560-760 760 1.060 2500 660 1.360 560-760 4EST 110x080 3060 3.916 0,34 0,6 660 **4EST** 110x110 ⊞ 1.060 1.060 3.700 4.590 5.875 0.89 660 660 1.360 560-760 0,51 **4EST** 140x110 1.360 1.060 5.350 6.660 8.524 1,19 660 660 1.360 560-760 0,74 $\square$ **4EST** 140x140 1.360 1.360 1,59 1.360 560-760 7.600 9.450 12.096 1,05 660 660 **4EST** 170x140 1.660 1.360 10.000 15.897 1,38 1,95 660 660 1.360 560-760 12.420 12.900 1,78 **4EST** 170x170 1.660 1.660 16.020 20.505 2,38 760 760 1.630 560-760 **4EST** 200x170 1.960 1.660 15.900 25.344 2,2 2,88 760 1.630 560-760 19.800 760 19.500 2,7 3,48 4EST 200x200 1.960 1.960 24.300 31.104 960 960 1.960 560-760 **4EST** 230x200 1.960 23.200 28.890 3,21 4,04 960 960 1.960 2.260 36.979 560-760 **4EST** 230x230 2.260 2.260 25.750 32.130 41.126 3,57 4,69 1.060 1.060 2.260 560-760 **4EST** 260x230 2.560 2.260 30.000 47.692 1.060 37.260 4,14 5,35 1.060 2.260 560-760 **4EST** 290x230 34.000 2.860 2.260 42.390 54.259 4,72 6,03 1.060 1.060 2.260 560-760 4EST 320x230 2.260 3.160 38.000 47.070 60.249 5,29 6,68 1.060 1.060 2.260 560-760

LEAFLET Can Klima Teknik reserves the right to change dimensions and flow rate values without prior notice, in respect to product development.

560-760

560-760

560-760

560-760

560-760

Heater Coil	Electric Heater	Cooling Coil	Plug Fan	
HU	HE	CU	РВ	
360	460	860	/	
	460	860	/	
360	460	860	1.060	
360	460	860	1.060	
360	460	860	1.260	
360	460	860	1.360	
360	460	860	1.460	
360	460	860	1.560	
360	460	860	1.760	
360	460	860	1.760	
360	460	860	2.260	
360	460	860	2.260	
360	460	860	2.260	
360	460	860	2.260	
360	460	860	1.260	
360	460	860	1.260	
360	460	860	1.260	
360	460	860	1.260	
360	460	860	1.260	

Double Inlet Fan	Steam Humidifier	High Pressured	Plate Heat Recovery	Rotary Heat	Heat Recovery with Two Heat Exchangers	Sound Attenuator Module	<ul> <li>%100 Fresh Air Handling Unit (F-AHU)</li> <li>Mixed Air Handling Unit (M-AHU)</li> </ul>		Mixed Air Hand Pla	lling Unit with ate HR (MAHU)	<ul> <li>%100 Fr</li> <li>Plate HR</li> <li>Mixed A</li> <li>HRW (R/</li> </ul>	
РВ	HS	Humidifier	HE	Recovery	ET	SA	AHU Length	Motor Power (kW)	AHU Length	Motor Power (kW)	AHU Length	
1.060	1.160	2.360	860	660	860	960-1.860	3.460	1,10	5.560	1,10	4.860	
1.060	1.160	2.360	860	660	860	960-1.860	3.460	1,50	5.560	1,50	4.860	
1.160	1.160	2.360	960	660	860	960-1.860	3.560	2,20	5.760	2,20	4.860	
1.260	1.160	2.360	960	660	860	960-1.860	3.660	3,00	5.960	3,00	4.860	
1.460	1.160	2.360	1.260	660	860	960-1.860	3.860	5,50	6.160	5,50	4.860	
1.560	1.160	2.360	1.360	660	860	960-1.860	3.960	5,50	6.160	5,50	4.860	
1.660	1.160	2.360	1.660	660	860	960-1.860	4.060	7,50	6.360	7,50	5.060	
1.760	1.160	2.360	1.660	660	860	960-1.860	4.160	11,00	6.360	11,00	5.060	
2.060	1.160	2.360	1.960	660	860	960-1.860	4.460	11,00	6.660	11,00	5.160	
2.060	1.160	2.360	1.960	660	860	960-1.860	4.460	15,00	6.660	15,00	5.160	
2.060	1.160	2.360	-	660	860	960-1.860	4.460	18,50	6.660	18,50	5.260	
2.260	1.160	2.360	-	660	860	960-1.860	4.660	18,50	6.660	18,50	5.260	
2.560	1.160	2.360	_	660	860	960-1.860	4.960	22,00	6.960	22,00	5.260	
1.860	1.160	2.360	_	660	860	960-1.860	4.260	22,00	6.360	22,00	5.260	
2.060	1.160	2.360	-	660	860	960-1.860	4.460	30,00	6.660	30,00	5.260	
2.060	1.160	2.360	_	_	860	960-1.860	4.460	37,00	6.660	37,00	5.260	
2.260	1.160	2.360	_	_	860	960-1.860	4.660	37,00	6.660	37,00	5.260	
2.260	1.160	2.360	_	-	860	960-1.860	4.660	37,00	6.660	37,00	5.260	
2.560	1.160	2.360	-	-	860	940-1.840	4.960	45,00	6.960	45,00	5.260	



55,00

55,00

75,00

75,00

90,00

5.260

5.260

5.260

5.260

5.260

55,00

55,00

75,00

75,00

90,00





# PACKAGED HYGIENIC AIR HANDLING UNITS WITH MOUNTED CONTROLS

5CKL - HAHU Hygienic air handling units are designed to meet the clean room specifications of hospitals, surgery-operation rooms and other various branches dealing with a sterile process such as like food, medicine and chemical facilities. In order to maintain the necessary sterile conditions, special design smooth panel-frames are used to avoid in-unit contamination, and corrosion-resistant stainless steel equipments provides a remarkable durability to the units.

5CKL - HAHU hygienic air handling units provide packaged solutions with high efficiency.



# **Optional Refrigerant System Integration**

Refrigerant System integrated air handling units are unique and trendy design which solves both evaporation and condensation problems for all in one unit.

High efficient compressors and energy recovery systems work together to operate the system at high COP's. Refrigerant integrated air handling units provide safe and reserved system while consuming less energy to hold the regime and create reliability by Twin-Triplet-Quad Compressors.



# PACKAGED DEHUMIDIFYING **AIR HANDLING UNITS**



Due to the high amount of evaporation at indoor swimming pools, dehumidification of the ambient air is necessary. Standard air handling units remain inadequate at this level. Upgraded and improved standard air handling units are used for indoor swimming pools and spa facilities. Customer satisfaction for comfort and health, it is essential to remove the excessive amount of humidity from the ambient air.

# **STAND-BY OPERATION MODE**

While pool/spa is out of service, compressor is switched off, ventilating and exhaust fans are working at minimum operating point and providing an optimum clean air condition (make a certain amount of fresh air mixture).

# **DEHUMIDIFICATION MODE**

Unit works at maximum operation point depends on automation scenario. Pool/spa ambient air is recirculated and dehumidified by the operating refrigerant system. Reserved compressors shut-off and turn at standby mode when the requested regime is provided. Necessary fresh air is blown according to the initial scenario.

# **FREE COOLING MODE**

In other words mid-season climate change mode, corresponds to %100 fresh air supply and %100 exhaust air extracted from high humidity air (mixing damper fully closed).





# **Refrigerant System Integration**

Refrigerant system integrated air handling units are unique and trendy design which solves both evaporation and condensation problems for all in one unit.

High efficient compressors and energy recovery systems work together to operate the system at high COP's. Refrigerant integrated air handling units provide safe and reserved system while consuming less energy to hold the regime and create reliability by Twin-Triplet-Quad Compressors.





HVAC systems for data centers play a significant role in facility's capital expense and use large amount of energy. ASHRAE (American Society of Heating, Refrigerating, and Air-conditioning Engineers) publishes a specific guideline for temperature and humidity control. In data centers, an upgraded packaged air handling unit solution provides and maintains a sensitive, consistent and reliable ambient air condition.



# FC: FREE COOLING

Free Cooling mode works when the outdoor air temperature is lower than the indoor air temperature. The external air temperature changes due to heat recovery system getting heat from data center. This mode does not need any additional process.

# IAC: INDIRECT EVAPORATIVE COOLING

Indirect Evaporative Cooling mode uses adiabatic humidifiers before heat recovery system to pre-cool the external air. Loading air with water and letting it evaporate increases the humidity of the air and lowers down the temperature which provides a higher heat recovery capacity and higher efficiency. Indirect evaporative cooling is basically an improved mode of free cooling which gives a high cooling capacity with very low energy consumption.

# SMC: STANDART MECHANICAL COOLING

Standard Mechanical Cooling mode is used when SC or IAC remains insufficient. Refrigerant can be used as an alternative of cooling exchanger.



# ACCESSORIES



# **Color Option:**

The exterior surface of 4EST air handling units are standard RAL9002. Different colour variations are applicable to satisfy the aesthetic and architectural needs.

# **ACCESSORY EQUIPMENTS for GENERAL MODULE**

Interior Lighting (Lightening with Switch): In-module lightening

Observation Window: Double-glass window for observation purpose

Door Sensor : Safety switch for doors

Roof (Sheet Metal/Canvas): Waterproof solutions for external units

**Factory Prewired Unit :** Prewiring option decreases the amount of electrical work at site in a way that all in-unit cablings are excluded from scope of electrical contractor. Jack type connections and hidden cablings prevent any complications during assembly or future use.



# Installation at Site Option:

Manufacturing the parts and sending them to site. Ready parts and equipment are mounted at site by our team. This option lets the customer put units in mechanical rooms which are enclosed and impossible to carry from within the openings/doors. Also mounting the units at site creates a significant advantage regarding the transportation costs.



Can Klima Teknik reserves all the rights to change and improve its products' specifications and

For more information: www.canklimateknik.com - info@canklm.com +90 216 499 01 00



©2018 Can Klima Teknik All rights reserved









