

POOL

POOL-CRF

Plate Heat Recovery Pool Dehumidifier



DOGU HVAC: INNOVATING TODAY SUSTAINING TOMORROW



P O O L

Packaged Pool Dehumidification Unit

POOL

PACKAGED POOL DEHUMIDIFICATION UNIT

POOL-CRF

The Pool Dehumidifier Unit is designed to control the high humidity levels generated in indoor swimming pools and to provide a healthy indoor environment. By removing humid air from the pool area, it helps prevent condensation, corrosion, and potential damage to building components.

The unit integrates fresh air supply, exhaust air discharge, heat recovery, and dehumidification functions within a single system, ensuring the maintenance of comfort conditions in the pool environment. Supported by high-efficiency fans, a heat recovery exchanger, and heating/cooling components, the system prioritizes energy efficiency while delivering reliable and stable operation.

With its durable casing structure, service- and maintenance-friendly design, and advanced automation infrastructure, the unit stands out as a long-lasting, efficient, and sustainable solution for hotel, sports complex, and similar indoor pool applications.

WORKING PRINCIPLE

The Pool Dehumidifier Unit draws humid air from the pool area into the unit and subjects it to a dehumidification process. Within the system, excess moisture in the air is removed through the condensation method. The dehumidified air is reheated as required and supplied back into the space.

Fresh air and exhaust air volumes are controlled by the automation system to maintain balanced indoor comfort conditions. Through the heat recovery system, the energy from the exhaust air is utilized to enhance overall energy efficiency. The unit operates automatically based on data received from sensors, maintaining the humidity level within the desired range.



POOL

COMPONENTS

① FILTERS

Filters capture dust, dirt, and airborne particles, ensuring clean indoor air quality. They protect system components and contribute to more efficient and longer-lasting operation. Thanks to their easily replaceable design, maintenance procedures are simple and practical. The unit features a single-stage G4 class [ISO Coarse] filter on both the exhaust and fresh air intakes.

② FANS

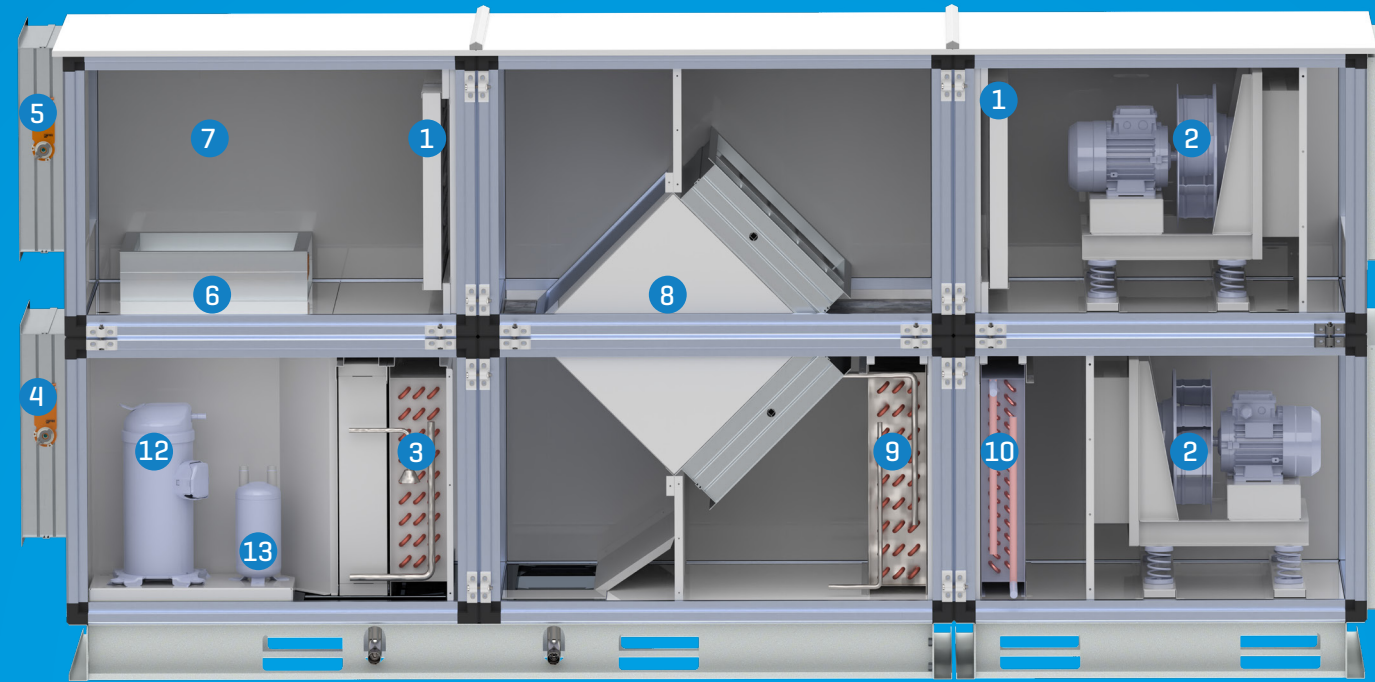
Fans ensure efficient air circulation and continuous renewal of indoor air, creating a comfortable and healthy environment. As standard, an AC plug fan [externally mounted motor] is used, with an optional EC plug fan [self-contained motor] available for higher energy efficiency and quieter operation.

③ EVAPORATOR

The evaporator is a heat exchanger containing refrigerant gas that cools the air through heat transfer. It absorbs heat from the air passing through it, lowering its temperature. Its copper tube and aluminum fin construction provides high heat transfer efficiency. Its hydrophilic-coated surface enhances dehumidification performance and supports controlled removal of condensate.

④ EXHAUST DAMPER

This is a modulating damper that controls the exhaust air flow rate. It operates based on data from the temperature and humidity sensors.



⑤ FRESH AIR DAMPER

This controls the amount of fresh air drawn in from outside. It operates based on data from the temperature and humidity sensors.

⑥ MIXING DAMPER

This blends fresh air and return air at the desired ratios to provide comfort and energy optimization. It operates based on data from the temperature and humidity sensors.

⑦ AUTOMATION PANEL

The automation panel is the central unit where all electrical and operational management of the unit is performed. Based on data received from the fresh air temperature sensor, it automatically activates optional duct-type heating equipment when required. By sensing ambient conditions through temperature and humidity sensors, its software automatically manages the unit's operating modes and ensures the dehumidification process runs at maximum efficiency. The constant flow function contributes to efficient, balanced operation of the cooling cycle by preventing the system from running into low or high pressure conditions. Monitoring is available via the Modbus communication protocol.

⑧ HEAT RECOVERY HEAT EXCHANGER

The heat recovery exchanger enables heat transfer between the exhaust air discharged from the indoor environment and the fresh outdoor air supply without air mixing. By transferring the thermal energy contained in the exhaust air to the incoming fresh air, it ensures efficient air renewal while reducing energy consumption. The unit uses an aluminum-construction cross-flow heat recovery exchanger.



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COMPONENTS

⑨ CONDENSER

The condenser is a heat exchanger containing refrigerant that heats the air passing through it via heat transfer. Its copper tube and aluminum fin construction provides high heat transfer efficiency and contributes to the system's overall efficient operation. Its epoxy-coated construction increases corrosion resistance, ensuring long service life under demanding operating conditions.

⑩ HEATING COIL

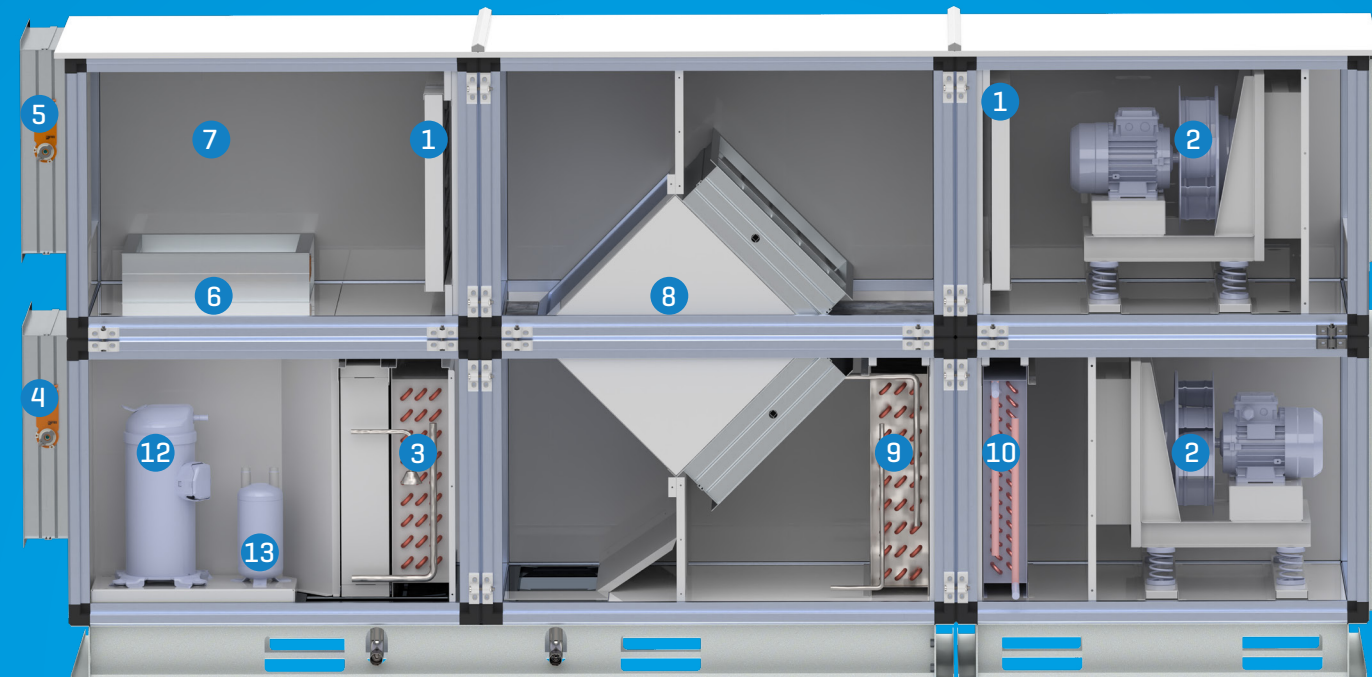
The heating coil is a heat transfer element used to raise the temperature of the air. It brings the air to the desired temperature using hot fluid or electrical energy passing through it. In heating applications, it contributes to the system's efficient operation by providing comfortable, balanced air conditioning. Its epoxy-coated construction increases corrosion resistance, ensuring long service life. An electric duct-type heater is available as an option.

⑪ CASING

The casing protects all mechanical and electrical components against external influences. Its robust construction ensures long service life. Designed with thermal and acoustic insulation, it contributes to safe and quiet operation. The unit features a double-skin construction made of painted sheet steel and insulated with 50 mm rockwool. [Double-wall construction, insulated with 50 mm rock wool, manufactured from painted sheet steel.]

⑫ COMPRESSOR

The compressor is the main component in refrigeration and heating systems that sustains the cycle by raising the pressure and temperature of the refrigerant. It circulates the refrigerant within the system and contributes to efficient heat transfer. The unit uses a hermetic scroll compressor, providing high efficiency, quiet operation, and long service life.



PACKAGED POOL DEHUMIDIFICATION UNIT

⑬ ACCUMULATOR

The accumulator is a protective component in refrigeration and heating systems that retains any liquid refrigerant that could return to the compressor, ensuring that only refrigerant in the gas phase reaches the compressor. This helps protect the compressor from liquid slugging and contributes to safe, stable, and long-lasting system operation.

⑭ FILTER SERVICE COVERS

Filter service covers are designed to provide fast and easy access to the filters. Their removable design allows filter replacement, cleaning, and maintenance to be carried out conveniently. This design reduces service time and improves ease of operation.

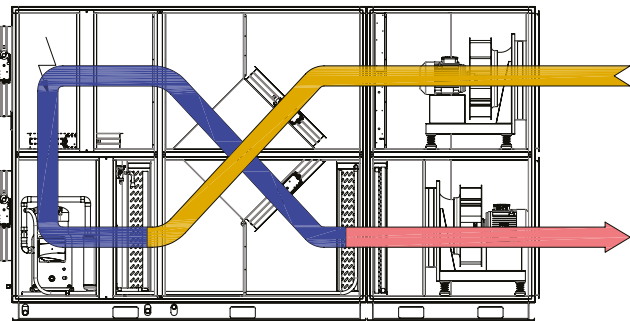
⑮ FAN SERVICE COVERS

Fan service covers are designed to provide fast and easy access to the fans. Their removable design allows fan replacement, maintenance, and servicing to be carried out conveniently. This design reduces service time and improves ease of operation.



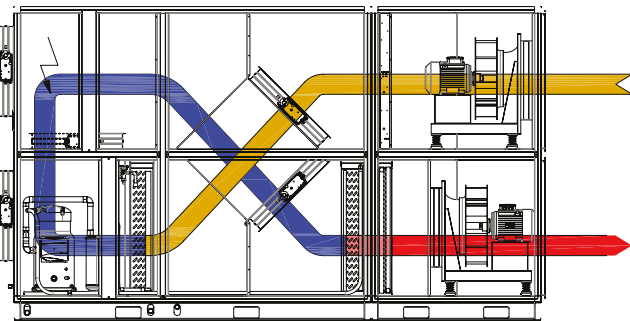
WORKING PRINCIPLE

%100 Return Air



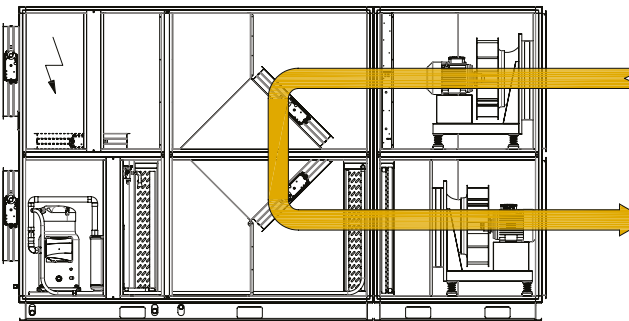
Humid and Warm Return Air

%100 Return Air Operation

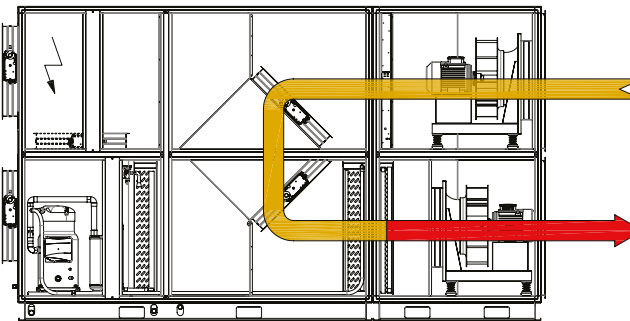


Humid and Cool Return Air

Dry Return Air

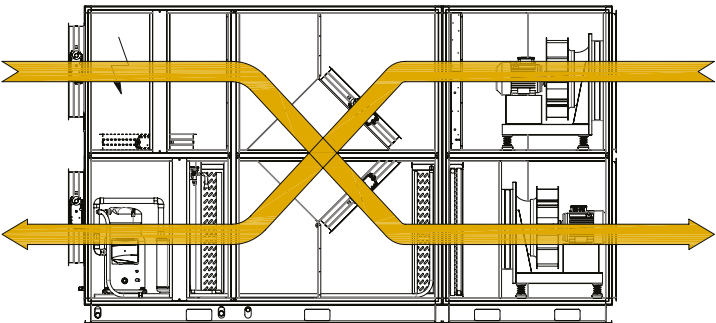


Dry and Warm Return Air

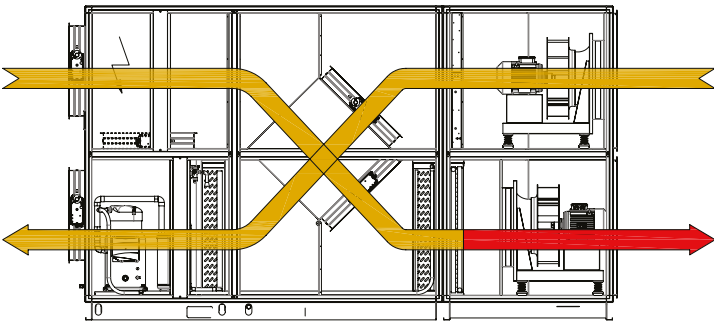


Dry and Cool Return Air

%100 Fresh Air Operation

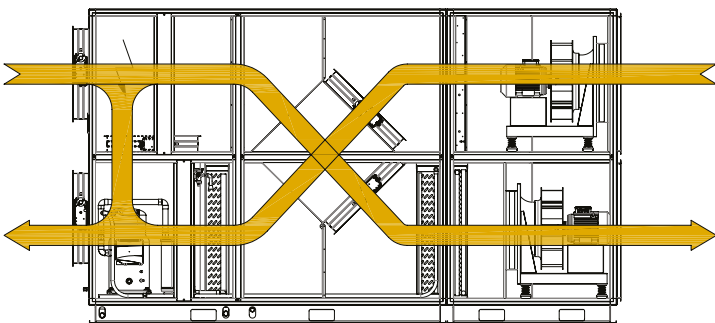


Dry and Warm Fresh Air

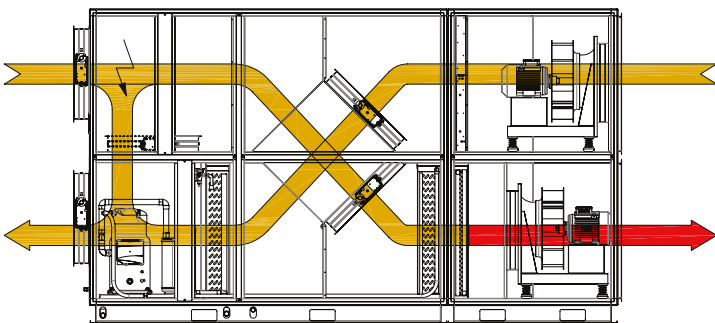


Dry and Cool Fresh Air

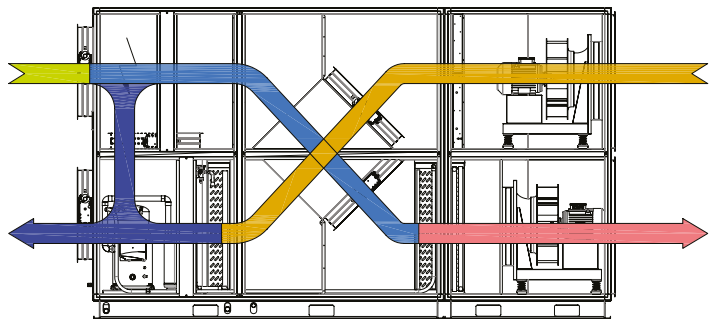
Mixed Air Operation



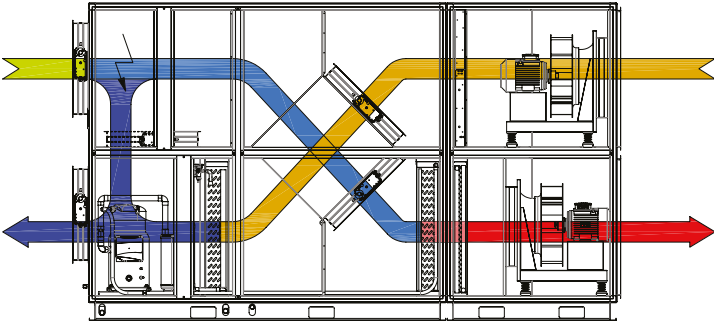
Warm Return Air and Fresh Air



Cool Return Air and Fresh Air



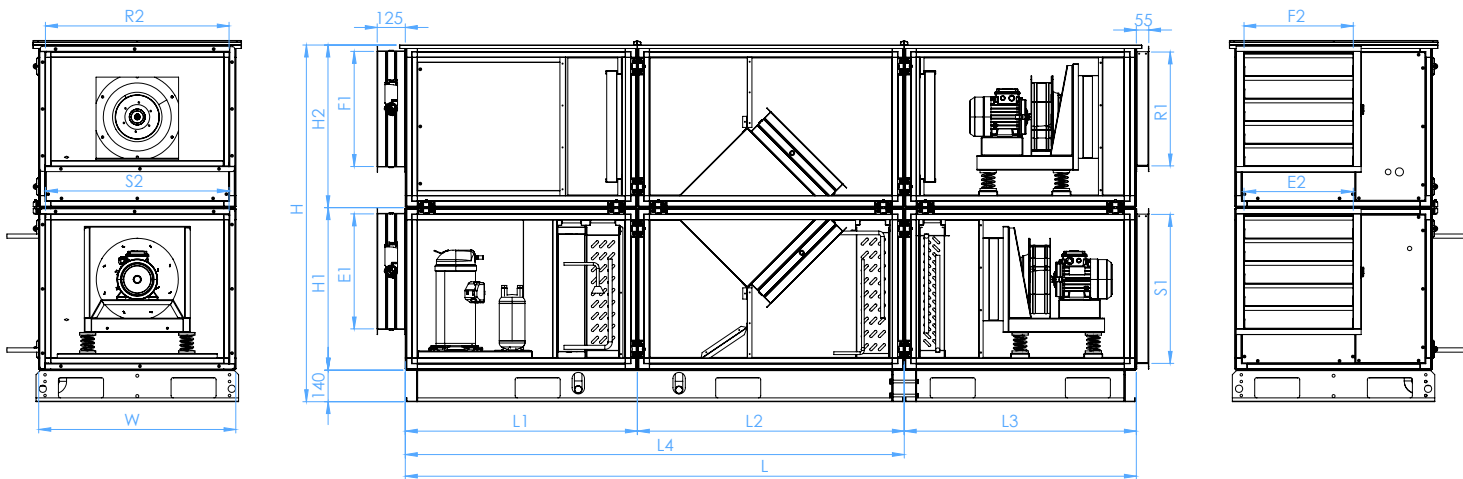
Humid - Warm Return Air and Fresh Air



Humid - Cool Return Air and Fresh Air

UNIT DIMENSION TABLE and TECHNICAL SPECIFICATIONS

Pool CRF - Plate Heat Exchanger Pool Dehumidification Unit



PACKAGED POOL DEHUMIDIFICATION UNIT

MODEL	UNIT	TYPE	CRF-030	CRF-045	CRF-060	CRF-080	CRF-100	CRF-120	CRF-160	CRF-180	CRF-200	CRF-250
H	mm	PL	1580	1890	2200	2200	2510	2510	2820	2820	3440	3440
H1	mm	PL	720	875	1030	1030	1185	1185	1340	1340	1650	1650
H2	mm	PL	720	875	1030	1030	1185	1185	1340	1340	1650	1650
W	mm	PL	875	1030	1030	1340	1340	1650	1960	1960	1960	2270
L	mm	PL	3245	3245	3555	3710	4020	4175	4485	4950	5725	5880
L1	mm	PL	1030	1030	1185	1185	1185	1185	1340	1340	1802	1960
L2	mm	PL	1185	1185	1340	1340	1495	1650	1650	1960	2270	2270
L3	mm	PL	1030	1030	1185	1185	1340	1340	3300	1650	1650	1650
L4	mm	PL	2215	2215	2525	2525	2680	2835	810	3300	4075	4230
F1	mm	PL	510	610	610	610	710	810	1300	810	810	810
F2	mm	PL	485	485	655	655	800	930	810	1300	1235	1300
E1	mm	PL	510	610	610	610	710	810	1300	810	810	810
E2	mm	PL	485	485	655	655	800	930	1235	1300	1235	1300
S1	mm	PL	660	815	970	970	1125	1125	1280	1280	1590	1590
S2	mm	PL	815	970	1280	1280	1280	1590	1900	1900	1900	2210
R1	mm	PL	505	660	815	815	970	910	1125	1125	1435	1435
R2	mm	PL	815	970	1280	1280	1280	1590	1900	1900	1900	2210

Note: All dimensions are mm.

Device Model	Unit	POOL CRF 030	POOL CRF 045	POOL CRF 060	POOL CRF 080	POOL CRF 100	POOL CRF 120	POOL CRF 160	POOL CRF 180	POOL CRF 200	POOL CRF 250
Air-flow	m³/h	3000	4500	6000	8000	10000	12000	16000	18000	20000	25000
External Static Pressure	Pa	450	450	450	450	450	450	450	450	450	450
ASP/VANT Motor Power	kW	1,5/1,5	2,2/2,2	3/3	5,5/5,5	5,5/5,5	5,5/5,5	7,5/7,5	11/11	11/11	15/15
Optional EC Fan ASP/VANT Motor Power	kW	1,14/1,14	2,75/2,75	4/4	4/4	6,3/6,3	6,8/6,8	7,7/7,7	8/8	12,6/12,6	12,24/12,24
Dehumidification Capacity according to VDI 2089**	kg/h	19.1	28.6	38.2	50.9	63.7	76.3	101.8	114.5	127.2	159.0
Evaporator Capacity	kW	16.46	25.37	33.3	42.11	52	63.2	81.8	96.66	100.93	128.63
Condenser Capacity	kW	20.7	31.4	40.1	51.5	61.9	79.3	100	121.7	123.8	158.5
Water Heater Capacity [80°C/60°C]	kW	27.5	43.8	56	76.7	96	120.2	162.8	175.3	200.2	247.9
Compressor-Circuit Number	kW	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	2-2	2-2
Total Absorbed Power	kW	9.2	13.9	18.5	27.5	29.5	35.5	45	59	59	79
Total Absorbed Power with Optional EC Fan	kW	8.8	16,7	20,26	26,38	32,2	36	44.12	43.1	58.56	72.88
Voltage/Hertz/Phaset	400V / 50Hz / 3 Phase										

NOTES:
Designed in accordance with VDI 2089.
*Electric heater is not included in the power consumption values.
**Values are calculated at 30°C temperature and 50% relative humidity.
All dimensions are mm.

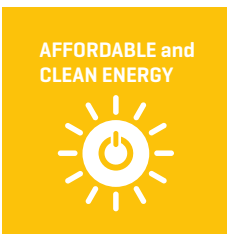
Function - Equipment / Automation	Usage Status
Emergency Stop Button Stops all functions of the unit in emergency situations, helping to ensure safety. 	STANDARD
Electrical Control Panel A microprocessor-based control system that manages all operating functions of the unit. Its automation software ensures the unit operates safely, efficiently, and in a stable manner. 	STANDARD
Duct-Type Temperature and Humidity Sensors Duct-type sensors continuously measure temperature and humidity values, ensuring the system operates under ideal comfort conditions. The unit is automatically controlled based on the measured values. 	STANDARD
Valve Servomotors Controls the three-way valves used on the hydronic heating coil, acting as the final heating stage in the system. 	STANDARD
Damper Servomotors Opens and closes the fresh air, exhaust, mixing, and bypass dampers according to the desired temperature and operating scenarios. Contributes to balanced and controlled management of airflow. 	STANDARD

Function - Equipment / Automation	Usage Status
Frost Protection Thermostats Protects the coils from freezing at low temperatures. Activates during frost scenarios, eliminating the risk of frost forming on the coil surface. 	STANDARD
Central Communication Enables integration with automation systems via Modbus RTU, Modbus TCP/IP, and BACnet IP (optional) communication protocols.	STANDARD
Differential Pressure Switches Detects the fouling condition of the filters, enabling timely identification of maintenance needs. Helps preserve system performance. 	STANDARD
Operator Unit (Display) An LCD control panel that allows the unit's operating status to be monitored and settings to be configured. Can be mounted on the unit or remotely in the space, providing the user with easy and convenient control. 	OPTIONAL
Constant Air Flow Control Automatically adjusts the fan speed to maintain a constant air flow rate, even as filter fouling or system resistance changes. 	STANDARD

SUSTAINABILITY SOLUTIONS AT DOGU HVAC



We offer supplementary health insurance to our employees to promote healthy living. We also plan health-focused initiatives such as smoking cessation programs.



Our R&D center's 2,500 m² solar panels and 0.6 MW annual capacity solar energy systems reduce our carbon footprint. We generate our electricity, ensuring a reliable, sustainable, and accessible clean energy source.



We minimize waste through lean production policies and emphasize recycling, simultaneously increasing efficiency in our production processes.



Through the DOGU HVAC CLUB project, we organize technical tours of our factory, participate in career events, and provide sponsorships to support the skill development of university and technical high school students.



Decent Work and Economic Growth: As an employer brand, our primary goal is to protect our employees' rights and create a workplace founded on equality and justice for all employees.



We support environmental protection through our eco-friendly, sustainable, energy-efficient product lines and R&D efforts focused on reducing waste that could contribute to climate change.



In 2024, we increased female employment in our administrative and production departments. This step aims to contribute to gender equality by offering a workplace with equal rights for all employees.



We enhance indoor air quality with environmentally friendly and energy-efficient products, ensuring adherence to European standards.



We value transparency and accountability, working with associations like ISKAV to prevent corruption and unfair competition, aligning with sectoral ethical values.



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