ECRH

Rooftop
AIR CONDITIONER





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DOĞU

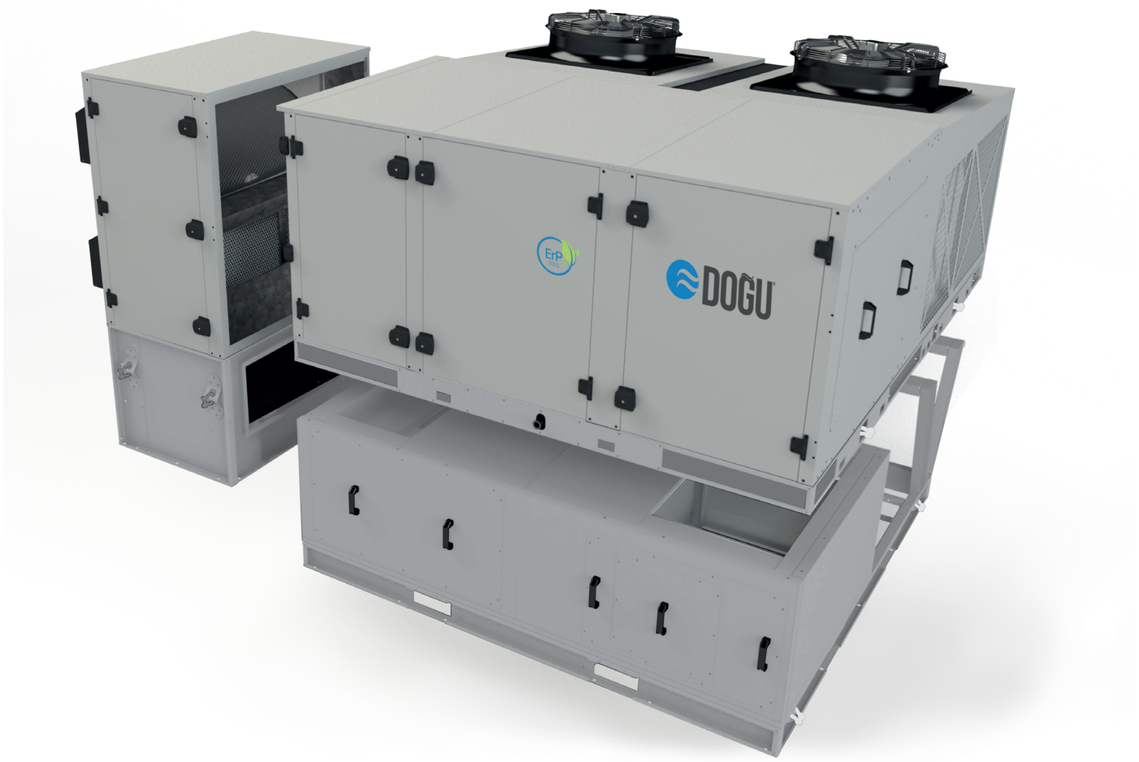


ECRH

GENERAL OVERWIEW

ECRH Rooftop Packaged Air Conditioner units are designed for cooling or heating/cooling through a direct expansion refrigerant system and can provide the required fresh air for the space, all within a single unit. ECRH units are built for installation on roofs, terraces, or other outdoor environments, and they condition indoor air via ductwork. These units are widely used in various spaces, including large commercial buildings, business centers, airports, restaurants, large retail stores, cinemas, theaters, conference halls, industrial buildings, and logistics centers. Designed according to the heating, cooling, and fresh air needs of the conditioned space, these units ensure high efficiency and minimum energy consumption through features such as heat recovery systems, a fully automatic control system, economizer dampers, and free-cooling configurations.

The automation system and control panel used in the ECRH series Rooftop units are fully compatible with the various options and configurations offered. Our compactly designed units are equipped with a Plug & Play feature, which makes them ready for use simply by connecting to electricity. This feature facilitates unit installation on-site and shortens the commissioning time.



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ECRH

COMPONENTS

① EC PLUG FANS

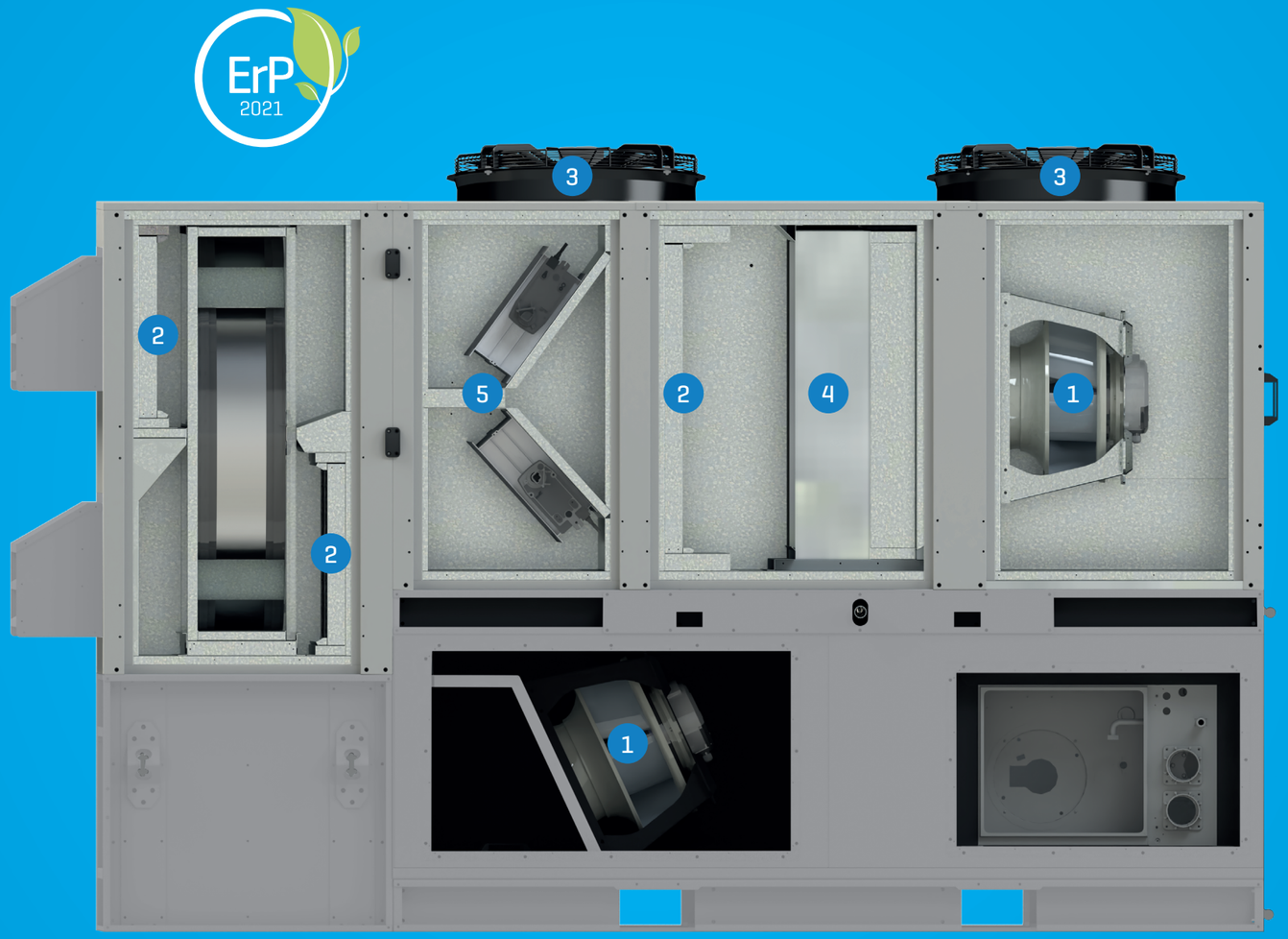
In the ECRH Rooftop series, statically and dynamically balanced, backward-curved, high-efficiency, radial, single-inlet EC plug fans are used on the ventilation side. The use of EC fan motors increases the unit's efficiency while reducing energy consumption. As a standard, EC fans are used, but more economical AC fans are also available as an option.

② FILTERS

In ECRH Rooftop units, standard EU 4 quality ISO Coarse 55% (G4) filters are used. In heat recovery systems, filters are placed in front of the indoor coil, at the return air inlet of the rotor, and at the fresh air inlet of the rotor. Additionally, an optional F-class panel filter can be installed in front of the indoor coil for two-stage filtration. The filters comply with EN 779 and ISO 16890 standards. Filter contamination can be monitored from the control panel via differential pressure sensors. Furthermore, the filters are washable and reusable when they become dirty.

③ EC AXIAL FANS

The ECRH series units use direct-coupled electric motor-driven, high-efficiency, and low-energy consumption EC axial fans suitable for outdoor conditions. This allows airflow control based on outdoor conditions and operational capacity without the need for additional electronic components. More economical AC fans are also available as an option instead of standard EC fans.



④ INDOOR COIL

Indoor coils are manufactured with a copper tube-aluminum fin combination. Coil selection is optimized for unit capacity and airflow, considering pressure drops on both the air and fluid sides, as well as air velocity across the coil for maximum efficiency. Specially designed coils are used in dual-circuit units, allowing for a single indoor coil. Coils are optionally available with hydrophilic or epoxy coating. The indoor coil is equipped with a drain pan made of stainless steel, featuring a drainage outlet and a removable design for easy cleaning.

⑤ ECONOMIZER AND BYPASS DAMPERS

Economizer dampers are used to adjust the fresh air requirement proportionally between 0-100% with the return fan. This adjustment is done automatically by the control system based on sensors located on the supply side. Additionally, the system enables free cooling when outdoor air and room conditions are suitable. When heat recovery is not used, the rotary heat recovery system can be deactivated, and fresh air requirements are met via the bypass damper.

⑥ COOLING CIRCUIT

The ECRH series is designed with one compressor per circuit. The compressors are hermetic scroll types with thermal protection and crankcase heaters and are compatible with R410A refrigerant. Each independent circuit includes a dryer, sight glass, check valve, 4-way valve, and accumulator. High and low-pressure sensors ensure safe operation of the cooling cycle.

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ECRH

COMPONENTS

· CASING

The body of the rooftop air conditioning units is specially designed to resist atmospheric corrosion with high durability against rusting and puncturing. The inner panels are made of aluzinc sheets, and the outer panels are double-walled and frameless, constructed from electrostatically powder-coated galvanized sheets without a rooftop base. Stainless steel drain pans with drainage outlets are used in sections where condensation occurs. For thermal and acoustic insulation, the unit is insulated with 50 mm thick, 70 kg/m³ density rock wool. Service doors are strategically positioned for easy access to internal components, ensuring convenient maintenance and service.

· CONDENSATE DRAIN PAN

The condensate drain pan is used to discharge water accumulated due to condensation on the evaporator. It is made of stainless steel and can be cleaned.

· RETURN FAN

Optional EC plug fans can be installed for return air discharge. When a return fan is used, thermodynamic heat recovery is also enabled. The return fan allows a portion of the indoor air to pass over the condenser coil, achieving thermodynamic heat recovery. In models with thermodynamic heat recovery, the air passing through the condenser is cooler than the outdoor air temperature, reducing the condensation temperature. This improves compressor efficiency while reducing energy consumption.



· CONTROL PANEL

The ECRH series is equipped with a microprocessor-based control system with a built-in display as standard. The unit is ModBus-compatible for monitoring through the building automation system, and it can also support other communication protocols such as BACnet, LonWorks, and BMS. The Plug & Play feature allows the control system to autonomously perform all heating, cooling, and ventilation functions without needing additional modules. Optional components, such as CO2 sensors, smoke detectors, and differential pressure switches, can also be controlled through this system.

· ROTARY HEAT RECOVERY CELL

The heat recovery modules in rooftop units use a Eurovent-certified, ERP-compliant, high-efficiency rotary energy recovery exchanger of the enthalpy type. By using an enthalpy rotor, both heat and moisture transfer occur between the fresh air and exhaust air streams. Optionally, sorption rotors, which provide higher heat and moisture transfer, or condensation rotors, which only transfer sensible heat, can also be used.

· OUTDOOR COIL

The coils are made from copper tubes with aluminum fins. Unlike the indoor coil, two coils are used in outdoor, independent dual-circuit units. Coil selection is based on airflow direction, pressure drop, air velocity, unit capacity, airflow rate, and energy efficiency. Optional epoxy or hydrophilic coating is available for these coils.

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ECRH

ECRH - 030 - 180

- High Energy Efficiency Packaged Air Conditioners
- Eco-Friendly R410A/R32 Refrigerant
- 100% Fresh Air Operation
- High Seasonal Efficiency
- Rotary Heat Recovery System
- 3-Stage (Asymmetric) Cooling
- Independent Dual-Circuit Cooling
- Advanced Microprocessor Control
- High Installation Flexibility and Easy Commissioning
- Wide and Versatile Product Range (3 Casings, 8 Models)

ECRH - 030 - 180

Model	Airflow Rate	Cooling & Heating Capacities	EER	COP	SEER	SCOP
ECRH - 030	5500 m3/h	28.5 / 28.7	3,19	3,77	3,31	2,99
ECRH - 045	8000 m3/h	42.4 / 42.7	3,44	3,99	3,62	3,15
ECRH - 060	11000 m3/h	57.3 / 57.6	3,29	3,58	3,55	3,14
ECRH - 075	14000 m3/h	75.6 / 74.8	3,43	3,65	3,58	3,22
ECRH - 095	18000 m3/h	93 / 91.4	3,41	3,61	3,66	3,15
ECRH - 125	22000 m3/h	122.6 / 123.2	3,23	3,84	3,49	3,06
ECRH - 155	27000 m3/h	155.4 / 155.8	3,24	3,61	3,42	3,24
ECRH - 180	32000 m3/h	178 / 175.5	3,27	3,61	3,48	3,14

3 Different Series: Bsc, Eco, and Energy



ECRH – BSC: The BSC series meets the heating and cooling needs of the space with high efficiency and low energy consumption, operating with 100% return air.



ECRH – ECO: The ECO series is equipped with economizer dampers at the fresh air intake, return air, and exhaust outlet. The unit operates with a 30% fresh air ratio, which can increase up to 100% with natural cooling depending on external air conditions. The economizer dampers are controlled by precise sensors on the fresh air and return air streams.



ECRH – ENERGY: The ENERGY series units are designed with economizer dampers and a rotary heat recovery system, making them ideal for areas with high fresh air requirements. Through a high-efficiency, low-pressure-drop heat exchanger, both sensible and latent heat transfer occurs between the exhaust air and fresh air, ensuring efficient energy recovery.

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TECHNICAL DATA

ECRH		030	045	060	075
FANS					
Indoor Fan		EC Plug Fan			
Outdoor		EC Axial Fan			
Number of Outdoor Fans	Piece	1	1	2	2
Min. Airflow Rate	m³/h	4400	6400	8800	11200
Nominal Airflow Rate	m³/h	5500	8000	11000	14000
Max. Airflow Rate	m³/h	6050	8800	12100	15400
Nominal External Static Pressure	Pa	200	200	200	200
NORMINAL THERMAL PERFORMANCE - COOLING					
(1)Cooling Capacity	kW	28,5	42,4	57,3	75,6
(1)EER		3,19	3,44	3,29	3,43
(1)Installed Power	kW	15,63	18,77	28,39	32,92
Eurovent Energy Class		A	A	A	A
NORMINAL THERMAL PERFORMANCE - HEATING MODE					
(1)Heating Capacity	kW	28,7	42,7	57,6	74,8
(1)COP		3,77	3,99	3,58	3,65
Eurovent Energy Class		A	A	A	A
SEASONAL EFFICIENCIES					
(2)Seasonal Energy Efficiency Ratio (SEER)		3,31	3,62	3,55	3,58
(2)Seasonal Energy Efficiency ηs,c	%	129,58	141,85	138,95	144,4
(2)Seasonal Coefficient of Performance SCOP		2,99	3,15	3,14	3,22
(2)Seasonal Energy Efficiency ηs,h	%	116,62	122,91	122,26	125,6
COMPRESSOR					
Refrigerant Type		R410a			
Number of Compressors	Piece	2	2	2	2
Compressor Type		Scroll			
Cooling Circuit	Piece	2	2	2	2
Capacity Control		3	3	3	3
Tota Compressor Power	kW	7,65	10,58	14,79	19,02
Current (Nominal)	A	14,8	18,62	27,52	34,31
(OPTIONAL) NATURAL GAS HEATER					
Capacity(Min-Max)	kW	7,6-34,85	12,4-65	12,4-65	16,4-82
Burner Pressure	Pa	90	120	120	120
Supply Voltage	V-hz	230 V-50 Hz Monofaze			
Power Input (Min-Max)	kW	0,011-0,074	0,015-0,097	0,015-0,097	0,02-0,123
(OPTIONAL) ELECTRIC HEATER					
Capacity (▪T=10 °C)	kW	20	30	40	50
Hot Water Regime (▪T=20 °C)	kW	40	60	80	100
(OPTIONAL) HOT WATER HEATER					
Capacity	kW	82	117	135	210
Hot Water Regime	°C	80/60			
SOUND DATA					
Sound Power Level	dBA	75	76	78	80
Sound Pressure (1 m)	dBA	66	68	71	72
Sound Pressure(5 m)	dBA	52	54	57	57

NOTES:
(1) According to Eurovent conditions:
Cooling: · Outdoor Temperature = 35°C DB · Coil Inlet Temperature = 27°C DB / 19°C WB
Heating: · Outdoor Temperature = 7°C DB / 6°C WB · Indoor Temperature = 20°C DB
(2) According to EN 14825 standard

TECHNICAL DATA

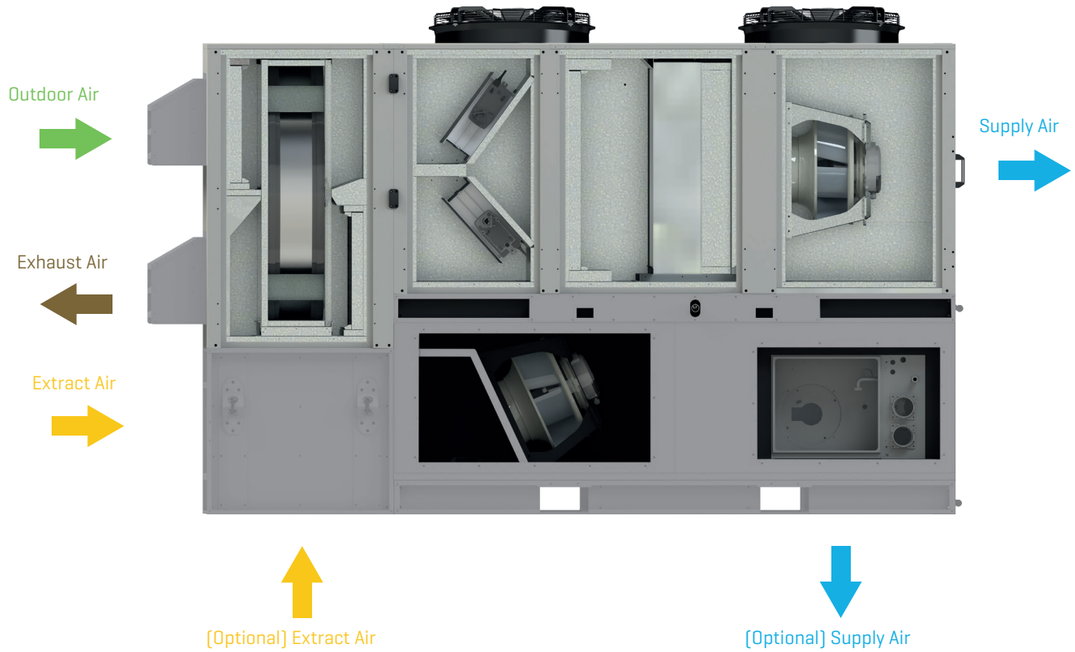
ECRH		095	125	155	180
FANS					
Indoor Fan		EC Plug Fan			
Outdoor Fan		EC Axial Fan			
Number of Outdoor Fans	Piece	2	2	2	2
Min. Airflow Rate	m³/h	14400	17600	21600	25600
Nominal Airflow Rate	m³/h	18000	22000	27000	32000
Max. Airflow Rate	m³/h	19800	24200	29700	35200
Nominal External Static Pressure	Pa	200	200	200	200
NORMINAL THERMAL PERFORMANCE - COOLING					
(1)Cooling Capacity	kW	93	122,6	155,4	178
(1)EER		3,41	3,23	3,24	3,27
(1)Installed Power	kW	38,37	54,76	65,19	71,27
Eurovent Energy Class		A	A	A	A
NORMINAL THERMAL PERFORMANCE - HEATING MODE					
(1)Heating Capacity	kW	91,4	123,2	158	175,5
(1)COP		3,61	3,84	3,61	3,61
Eurovent Energy Class		A	A	A	A
SEASONAL EFFICIENCIES					
(2)Seasonal Energy Efficiency Ratio (SEER)		3,66	3,49	3,42	3,48
(2)Seasonal Energy Efficiency ηs,c	%	143,43	136,48	133,61	136,14
(2)Seasonal Coefficient of Performance SCOP		3,15	3,06	3,24	3,14
(2)Seasonal Energy Efficiency ηs,h	%	122,95	119,37	126,64	122,68
COMPRESSOR					
Refrigerant Type		R410a			
Number of Compressors	Piece	2	2	2	2
Compressor Type	Piece	Scroll			
Cooling Circuit		2	2	2	2
Capacity Control	kW	3	3	3	3
Tota Compressor Power	A	22,89	33,46	42,39	45,07
Current (Nominal)		41,26	59,15	73,45	79,03
(OPTIONAL) NATURAL GAS HEATER					
Capacity(Min-Max)	kW	21-100	12,4-130	16,4-164	21-200
Burner Pressure	Pa	120	120	120	120
Supply Voltage	V-hz	230 V-50 Hz Monofaze			
Power Input (Min-Max)	kW	0,02-0,130	0,015-0,194	0,02-0,246	0,02-0,26
(OPTIONAL) ELECTRIC HEATER					
Capacity (▪T=10 °C)	kW	65	80	100	120
Hot Water Regime (▪T=20 °C)	kW	130	165	190	230
(OPTIONAL) HOT WATER HEATER					
Capacity	kW	258	318	405	465
Hot Water Regime	°C	80/60			
SOUND DATA					
Sound Power Level	dBA	79	81	81	84
Sound Pressure (1 m)	dBA	72	73	73	76
Sound Pressure(5 m)	dBA	58	59	60	62

NOTLAR:
(1)According to Eurovent conditions:
Cooling: · Outdoor Temperature = 35°C DB · Coil Inlet Temperature = 27°C DB / 19°C WB
Heating: · Outdoor Temperature = 7°C DB / 6°C WB · Indoor Temperature = 20°C DB
(2)According to EN 14825 standard

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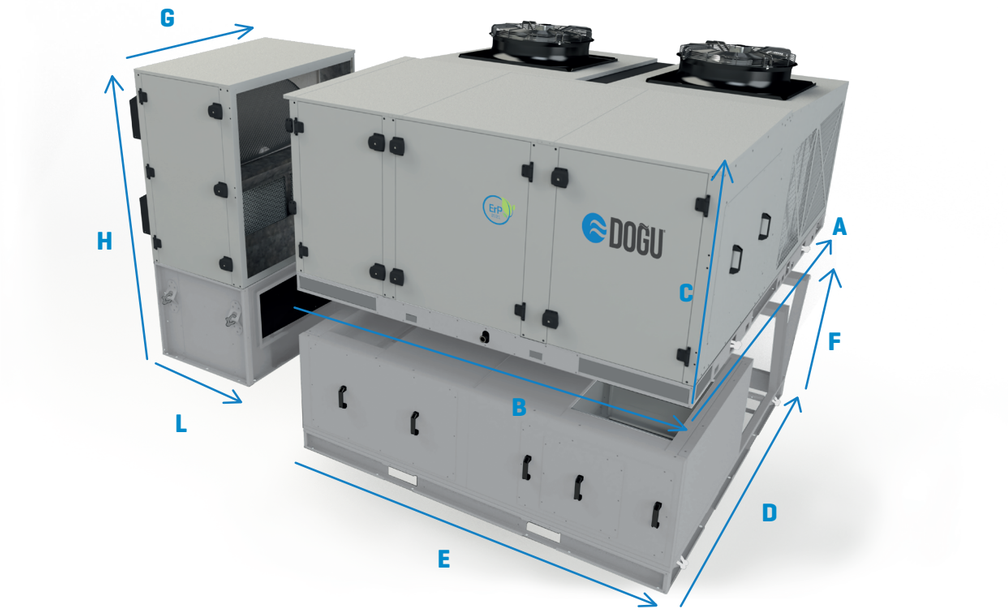
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AIRFLOW CONFIGURATIONS



In the ECRH ENERGY model with heat recovery and economizer dampers, heat recovery and thermodynamic heat recovery are carried out by the return fan. A portion of the exhaust air is mixed with fresh air according to the mixing ratio and then passes through the rotary-type heat recovery unit.

DIMENSIONS AND WEIGHTS



UNIT(mm)	30	45	60	70	95	125	155	180
A	2770	3145	3320	3500	3810	4500	4720	5020
B	2320	2320	2320	2320	2320	2320	2320	2320
C	1150	1215	1340	1565	1740	2000	2220	2520
ROOF CURB (mm)								
D	2770	3145	3320	3500	3810	4500	4720	5020
E	2320	2320	2320	2320	2320	2320	2320	2320
F	790	990	990	990	1280	1430	1430	1430
ROTOR MODULE(mm)								
G	1200	1475	1650	1825	2000	2220	2450	2750
H	1940	2200	2330	2555	3020	3430	3650	3950
L	770	870	910	910	910	910	910	910

ECRH (kg)	30	45	60	70	95	125	155	180
Unit	1050	1200	1350	1450	1800	2230	2530	2950
Rotor	300	350	430	500	590	690	780	900
RoofCrub	550	700	790	910	1140	1320	1280	1480
Total	1900	2250	2570	2860	3530	4240	4590	5300

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ECRH - 030 - 180

STANDARDS & OPTIONS	SERIES		
	BSC	**ECO**	**ENERGY**
Cooling Only	o	o	o
Reversible (Heating/Cooling)	s	s	s
Supply Direction EC Plug Fan	s	s	s
Supply Direction Plug Fan	o	o	o
Condenser Direction EC Axial Fan	s	s	s
Condenser Direction AC Axial Fan	o	o	o
Rooftop Base	o	o	o
Economizer	x	x	x
Bypass Damper	x	x	x
Thermodynamic Heat Recovery	x	x	x
Rotary Type Heat Recovery	x	x	x
Return Fan	o	o	o
Operation with 100% Return Air	s	s	s
Operation with Proportional Fresh Air (030%)	x	x	x
Operation with 100% Fresh Air	x	x	x
Free Cooling	x	x	x
Electronic Expansion Valve	o	o	o
Low and High Capacity Electric Heater	o	o	o
Natural Gas Heater	o	o	o
Hot Water Heater	o	o	o
ISO Coarse Filter (G Class)	s	s	s
ePM1 Filter (F Class)	o	o	o
ISO Coarse + ePM1 Filters	o	o	o
Coil Coating	o	o	o
Control with Temperature Sensor	s	s	s
Differential Pressure Sensor	o	o	o
Differential Pressure Sensor (Filter Contamination Alarm)	o	o	o
Enthalpy Control	o	o	o
Smoke Detector and Fire Alarm	o	o	o
Fire Alarm	o	o	o
Touch Screen	o	o	o
ModBus	s	s	s
Bacnet MSTP	o	o	o
LonWorks FTT	o	o	o

s : Standart
o : Optional
x : Not Suitable

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SUSTAINABILITY SOLUTIONS AT DOGU HVAC

3 GOOD HEALTH and WELL- BEING

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

4 QUALITY EDUCATION

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.

5 GENDER EQUALITY

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.

7 AFFORDABLE and CLEAN ENERGY

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.

8 DECENT WORK and ECONOMIC GROWTH

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.

11 SUSTAINABLE CITIES and COMMUNITIES

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

12 RESPONSIBLE CONSUMPTION and PRODUCTION

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

13 CLIMATE ACTION

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.

16 PEACE, JUSTICE and STRONG INSTITIONS

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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Venues Breathe With Us

Read to watch our
promotional video

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