DOĞU
İKLİMLENDİRME | HVAC SYSTEMS

ECRH - R32

Rooftop Air Conditioner

Venues Breathe with DOGU HVAC Systems!

DOGU HVAC, which began production of ventilation and climate control equipment,founded in Izmir in 1999," and which are subsumed under 7 major groups as Air Handling Units, Rooftop Units, Heat/Energy Recovery Units, Air Purifiers, Air Distribution & Management Products and Kitchen Ventilation Equipments are all produced under the compliance with EU standards. Air Purifiers under the B-Fresh brand, VRF Systems under Seasons brand, and the rest of the products under the DOGU brand are brought to both domestic and international markets. DOGU HVAC's, headquarter in Izmir/Turkey, operates in a large-sized plant spreaded over factory, in total area of 32.000 sqm in which 17.500 sqm indoor space that enables DOGU HVAC manufactures 200 various type of products. Additionally, DOGU HVAC has a powerful sales network with sales offices located in İstanbul, Ankara and Antalya in Turkey as well as authorized dealers in many other countries for sales and after sales operations. "DOGU HVAC,- fundamentally adhering to the principles of 'Customer Satisfaction' and 'Zero Error,' exports to more than 55 countries across 4 continents today, with over 300 employees, an extensive machine-tools, and comprehensive product certification."

DOGU HVAC R&D center developed exclusive products, such as Packaged Air Conditioning Units [Rooftop] with environmentally friendly R32 refrigerant, Heat/Energy Recovery Units compatible with ERP regulations, Air handling units with TB1-T2 values, Recirculated Laminar Airflow Unit, Single Piece Square Ceiling Diffuser and Ecology Units, for the first time have brought to the sector. DOGU HVAC R&D has the ability to make customized production which can meet the requirement of the customers by means of special software such as "ANSYS FLUENT". DOGU HVAC guaranteed its quality of management by having advantages of ISO 9001, ISO 14001, ISO 45001 certifications. Air Handling Units have EUROVENT, TUV Hygiene [in accordance with DIN1946-4, VDI 6022-1, DIN EN 13053 standarts], have TSEK and CE quality certifications. Fire Dampers have EN 1366-2 and EN 13501-3 CE certifications; Smoke Control Dampers have EN 1366-10 and 12101-8 CE certifications; Kitchen Ventilation Products have TSEK and CE quality certifications.

GENERAL SPECIFICATIONS

Roof type (ROOFTOP) package air conditioners, which operate either only cooling or reversible with the direct expansion refrigerant system providing the conditioning of the air indoor through ducts, which will meet the fresh air requirement needed and can perform all heating, cooling and ventilation processes in a compact unit. ECRH is designed for climates that need cooling only or reversible. Various capacity options available according to the size of the environment to be air-conditioned.

Main applications are business centers, airports, cinema and theatre halls, conference halls, industrial buildings, shopping malls, restaurants etc. Optimized heat recovery, fully automated system, economizer damper and free-cooling configurations available according to the needs of the place which will be conditioned efficiently with low energy consumption. ECRH ranges are fully automated with several options – options differ depending on the working scenarios-. Thanks to its Plug&Play feature and design, installation and commissioning time is short.

ECRH / Rooftop Air Conditioner

COMPONENTS

FILTERS

Easy clean and reusable filters. As standard EU ISO Course 55% (ISO 16890 – EN779 for G4). Filters are placed in front of the supply coil, at return air side and fresh air side of the rotary wheel. 2-stage filtration used as optionally with F class panel filters. Filters comply with EN779 and EN16890 standards. Filter impurities can be monitored from the control panel with the differential pressure switch.

EC AXIAL FANS

ECRH units are equipped with self-coupled electric motors with low consumption and suitable for outdoor conditions. EC axial fans with high efficiency and low energy consumption are used. In this way opportunity to control air flow provided without any additional electronic components according to weather conditions and operation capacity. Economical AC axial fans might be used conditionally.

EC PLUG FANS

High efficient EC Plug Fans are used for supply
side optionally. Economical AC plug fans might
be used conditionally.

ECONOMIZER & BYPASS DAMPERS

Economizer is used to proportionally adjust the fresh air demand needed between 0-100% with a return fan. This adjustment is made automatically by control system with the sensors, located on the supply side in addition, it provides an opportunity of free cooling when outdoor and indoor conditions are suitable. Bypass damper, on the other hand, direct air mixture provided by stopping heat recovery where heat recovery is not possible (like mid seasons) between outdoor air and indoor air, direct air mixture can be made by stopping the heat recovery system with bypass damper.

INDOOR HEAT EXCHANGER COIL

Coils are made of copper pipes-aluminum fins. The design criteria of the coils are selected according to air and fluid side, pressure drop, air velocity, unit capacity, air flow rate and energy efficiency. In double circuit systems, custom made coils used. Optionally the fins might be coated with epoxy and hydrophilic. The drain pans of the coils are made of stainless steel and cleanable.

REFRIGERANT CIRCUIT

ECRH ranges designed as only one compressor for each circuit. Compressors are hermetic scroll compressors with. thermal protection, crankcase heater and compressors suitable for R410A as refrigerant fluid type. Thermostatic expansion valves used for each inlet of coil. And dryer, inspection glass, check valves, 4-way valve and accumulator used for each independent circuit. Safe operation of refrigeration cycle is ensured by low pressure and high-pressure sensors.

ErP 2018

ECRH R32 080-200

- High Energy Efficient Packaged Air Conditioners
- Eco-Friendly R32 Refrigerant Gas
- Operating with 100% Fresh Air
- High Seasonal Efficiency
- Thermodynamic Heat Recovery
- 3 Stage (Asymmetric) Cooling
- Independent Dual Circuit Cooling
- Advanced Microprocessor Control
- High Installation Flexibility and Easy Commissioning
- Wide and Versatile Range (3 casings, 8 sizes)

SPECIFICATIONS

ECRH R32– ENERGY: Units with economizer dampers and rotary typeheat exchanger. Designed for areas, which requires high fresh air. Withheat exchangers that have high efficiency and low pressure drop, sensible and latent heat transfer is made between exhaustand fresh air.

Model	Air Flow	Cooling & Heating Capacities	EER
ECRH-080	8000 m³/h	39.3 38.08	2.59
ECRH-105	10500 m³/h	44.6 46.7	2.44
ECRH-120	12000 m³/h	48.3 50.4	2.22
ECRH-135	13500 m³/h	58.6 60.0	2.35
ECRH-155	15500 m³/h	65.4 68.2	2.43
ECRH-175	17500 m³/h	73.4 78.56	2.47
ECRH-155	20000 m3/h	90.25 90	2.74

TECHNICAL DATA

FOUR ECRH-R32		080	105	120	135
FANS					
Indoor Fan Type		EC Plug Fan			
Outdoor Fan Type		EC Axial Fan			
Number of Outdoor Fan	pcs.	1	1	2	2
Min Air Flow	m^3/h	7200	9450	10800	12150
Nominal Air Flow	m^3/h	8000	10500	12000	13500

NOMINAL THERMAL PERFORMANCES - COOLING MODE					
(1)Cooling Capacity	kW	39.32	44.6	48.25	58.6
(1)EER		2.59	2.44	2.22	2.35
(1)Total Installed Power	kW	15.18	18.23	21.68	24.86
Eurovent Energy Class		D	D	D	D

NOMINAL THERMAL PERFORMANCES - HEATING MODE					
(1)Heating Capacity	kW	38.08	46.76	50.46	60.02
(1)COP		2.92	2.64	2.56	2.47
Eurovent Energy Class		D	D	D	D

SEASONAL EFFICIENCIES					
(2)Seasonal Energy Efficiency Ratio(SEER)		2.87	2.70	2.56	2.69
(2)Seasonal Energy Efficiency ηs,c	%	111,80	113,60	112,69	114,26
(2)Seasonal Coefficient of Performance SCOP		2,82	2,64	2,56	2,59
(2)Seasonal Energy Efficiency ηs,h	%	109,80	111,40	111,00	112,60

COMPRESSOR					
Refrigerant Type		R32			
Number of Compressor	pcs.	2	2	2	2
Compressor Type		Scroll			
Cooling Circuit	pcs.	2	2	2	2
Capacity Control		2	2	2	2

NOTES:
(1) According to Eurovent conditions:
Cooling: · Outdoor temperature = 35°C DB · Entering coil 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

ECRH		155	175	200	
FANS					
Indoor Fan Type		EC Plug Fan			
Outdoor Fan Type		EC Axial Fan			
Number of Outdoor Fan	pcs.	2	2	2	
Min Air Flow	m³/h	14400	17600	18000	
Nominal Air Flow	m³/h	15500	17500	20000	

NOMINAL THERMAL PERFORMANCES - COOLING MODE					
(1)Cooling Capacity	kW	65.45	73.49	90.24	
(1)EER		2.43	2.47	2.74	
(1)Total Installed Power	kW	26.85	29.65	32.89	
Eurovent Energy Class		D	D	D	

NOMINAL THERMAL PERFORMANCES - HEATING MODE					
(1)Heating Capacity	kW	68.26	78.56	90	
(1)COP		2.47	2.57	2.75	
Eurovent Energy Class		D	D	D	

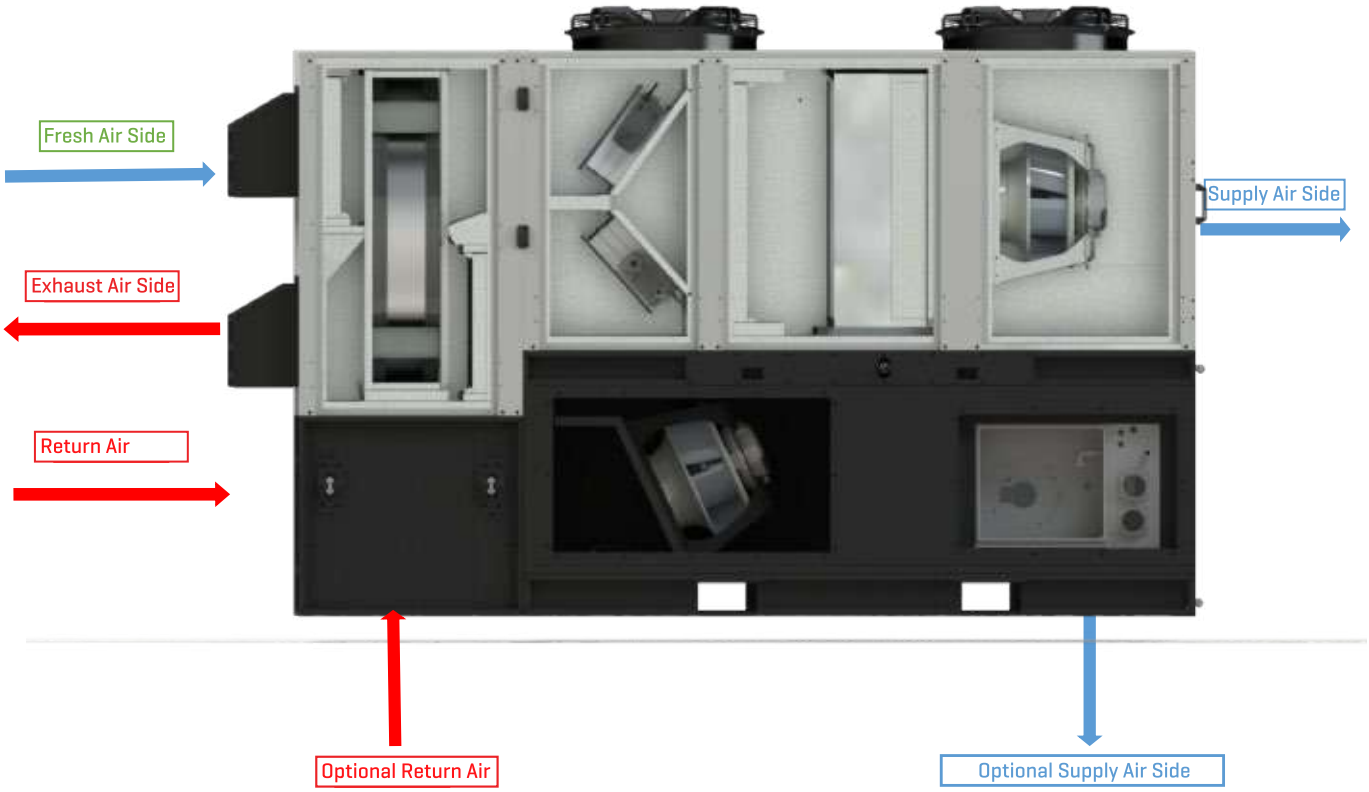
SEASONAL EFFICIENCIES					
(2)Seasonal Energy Efficiency Ratio(SEER)		2.71	2.49	2.79	
(2)Seasonal Energy Efficiency ηs,c	%	110.65	109.20	112.80	
(2)Seasonal Coefficient of Performance SCOP		2.64	2.46	2.49	
(2)Seasonal Energy Efficiency ηs,h	%	113.72	113.48	113.00	

COMPRESSOR					
Refrigerant Type		R32			
Number of Compressor	pcs.	2	2	2	
Compressor Type		Scroll			
Cooling Circuit	pcs.	2	2	2	
Capacity Control		3	3	3	

NOTES:
(1) According to Eurovent conditions:
Cooling: · Outdoor temperature = 35°C DB · Entering coil 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

AIR CONFIGURATIONS

ECRH-R32 – Energy Series:



In ECRH ENERGY with heat recovery and economizer dampers, heat recovery and thermodynamics heat recovery are performed by the return fan. Some of the exhaust air is passed through the rotary type heat recovery unit according to the mixing ratio. Then, the heat transferred air is passed over the condenser coil directly. In this way, energy saving is achieved by thermodynamics heat recovery.

AIR CONFIGURATIONS

ECRH-R32 – ENERGY Series

Models	080	105	120	135	155	175	200	
W	2770	3145	3320	3495	3810	4495	4720	
L	2320	2320	2320	2320	2320	2320	2320	
H	1408	1493	1618	1843	2054	2246	2246	

All dimensions are in mm.

STANDARDS & OPTIONS	SERIES		
	BSC	ECO	ENERGY
Cooling Only	O	O	O
Reversible (Heating/Cooling)	S	S	S
EC plug fan for supply side	S	S	S
Plug fan for supply side	O	O	O
EC axial fan for condenser side	S	S	S
AC axial fan for condenser side	O	O	O
Roofcurb	O	O	O
Economizer	X	X	X
Bypass damper	X	X	X
Thermodynamics heat recovery	X	X	X
Rotary type heat exchanger	X	X	X
Return Fan for exhaust side	O	O	O
Operation with %100 return air	S	S	S
Operation with partial fresh air (up to %30)	X	X	X
Operation with %100 fresh air	X	X	X
Free-Cooling	X	X	X
Electronix expansion valve	O	O	O
Low and high electric heater	O	O	O
Natural gas heater	O	O	O
Hot Water Heater	O	O	O
ISO Course filter (G Class)	S	S	S
ePM1 filter (F Class)	O	O	O
ISO Course + ePM1 filters	O	O	O
Coil coating	O	O	O
Control with room temperature sensor	S	S	S
Differencial pressure switch (Dirty filter alarm)	O	O	O
CO2 sensor	O	O	O
Enthalpy control	O	O	O
Smoke dedector and fire alarm	O	O	O
Fire alarm	O	O	O
Touch Panel	O	O	O
ModBus	S	S	S
Bacnet MSTP	O	O	O
LonWorks FTT	O	O	O

S : Standard

O : Options

X : Not Available

NOTES

NOTES


We make the difference with
200 different types of products.
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