EcoAir Box

modul R
R-SERIES

AIR-TO-WATER RECIPROCATING COMPRESSOR ASHPs

WITH OVER 100 AIR-TO-WATER AIR SOURCE HEAT PUMPS INSTALLED SINCE 2021, WITH 22.34MW OF EQUIPMENT DEPLOYED ACROSS THE UK.

The typical installation includes retail parks, supermarkets, warehouses, offices, care homes, agricultural buildings, universities and schools.

GWP of 3 R290

GWP of 1 R744

DUTY UP TO 150KW HEATING

LOWEST SOUND LEVEL ON THE MARKET

42* dB(A) AT 10 METRES

LOW IMPACT REFRIGERANTS R290, R744

554 air handling units have been designed, manufactured and installed by EcoAir Box since 2017. EcoAir Box is a trading division of Excool Ltd who have over **40 years experience in the HVAC Sector**.

ECOAIRBOX.COM

eXcool COMMERCIAL Advanced Climatic Solutions

THE QUEEN'S AWARDS FOR ENTERPRISE: INTERNATIONAL TRADE 2022

The global push for decarbonisation in response to climate change has significantly impacted the refrigeration and air conditioning sectors. Refrigerants are essential to these systems, but traditional refrigerants such as hydrofluorocarbons (HFCs) have been linked to high global warming potentials (GWPs). This brochure highlights the two refrigerants R290 and R744 that have the lowest GWPs & therefore the lowest impact on the environment to date.

All ModulR R-Series ASHPs are manufactured in the UK with high-quality components from trusted suppliers. Our state-of-the-art ASHP testing bay allows our clients to visit our Bromsgrove HQ to see the equipment in operation, receiving real-time data analysis from our engineering experts.

DESIGN HIGHLIGHTS INCLUDE:

Ultra-low noise (42dB at 10m*) yet highly effective with 5th generation Axial fans.
Compact size for a smaller footprint.
Modular bolt-on capabilities (R290 only).
Option to provide cooling and heating independently.
Optimised flow temperatures for energy saving.
Compressors offer 3 stages of control and are fully serviceable with easy maintenance access.
Designed to provide heating duties at -5°C ambient and cooling duties at 32°C ambient.
In-built pump and expansion vessel.
Remote monitoring available.
Carel controls pre-installed.
High flow temperatures (up to 70°C for R290 and up to 80°C for R744).

*in free field conditions for a single ASHP module.

WHY CHOOSE R290 REFRIGERANT?

With several refrigerants available, the table below provides an overview of the applications and benefits of R290.

R290 (PROPANE)		
Commercial sectors	• Supermarkets • Food service • Science Parks	• Offices • Schools and Universities • Food Preparation
Features	• Natural refrigerant • Very low GWP (3)	• High energy efficiency • Flow temperature up to 70°C
Benefits	• Ultra low impact refrigerant • Energy-efficient	• Good thermodynamic properties • Non-toxic in low concentrations

MODULAR DESIGN FOR CAPACITIES FROM 50KW UP TO 500KW AT -5*C (R290 SYSTEM ONLY)

With the heating and cooling demands of ASHPs increasing due to the impact of global warming, our R290 modular system allows for up to 5 modules to be joined together to form a single bank. This allows for:

Future expansion
Reduced impact during maintenance period
Increased levels of control
Optimal efficiency
Common headers for flow and return pipework

2 PIPE AND 4 PIPE OPTIONS AVAILABLE

The ModulR R-Series ASHPs are available in both two-pipe or four-pipe configurations.

Feature	**2 Pipe ASHP** (Standard)	**4 Pipe ASHP** (Available on Request)
Number of pipes	2 pipes (2 for either heating or cooling).	4 pipes (2 for heating, 2 for cooling).
Functionality	The unit is either in heating or cooling mode at one time.	The unit can heat and cool simultaneously to supply different zones or areas.
Energy-efficiency	Optimal efficiency for projects without simultaneous heating and cooling requirements.	More energy-efficient in systems requiring simultaneous heating and cooling.
Complexity	Simpler installation and operation.	More complex installation and operation.
Initial cost	Lower capital cost, ideal for projects which don't require simultaneous heating or cooling.	Higher capital cost, therefore only used for projects with simultaneous heating and cooling requirements.
Required space	Most compact solution.	More space required due to the extra piping for cooling and heating circuits.
System control	Requires switching between heating and cooling modes.	Allows for independent control of heating and cooling in different zones or areas.
Usage	Suitable for buildings that only need either heating or cooling at any given time: e.g. commercial buildings.	Ideal for buildings that need both heating and cooling at the same time in different areas: e.g. residential buildings.
Maintenance	Simpler maintenance due to fewer components.	More maintenance will be required due to additional components.

ARE BUFFER VESSELS REQUIRED?

For R290 versions of the R-Series, buffer vessels are not required. There are several advantages to this:

Simplicity: Fewer components reduce capital costs and maintenance requirements.
Smaller space requirement: Since there is no need for a separate buffer vessel, the system takes up less space, ideal for compact installations.
Potential energy saving: Without the requirement to supply a fixed flow temperature into a buffer vessel, each ASHP bank can modulate it's temperature based on the 0-10 demand signal from the connected system.

For R744 versions of the R-Series, buffer vessels are required to achieve the optimal system performance. These will be supplied by EAB as part of our package.

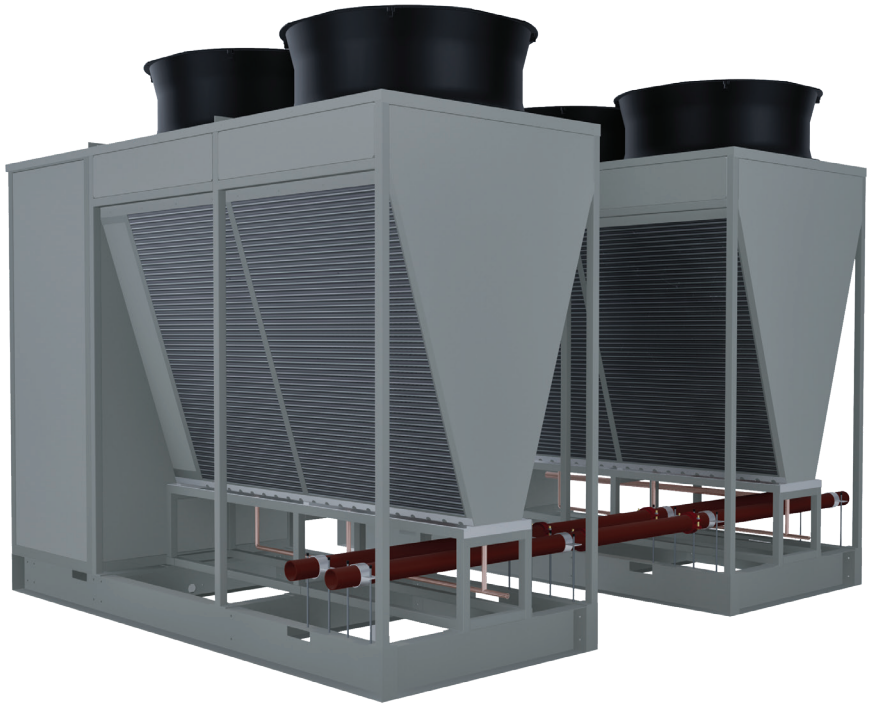
70kW R290 ASHP

70kW R290 ASHP			
Heating duty available at 7°C ambient (per module)	70kW	Frost protection system	Minimum 25% glycol fill required
Heating duty available at -5°C ambient (per module)	50kW	Number of control stages	3
Heating nominal flow temperature	45°C	Height	2642mm
Heating maximum flow temperature	70°C	Length	2100mm
Heating nominal return temperature	30°C	Width	1250mm
Cooling duty available at 32°C ambient (per module)	50kW	Dry weight (approx)	1300kg
Cooling nominal flow temperature	6°C	Voltage	400V
Cooling nominal return temperature	12°C	Frequency	50Hz
Maximum external hydraulic pressure drop	100kPa	Phases	3 ~
Standing hydraulic pressure	1.8 Bar	Full load current	50 Amps
BMS connectivity	Bacnet IP/ Modbus	Nominal run current	40 Amps
Sound pressure @ 10m based on free field conditions	42dB (A)	Nominal running load	21kW

135kW R290 ASHP

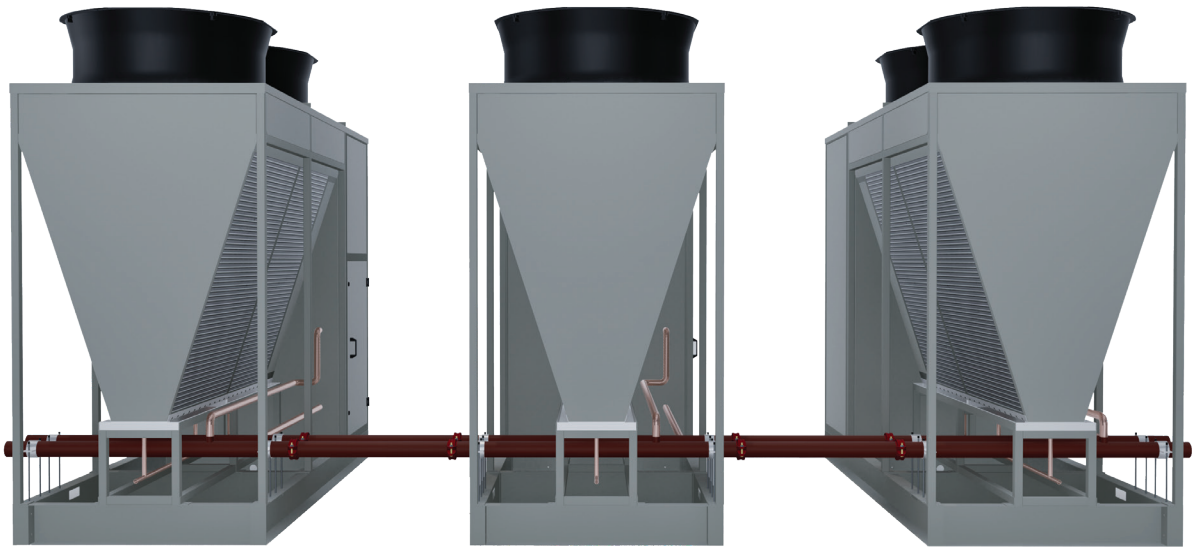
135kW R290 ASHP			
Heating duty available at 7°C ambient (per Module)	Up to 150kW	Frost protection system	Minimum 25% glycol fill required
Heating duty available at -5°C ambient (per module)	100kW	Number of control stages	3
Heating nominal flow temperature	45°C	Height	2642mm
Heating maximum flow temperature	70°C	Length	3000mm
Heating nominal return temperature	30°C	Width	1250mm
Cooling duty available at 32°C ambient (per module)	100kW	Dry weight (approx)	1500kg
Cooling nominal flow temperature	6°C	Voltage	400V
Cooling nominal return temperature	12°C	Frequency	50Hz
Maximum external hydraulic pressure drop	100kPa	Phases	3 ~
Standing hydraulic pressure	1.8 Bar	Full load current	89 Amps
BMS connectivity	Bacnet IP/ Modbus	Nominal run current	72.4 Amps
Sound pressure @ 10m based on free field conditions	42dB (A)	Nominal running load	42kW

270kW R290 ASHP



270kW R290 ASHP			
Heating duty available at 7°C ambient (per module)	Up to 300kW	Frost protection system	Minimum 25% glycol fill required
Heating duty available at -5°C ambient (per module)	200kW	Number of control stages	6
Heating nominal flow temperature	45°C	Height	2792mm
Heating maximum flow temperature	70°C	Length	3000mm
Heating nominal return temperature	30°C	Width	3500mm
Cooling duty available at 32°C ambient (per module)	200kW	Dry weight (approx)	3200kg
Cooling nominal flow temperature	6°C	Voltage	400V
Cooling nominal return temperature	12°C	Frequency	50Hz
Maximum external hydraulic pressure drop	100kPa	Phases	3 ~
Standing hydraulic pressure	1.8 Bar	Full load current	178 Amps
BMS connectivity	Bacnet IP/ Modbus	Nominal run current	144.8 Amps
Sound pressure @ 10m based on free field conditions	45dB (A)	Nominal running load	84kW

405kW R290 ASHP

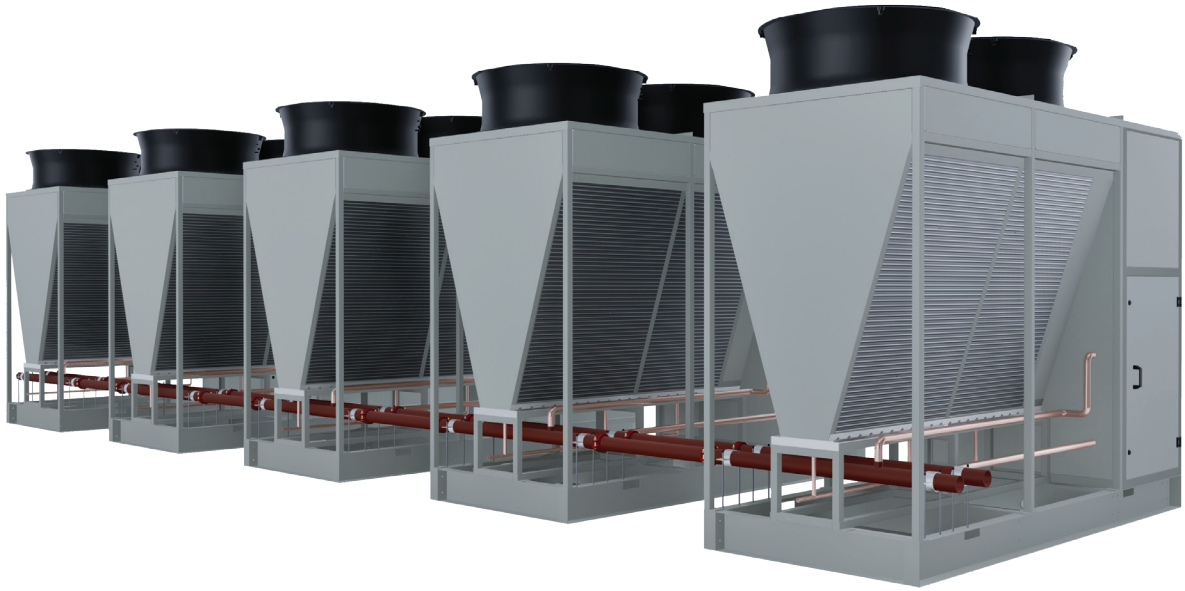


405kW R290 ASHP			
Heating duty available at 7°C ambient (per module)	450kW	Frost protection system	Minimum 25% glycol fill required
Heating duty available at -5°C ambient (per module)	300kW	Number of control stages	9
Heating nominal flow temperature	45°C	Height	2792mm
Heating maximum flow temperature	70°C	Length	3000mm
Heating nominal return temperature	30°C	Width	5750mm
Cooling duty available at 32°C ambient (per module)	300kW	Dry weight (approx)	4900kg
Cooling nominal flow temperature	6°C	Voltage	400V
Cooling nominal return temperature	12°C	Frequency	50Hz
Maximum external hydraulic pressure drop	100kPa	Phases	3 ~
Standing hydraulic pressure	1.8 Bar	Full load current	267 Amps
BMS connectivity	Bacnet IP/ Modbus	Nominal run current	217.2 Amps
Sound pressure @ 10m based on free field conditions	48dB (A)	Nominal running load	126kW

540kW R290 ASHP

540kW R290 ASHP			
Heating duty available at 7°C ambient (per module)	Up to 600kW	Frost protection system	Minimum 25% glycol fill required
Heating duty available at -5°C ambient (per module)	400kW	Number of control stages	12
Heating nominal flow temperature	45°C	Height	2792mm
Heating maximum flow temperature	70°C	Length	3000mm
Heating nominal return temperature	30°C	Width	8000mm
Cooling duty available at 32°C ambient (per module)	400kW	Dry weight (approx)	6600kg
Cooling nominal flow temperature	6°C	Voltage	400V
Cooling nominal return temperature	12°C	Frequency	50Hz
Maximum external hydraulic pressure drop	100kPa	Phases	3 ~
Standing hydraulic pressure	1.8 Bar	Full load current	356 Amps
BMS connectivity	Bacnet IP/ Modbus	Nominal run current	289.6 Amps
Sound pressure @ 10m based on free field conditions	51dB (A)	Nominal running load	168kW

675kW R290 ASHP



675kW R290 ASHP			
Heating duty available at 7°C ambient (per module)	Up to 750kW	Frost protection system	Minimum 25% glycol fill required
Heating duty available at -5°C ambient (per module)	500kW	Number of control stages	15
Heating nominal flow temperature	45°C	Height	2792mm
Heating maximum flow temperature	70°C	Length	3000mm
Heating nominal return temperature	30°C	Width	10250mm
Cooling duty available at 32°C ambient (per module)	500kW	Dry weight (approx)	8300kg
Cooling nominal flow temperature	6°C	Voltage	400V
Cooling nominal return temperature	12°C	Frequency	50Hz
Maximum external hydraulic pressure drop	100kPa	Phases	3 ~
Standing hydraulic pressure	1.8 Bar	Full load current	445 Amps
BMS connectivity	Bacnet IP/ Modbus	Nominal run current	362 Amps
Sound pressure @ 10m based on free field conditions	54 dB (A)	Nominal running load	210kW

ABOUT US

Founded in 1983, EcoAir Box first made its mark with a pioneering range of heat recovery air handling units (AHUs) designed for commercial swimming pools and quickly setting new standards across the leisure industry.

Building on that success, we expanded our portfolio to include AHUs, packaged plant rooms, ASHP's and chillers, cementing our reputation as a trusted provider of HVAC solutions for retail, commercial and industrial sectors.

EcoAir Box designs and manufactures both bespoke HVAC systems to meet the specific requirements of building services. Our range includes:

- Air-to-Water ASHPs in both 2 and 4 pipe configurations
- Air-to-Air ASHP's and chillers
- Modular form GSHP's
- Roof top chillers
- High-efficiency AHU's with integrated heat pumps
- Fully packaged rooftop units
- Heat recovery units
- Site specific design for all equipment to suit site requirements

Every unit is pre-commissioned, ensuring optimal performance when arriving on site ready for installation.

EcoAir Box are committed to supporting the decarbonisation of buildings and the transition to low-carbon heating and cooling technologies. Our solutions are designed to reduce energy consumption, lower emissions, and help clients meet their sustainability targets.

The HQ is based in Bromsgrove, Worcestershire, our highly skilled team including mechanical, refrigeration, heating, electrical, and control engineering disciplines. Together with this, we offer excellent access to transportation links enabling EcoAir Box to offer you the very best service the industry has to offer nationwide.

EcoAir Box

DESIGNED, ENGINEERED & MANUFACTURED IN THE UK

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