Airedale
APPLIED THERMAL INNOVATION

IT Cooling | In Row



InRak™

15 – 53kW

HIGH PERFORMANCE IN-ROW COOLER:

+ EER up to 6.25
+ 17 – 100% variable capacity control
+ Up to 83% more cooling/m²*

* Compared with a conventional CRAC unit

HFC R410A | AIR DX | EC INVERTER COMPRESSOR | EC FAN

HFC R410A | AIR COOLED | EC INVERTER COMPRESSOR | EC FAN

www.airedale.com

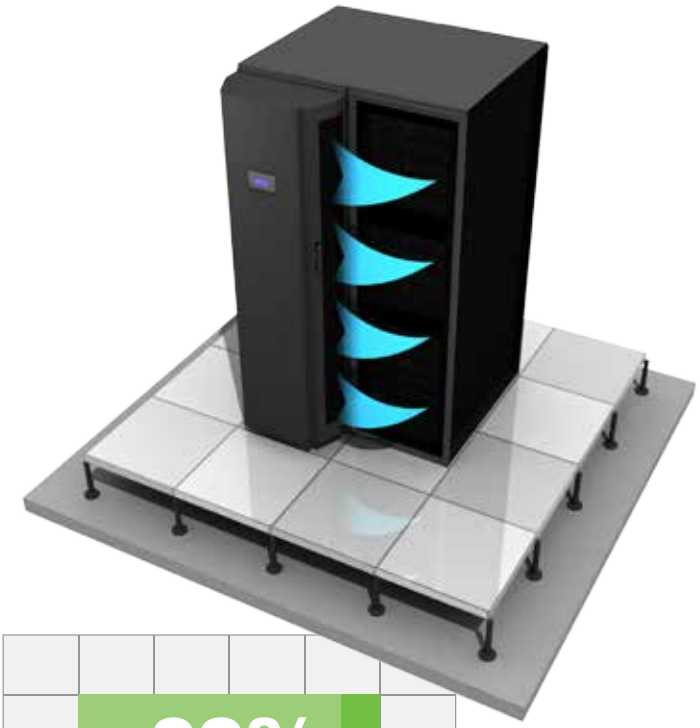
BRITISH MANUFACTURER | ENERGY EFFICIENCY | CONTROLS | SERVICE | TRAINING

Targeting IT cooling

Via the shortest, direct route

The InRak™ is a high performance in-row cooling solution which precisely cools and conditions air in close proximity to the servers and provides industry-leading cooling for its footprint.

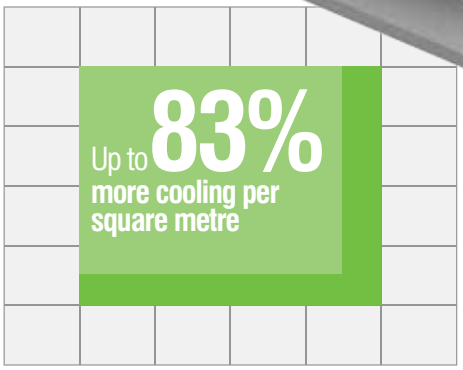
Advanced air flow management within the InRak™ innovatively transmits cooled air horizontally across the front of the server racks. This acts as a curtain, providing even cooling over the full height of the server rack whilst managing the aisle static pressure. Single circuit models of the InRak™ are available in DX.



Flexible, scalable application

The compact, modular InRak™ is an ideal solution for:

- Precise cooling of medium density zones with 6 - 10kW heat load per rack
- Aisle containment pod; localised cooling or open aisle structure
- Rooms with or without a floor void
- Managing localised hot spots
- Scalable IT environments



Typically offered by the InRak™ compared with a conventional CRAC unit

EC inverter scroll compressor

17 – 100% variable capacity control

EC 20 – 120rps compressor quietly and exactly matches cooling demand, reacting to load fluctuations and saving substantial energy at part load.

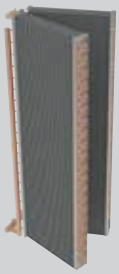
* tandem set comprises 1 x fixed speed and 1 x EC inverter compressor

EC fans

Up to 70% more efficient*

EC electronically commutated centrifugal fans give increased performance for reduced power input; the fan assembly can be replaced while the unit is still running.

* than an AC fan at part load



Efficient 'A' frame coil design

Maximum heat exchange area

The A-Frame heat exchanger can give a large increase in heat exchanger face area facilitating larger cooling capacities and more efficient cooling.

Electronic expansion valve

EER increased by up to 30%*

An EEV allows for perfect refrigeration control whilst operating at part load and lower ambient conditions with a reduced condensing pressure.

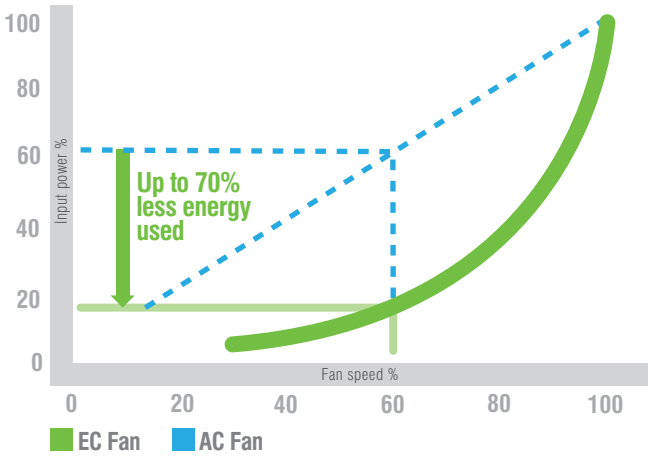
* compared with a standard thermostatic expansion valve

Up to 70% energy savings*

The InRak™ has been engineered with very low air flow resistance; its four centrifugal fans utilise the latest EC fan technology which responds seamlessly to load fluctuations and delivers greatly enhanced fan efficiency particularly at part load

* compared with an AC fan at part load.

EC fan: Up to 70% more efficient than an AC fan at part load



Optional n+1 fan configuration enhanced by smart control logic and EC fan technology, gives the InRak™ built-in redundancy and excellent part load efficiencies. During part load operation, the unit's Energy Efficiency Ratio (EER) increases, significantly contributing to reduced operating costs and carbon emissions.

EC FAN

EER up to 6.25

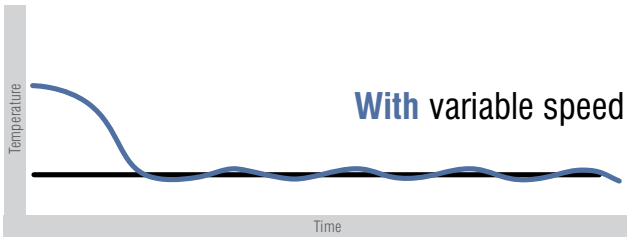
Exact capacity match with 17 –100% variable cooling

EC latest technology 20 – 120rps compressor offering 17 – 100% modulation

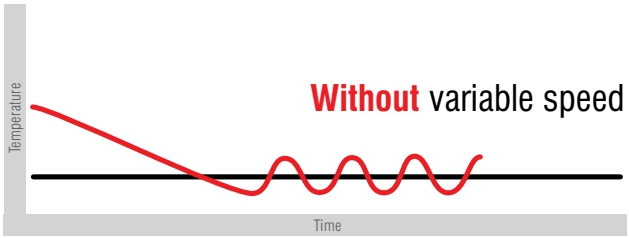
The InRak™ features two scroll compressors in one circuit comprising an EC latest technology 20 – 120rps inverter compressor and the opportunity to add a fixed speed compressor for larger capacities. The quietly operating EC inverter driven scroll compressor offers substantial energy savings at part load and with a starting current equivalent to just 10% that of a traditional fixed speed scroll compressor.

EC INVERTER COMPRESSOR

EC FAN



Supply air temperature is closer to setpoint. Zone temperature is kept tightly near setpoint at all times by continuous load-matching operation.



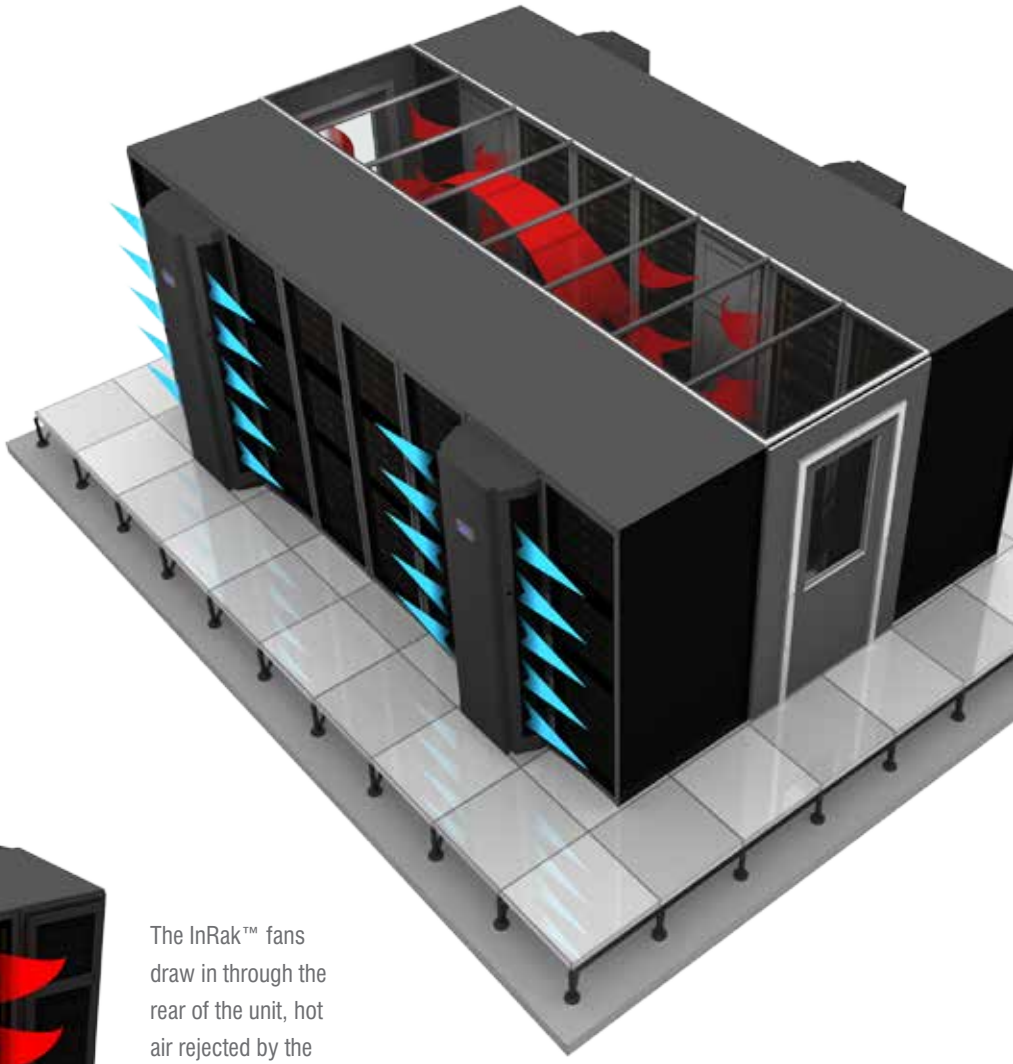
Supply air temperature will be colder than needed due to excess capacity. Zone setpoint is maintained by on-off cycling.

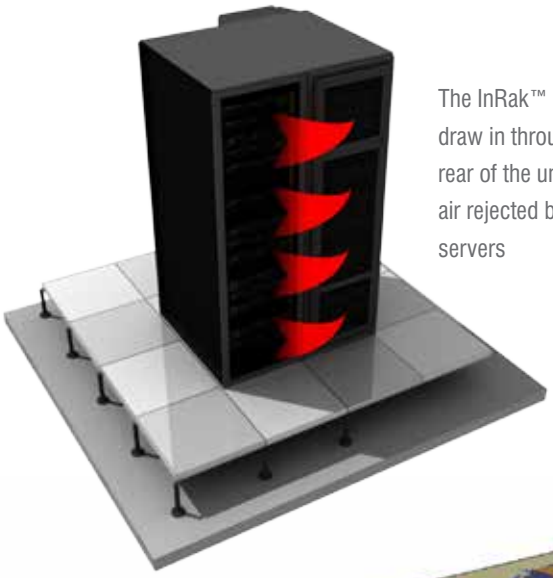
Even more efficient

In aisle containment

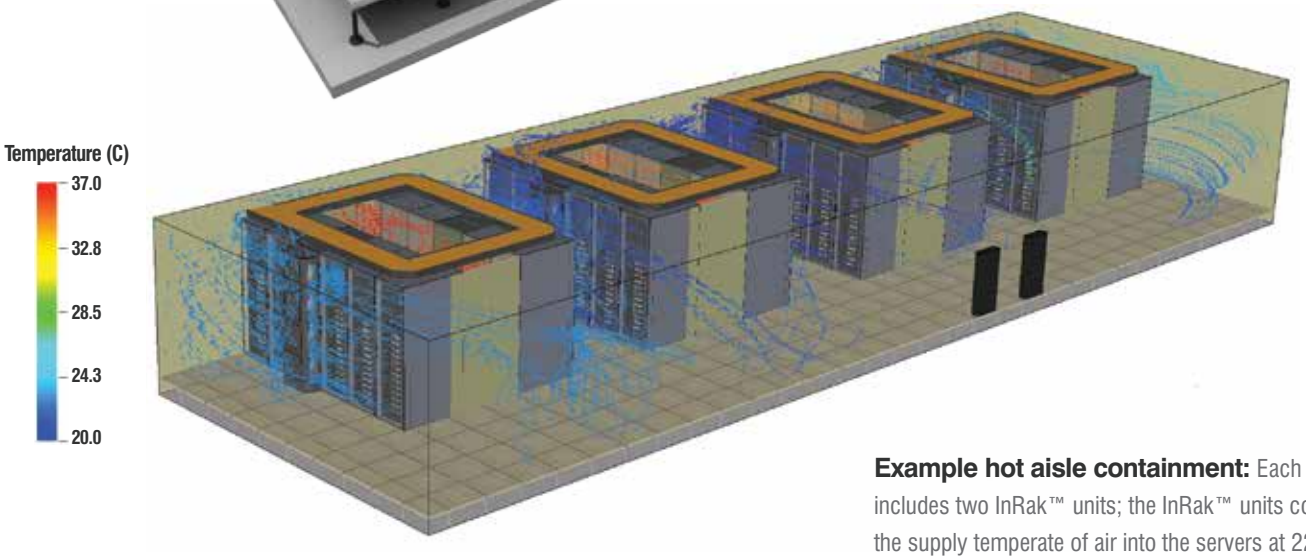
The InRak™ can be positioned next to a single rack; within a row of six 10kW server cabinets for example.

The InRak™ can be integrated into a traditional hot or cold aisle system, but when applied with aisle containment, the performance of the InRak™ is significantly enhanced. In hot aisle containment, the fans draw in hot air rejected by the servers. Due to the minimum distance that the hot air has to travel, the risk of cold air mixing with rejected hot air is greatly decreased. This in turn reduces the need for low supply air temperatures, enabling the data centre to operate at higher temperature, which improves efficiency.





The InRak™ fans draw in through the rear of the unit, hot air rejected by the servers



Example hot aisle containment: Each pod includes two InRak™ units; the InRak™ units control the supply temperate of air into the servers at 22°C ±2°C; hot aisle temperature is 36°C

Intelligent controls

Seamlessly managing your system

CONTROLS

The control centre of each of our cooling systems is a sophisticated electronic microprocessor with control logic specially developed by Airedale.

The microprocessor uses sensors to send and receive messages to and from active components such as compressors, fans and pumps so they interact with each other, balancing cooling duty, temperature, air flow and pressure to exactly match the application.

By integrating intelligent components, the controller manages and optimises the system's performance and reduces power draw.

Smart networking solutions:

Fully-programmable via the control panel's user-friendly display, the microprocessor can be linked with all standard BMS protocols to:

- **Trigger alarm messages**
- **Operate time scheduling**
- **Send alarm/service messages via email or SMS using an interface**
- **Allow adjustment of temperature setpoints**

Integration protocols

Modbus® BACnet™ SNMP ECHELON The LonWorks Company

Latest touch screen technology:

Available as an option and allowing the display to be viewed in full colour and in graphical format

24/7 total confidence

Resilience is designed into InRak™ units from day one and is managed by advanced controls logic to give you complete confidence that your data centre is never put at risk and to help you achieve data centre tier classification.

N+1 fans

The InRak's four fans run up to 75% capacity during normal operation. If one fan fails, the other three fans instantly speed up to 100% if required, to provide the same total amount of cooling and maintain temperature control. They then modulate back when a fourth fan is in operation again. All fans are 'hot swappable' as standard.

Pressure differential management

The InRak™ maintains pressure in the aisle containment system within the server design envelope, whilst still ensuring temperature is controlled.

Automatic transfer switch

In the event of a power failure, power supply is switched instantly to an alternative power supply and cooling continues, supporting redundancy power supply specifications in critical data centre builds.

Hot swappable fan management

Each of the unit's centrifugal fans are 'hot swappable' allowing the fan assembly to be replaced while the unit is still running.

Future-proof, flexible, 24/7

As an intelligent stand-alone unit or when networked with up to eight units, the InRak™ adapts to your data centre's particular requirement. Its compact, modular design makes it easy for multiple units of different size and capacity to be added as load increases or to eliminate hot spots. Smartly networked standby units ensure 24/7 availability.

Data centre management

Taken to another level

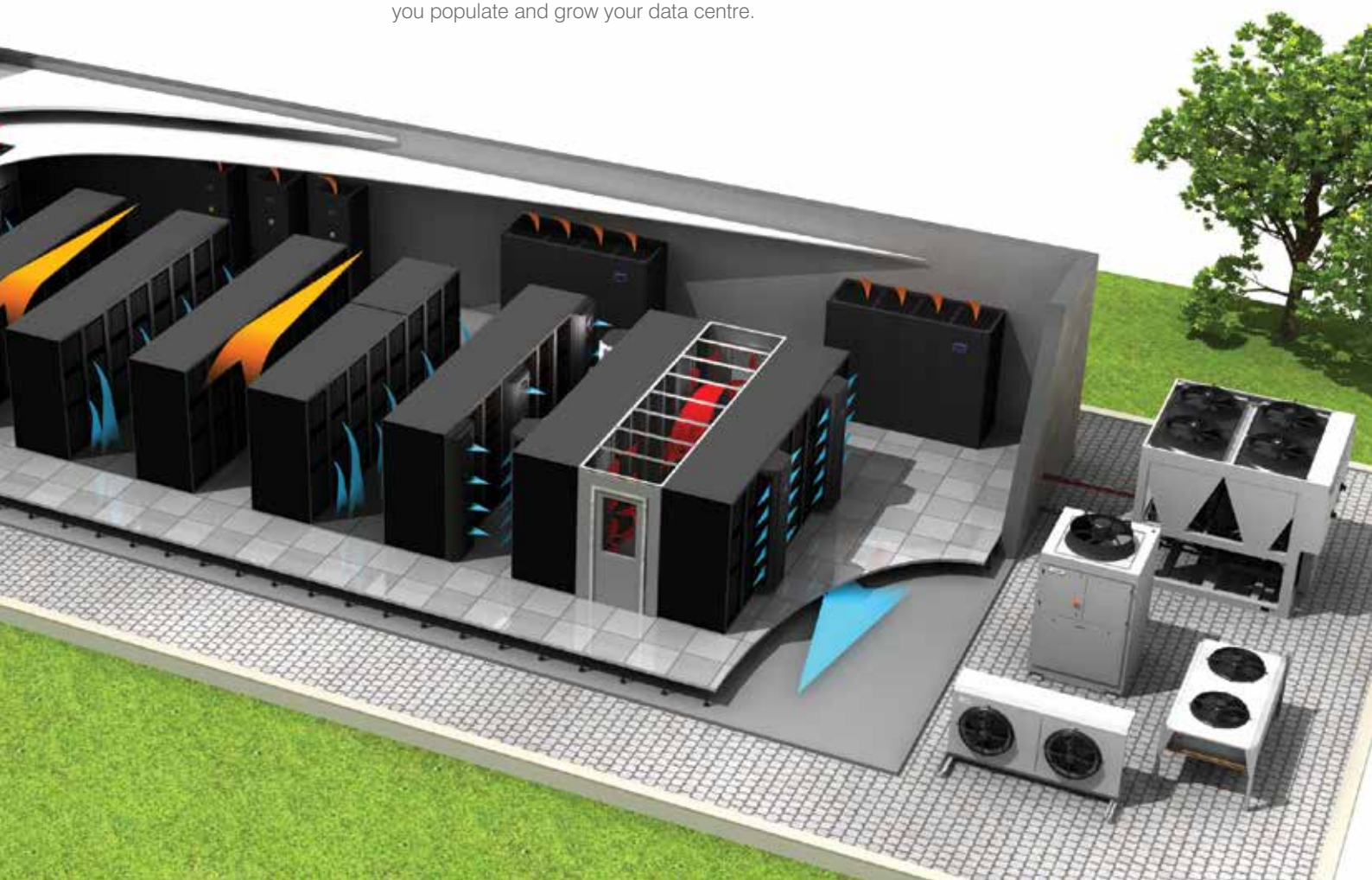
ACIS™ building management system developed by Airedale, enables you to manage smart cooling and other building services, from any manufacturer, in a single, integrated system across multiple sites and communication protocols. ACIS™ sits at the front end of a building system, putting you in control of reducing operating costs.

With the click of a button on a PC, tablet or phone, valuable and intelligent information can be pulled back automatically for remote 24/7 monitoring and maintenance, enhanced system operation and improved decisions.

ACIS

Integrated cooling solutions
As you grow your data centre

Designed to be stand-alone, Airedale units are even more efficient when integrated together, sharing intelligence and reducing your total lifecycle costs. Our systems give you the confidence to move from low to medium to high density cooling as you populate and grow your data centre.



Specifications at a glance

InRak™ DX – cooling by compressor

InRak™ DX is part of a closed refrigerant circuit controlled by scroll compressor technology. The InRak™ fans draw hot return air across an evaporator, heat is transferred into the refrigerant and dispelled via an external air cooled condenser.

DX air cooled

AIR DX AIR COOLED InRak DX

Mechanical

- 15– 53kW nominal cooling capacities
- 4 x single circuit DX models
- Quiet, efficient scroll compressors
- Efficient 'A' frame coil design for maximum heat exchanger area
- Compact design for 83% more cooling per m^2 compared with a conventional CRAC unit
- Top connection for rooms without a floor void

Energy saving

- EER up to 6.25
- Designed and optimised for R410A
- EC 20 – 120rps inverter compressor for exact capacity match and high part load efficiency
- EC electrically commutated centrifugal fans

* compared with a conventional CRAC unit

Resilience

- n + 1 fan configuration for increased efficiency and uptime (option)
- Aisle pressure control managing pressure between the hot and cold aisle
- Automatic transfer switch
- Hot swappable fans allowing fan assembly to be replaced while unit is running

Electrical & Controls

- Advanced control system solutions
- Air filtration (option)
- Controller power backup to ensure rapid re-start
- Self-regulating constant flow control simplifies commissioning

Nomenclature explained

LIR 60 42U - C0 40 - 0 1

LIR	LogiCool InRak
60	Case width in centimetres
42U	Unit height in U
X2	DX cooling, single circuit - tandem internal compressors (50Hz only)
X1	DX cooling, single circuit - single internal compressor
15- 53	Nominal cooling capacity in kW
0	400V/3 + N 50Hz
1	380V/3+N 60Hz

InRak™ standard case size

EU F-Gas Regulations

This product range contains R410A fluorinated greenhouse gas with a GWP of 2088, weight range of 3.8 - 4.2kg, representing 7.9 - 8.7 equivalent tonnes of CO_2.

InRak™ technical specifications:

Unit (-)	Nominal cooling [1, 2] (kW)	Nominal power input [2] (kW)	EER (-)	Part load EER [3] (-)	Dimensions (H x W x D mm)	Mass (kg)
Single Circuit Direct Expansion						
400V / 3~ / 50Hz						
LIR6042U-X123-0	36.0	11.98	3.00	5.80	1994 x 600 x 1344	395
LIR6042U-X130-0	37.0	12.16	3.04	5.82	1994 x 600 x 1344	395
LIR6042U-X240-0	50.6	17.34	2.92	4.97	1994 x 600 x 1344	442
LIR6042U-X250-0	53.3	17.17	3.10	5.24	1994 x 600 x 1344	442

1 Nominal cooling referes to the total gross cooling.
2 Nominal conditions are: DX 35°C/24% air on condition, 35°C ambient.
3 Part load EER's are the operating EER when the required duty is fixed at 50% of the maximum duty of the unit

Performance data calculated in accordance with BSEN 14511-2011 and Eurovent 6/6

50 Hz and 60 Hz power supplies available as follows:

	X1	X2
400 V / 3PH / 50 Hz Supply	•	•
380 V / 3PH / 60 Hz Supply	•	---

Total support

Whenever you need it

At Airedale, we don't just manufacture and supply cooling and refrigeration products; we also provide a broad range of supporting services to ensure our customers receive the best possible aftersales care.

With more than 40 years' experience in business critical cooling, investing in an Airedale cooling or refrigeration solution means that you can benefit from our advice, expertise and technical support too. From design and selection, through to commissioning and beyond, we make sure your system reduces your total cost of ownership, whilst providing maximum availability and longevity.

Service plans

Maximising your system's effectiveness 24/7

An Airedale service plan provides a planned, preventative maintenance package to sustain the optimum efficiency of your system, enabling the user to see real savings in energy costs and reduced carbon emissions.

With Airedale, you can rest assured that help is never far away. Our 24/7 emergency helpline and call out service is available 365 days of the year, ensuring that we are always on hand to provide expert advice and immediate help, day or night.

A guaranteed emergency response time means that a qualified Airedale engineer will be with you in no time, therefore maximising your system's uptime. Service plans also ensure F Gas compliance and incorporate a full parts and labour warranty for the first 12 months.

For more information visit **www.airedale.com**

* For customers outside the UK, our international distributors trained by Airedale would be pleased to offer service on Airedale units

Talk directly with an experienced engineer

Find out how we design our systems to reduce your whole life costs. Our highly experienced engineers are adept at tailoring our systems to suit your requirements.

+44 (0)113 239 1000

Have complete control of your site

Customers with critical sites can benefit from our remote monitoring facility. Aftersales services include chiller sequencing, network setup and integration as well as a live demonstration and training centre at our head office.

24/7 support; maintenance and spares

Immediate help on hand to keep your critical cooling system operational. Realise the full potential of your system; improve its longevity and efficiency and be F Gas compliant. Avoid downtime with our fast, efficient spares service.

Develop your skills

Learn more about your cooling system by attending an air conditioning and refrigeration course in our purpose-built training school. Train on high-tech cooling systems and fully operational rigs in our dedicated workshops. Industry recognised courses also available. Email **training@airedale.com** for further details.

Distributed by:

Airedale International Air Conditioning Limited | Leeds Road, Rawdon, Leeds LS19 6JY, England
Tel: +44 (0) 113 239 1000 **Fax:** +44 (0) 113 250 7219 **E-Mail:** enquiries@airedale.com

www.airedale.com

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