DAIKIN

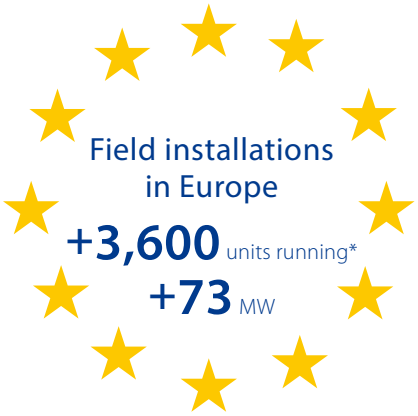
ZEAS

Refrigeration condensing units

For commercial and industrial applications

Daikin offers unrivalled experience and reliability in compressor technology for all HVAC-R applications. With a proven track record in delivering packaged condensing units, we are already a strong challenger in the refrigeration market.

Daikin's ZEAS condensing units, in combination with Conveni-Pack systems and commercial condensing units, are designed to offer every customer the tailor-made solution they need. As part of our sustainability policy, ZEAS condensing units use R-410A refrigerant and thus comply fully with the European F-gas Regulation and Ecodesign Directive. Extensive testing during design phase (drop and vibration test) and manufacture, smart installations by trained professionals and trustworthy after-sales service ensure that all our products work with maximum efficiency.



ZEAS, the smart choice

for medium and low temperature refrigeration

High energy savings potential

- ☑ Highly efficient operation
- ☑ Cuts energy consumption by between 10% and 35% compared to traditional refrigeration equipment
- ☑ Advanced DC inverter scroll compressor technology precisely adapts to the system's needs
- ☑ Eco-design compliant

Comfort

- ☑ Quiet operation, unobtrusive for customers and neighbours
  - › High grade sound insulation on compressors
  - › Condenser fans designed to limit noise
  - › Four low noise operation settings including night mode
- ☑ Wide temperature range allows multiple cabinet, freezer and cold room combinations
- ☑ For freezing and/or cooling applications

Intelligent control

- ☑ Can be connected to a third party monitoring system
- ☑ Refrigeration unit can be controlled remotely through a powerful interface
- ☑ Remote control of target evaporation temperature, reset errors and other functions

Reliable operation

- ☑ ZEAS condensing units are rigorously tested on the assembly line
- ☑ Proven inverter scroll technology
- ☑ Anti-corrosion treatment on the housing ensures long life even in extreme conditions
- ☑ Daikin condensing units are at the heart of refrigeration applications such as food retail, restaurants and food processing

* June 2016

Smart refrigeration

with additional advantages

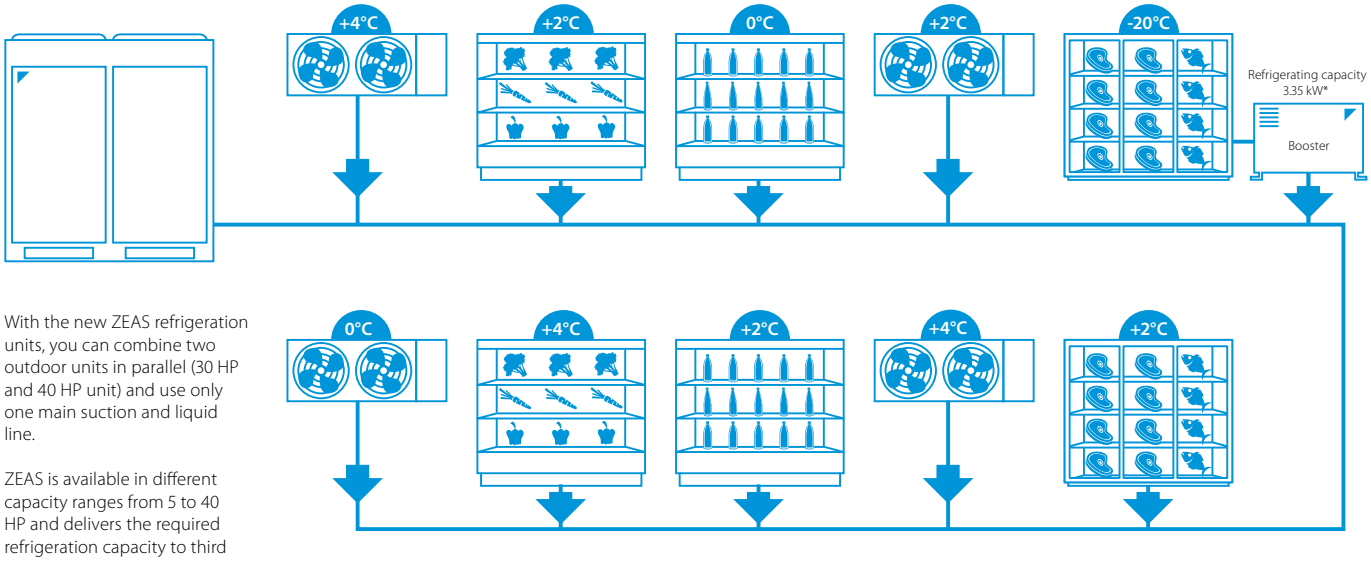
Small footprint
- Extremely compact design
- Best surface to capacity ratio on the market
- Easy to install in the smallest spaces
- Indoor installation possible
- Minimal space required between units in multi-unit installations

Low weight
- Low weight thanks to the compact design
- Only requires light roof constructions, making installation easier

Fully packaged
- Component selection risk reduced to zero
- Leak testing and run test in factory
- Built-in controls ensure optimum operation and unit safety

Wide temperature range
- Precise evaporating temperatures from -45°C to +10°C depending on the application

Comprehensive support
- Daikin provides comprehensive service and maintenance tools



With the new ZEAS refrigeration units, you can combine two outdoor units in parallel (30 HP and 40 HP unit) and use only one main suction and liquid line.

ZEAS is available in different capacity ranges from 5 to 40 HP and delivers the required refrigeration capacity to third party equipment like open showcases, glass door freezers and evaporators

Operating range
Ambient temperatures: -20°C to +43 °C
Evaporating temperatures: -45°C to +10°C

* Te= -35°C, Tc = -10°C, 10 K SH, Tamb = 32°C

Supermarket


Hotel & restaurant kitchen


ZEAS condensing units


Counter refrigerators


Cold storage

Acting ahead of legislation

Staying ahead of increasingly tough legislation and regulations around the world is one of the driving forces behind our investment in refrigeration technology. It is also what makes Daikin a leader in innovation.

F-gas regulation

The new F-gas regulations, which focus on direct emissions, came into force at the beginning of 2015. Daikin ZEAS condensing units meet all the legislative requirements for end-of-life emissions, as well as for emissions during a unit's lifecycle.

Ecodesign Directive

The EU's Ecodesign Directive 2009/125/EC is designed to encourage the market to use more efficient products. It also helps manufacturers to agree a better definition of efficiency for remote condensing units. Since 01/07/2016 refrigeration units also need to comply to this system of minimum efficiency requirements. In this catalogue the seasonal data is marked with the seasonal flower .

› **Inverter capacity control**
We have incorporated inverter technology into our ZEAS to give optimum control of fluctuating loads in refrigerated cabinets. This delivers lower energy losses than traditional refrigeration units.

› **Economiser function**
The economiser function in our refrigeration products delivers two main benefits. It increases the unit's capacity while less absorbed power is required. At the same time, it also decreases the discharge temperature, increasing the lifetime of the compressor.

› **Adaptable evaporation temperature**
To lower energy consumption, the configured evaporation temperature of ZEAS can be increased through an external signal.

At closing time, night curtains are lowered, reducing the load to 1/3. This means that the evaporator coil is now oversized and there is a risk of freezing the goods. To avoid this, the evaporation temperature of ZEAS can be increased.

Tools and platforms

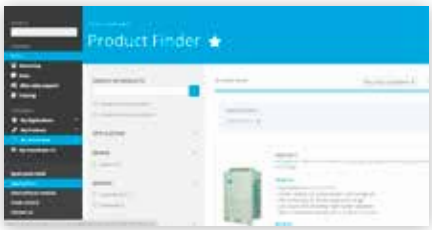
Here are a few handy tools to help you to find the Daikin products you need and how to get the best out of them.

Refrigeration Xpress software

User-friendly, easy to understand design software for Conveni-Pack and ZEAS. Its detailed report includes a list of materials, piping and wiring diagrams, and device options.

Business portal: my.daikin.eu

- Experience our new extranet that thinks with you at **my.daikin.eu**.
- Find information in seconds via a powerful search
- Customise the options so you see only info relevant for you
- Access via mobile device or desktop



Daikin product finder

For an overview of refrigeration products or if you want to make a comparison, please refer to **www.daikineurope.com/commercial/products**

- See how transportation is simulated and vibrations are tested on our shaker (search: vibration ZEAS)
- Watch why a Dutch culture and entertainment venue chose ZEAS for its beverage cooling (search: Energiehuis ZEAS)

https://www.youtube.com/DaikinEurope

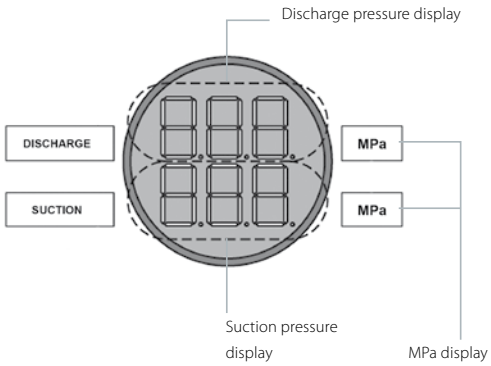
Troubleshooting and commissioning

Digital pressure gauge kit

BHGP26A1

The digital measurement display allows you to diagnose a unit at a glance, and it can be used with all ZEAS units and Conveni-Pack systems.

› Displays high and low pressure
› Displays error codes in the event of a fault
› Displays up to 32 operating parameters



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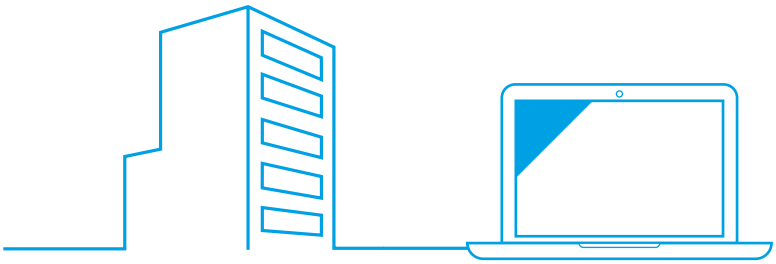
Service checker

The service checker is a monitoring tool which keeps your system trouble-free and working with top efficiency.

› Ideal for troubleshooting and commissioning
› Direct graphical parameter display



Modbus communication kit

BRR9A1V1

This Modbus communication interface lets you integrate ZEAS and Conveni-Pack systems fully with building control automation networks and other monitoring systems.

The interface allows you to read all the operational parameters and control important values using the Modbus protocol. In this way, refrigeration professionals can create reliable and energy-optimised shop concepts, including remote monitoring applications.

BRR9AV1

Display values

› Model information and operating status
› Refrigerant operating pressure and temperatures
› Electrical operating data and temperatures for components
› Target values
› Fan stage and compressor frequency, operating hours
› Warning and error messages, as well as system safety functions

Control values

› Target evaporation temperature
› Forced stop
› Error messages can be cancelled remotely

ZEAS condensing unit

Refrigeration solution for medium to large capacity applications featuring proven VRV technology

- Perfect solution for all cooling and freezing applications with variable load conditions and high energy efficiency requirements. Particularly for use in supermarkets, cold storage, blast coolers and freezers, etc.
- DC inverter scroll compressor with economiser function results in high energy efficiency and reliable performance
- Reduced CO_2 emissions thanks to the use of R-410A refrigerant and low energy consumption
- Factory tested and pre-programmed for quick and easy installation and commissioning
- Increased installation flexibility thanks to limited dimensions
- Low sound level including "night mode" operation
- For small freezing capacities, single ZEAS units can be connected to a booster unit
- Multi combination of 2x 15HP or 2x 20HP resulting in less pipework and installation time

LREQ8-12BY1

					LREQ-BY1	5	6	8	10	12	15	20
Refrigerating capacity	Low temperature		Nom.		kW	5.51 (1)	6.51 (1)	8.33 (1)	10.0 (1)	10.7 (1)	13.9 (1)	15.4 (1)
	Medium temperature		Nom.		kW	12.5 (2)	15.2 (2)	19.8 (2)	23.8 (2)	26.5 (2)	33.9 (2)	37.9 (2)
Power input	Low temperature		Nom.		kW	4.65 (1)	5.88 (1)	7.72 (1)	9.27 (1)	9.89 (1)	12.8 (1)	14.1 (1)
	Medium temperature		Nom.		kW	5.10 (2)	6.56 (2)	8.76 (2)	10.6 (2)	12.0 (2)	15.2 (2)	17.0 (2)
Seasonal energy performance ratio SEPR		R-410A	Te -10°C			3.86	3.79	3.64	3.42	3.51	3.38	3.23
			Te -35°C			1.61	1.65	1.71	1.69	1.67	1.60	1.61
Annual electricity consumption Q		R-410A	Te -10°C		kWh/a	19,907	24,681	33,483	42,794	46,377	61,683	72,030
			Te -35°C		kWh/a	25,547	29,366	36,361	44,054	47,872	64,822	71,162
Parameters at full load and ambient temp. 32°C (Point A)		R-410A	Te -10°C	Rated COP (COPA)		2.45	2.32	2.26	2.25	2.21	2.23	
			Te -35°C	Rated COP (COPA)		1.18	1.11		1.08		1.09	
Parameters at full load and ambient temp. 43°C		R-410A	Te -10°C	Declared COP (COP3)		1.54	1.57	1.40	1.46	1.47	1.46	1.51
			Te -35°C	Declared COP (COP3)		0.76	0.74	0.68	0.70	0.71		0.74
Dimensions	Unit		Height		mm	1,680						
			Width		mm	635		930			1,240	
			Depth		mm	765						
Weight	Unit				kg	166		242			331	337
Heat exchanger	Type					Cross fin coil						
Compressor	Type					Hermetically sealed scroll compressor						
	Output				W	2,600	3,200	2,100	3,000	3,400	2,600	3,400
	Piston displacement				m^3/h	11.18	13.85	19.68	23.36	25.27	32.24	35.8
	Speed				rpm	5,280	6,540	4,320	6,060	6,960	5,280	6,960
	Starting method					Direct on line (inverter driven)						
Compressor 2	Output				W	-		3,600				
	Speed				rpm	-		2,900				
Compressor 3	Output				W	-					3,600	
	Speed				rpm	-					2,900	
Fan	Type					Propeller fan						
	Quantity					1					2	
	Air flow rate	Cooling	Nom.		m^3/min	95	102	171	179	191	230	240
Fan motor	Output				W	350		750			350	750
	Drive					Direct drive						
Fan motor 2	Output				W	-					350	750
Sound pressure level	Nom.				dBA	55.0 (3)	56.0 (3)	57.0 (3)	59.0 (3)	61.0 (3)	62.0 (3)	63.0 (3)
Operation range	Evaporator	Cooling	Max.~Min.		°CDB	10~-45						
Refrigerant	Type					R-410A						
	GWP					2,087.5						
	Charge				kg	5.2		7.9			11.5	
					TCO_2eq	10.9		16.5			24.0	
	Control					Electronic expansion valve						
Power supply	Phase/Frequency/Voltage				Hz/V	3~/50/380-415						

				LREQ-BY1	30	40
System	Outdoor unit module 1				LREQ15BY1R	LREQ20BY1R
	Outdoor unit module 2				LREQ15BY1R	LREQ20BY1R
Refrigerating capacity	Medium temperature	Nom.		kW	67.8 (1)	75.8 (1)
	Low temperature	Nom.		kW	27.8	29.6
Power input	Medium temperature	Nom.		kW	30.4	34.0
	Low temperature	Nom.		kW	25.6	27.6
Sound pressure level	Nom.			dBA	65.0	66.0
Piping connections	Liquid				ø 19.05	
	Gas				ø 41.28	

(1) Cooling: evaporating temp. -10°C; outdoor temp. 32°C; suction SH10°C (2) Cooling: evaporating temp. -35°C; outdoor temp. 32°C; suction SH10°C (3) Sound pressure data: measured at 1m in front of unit, at 1.5m height | RLA is based on following conditions: outdoor temp. 32°CDB; suction SH 10°C; saturated temperature equivalent to suction pressure -10°C

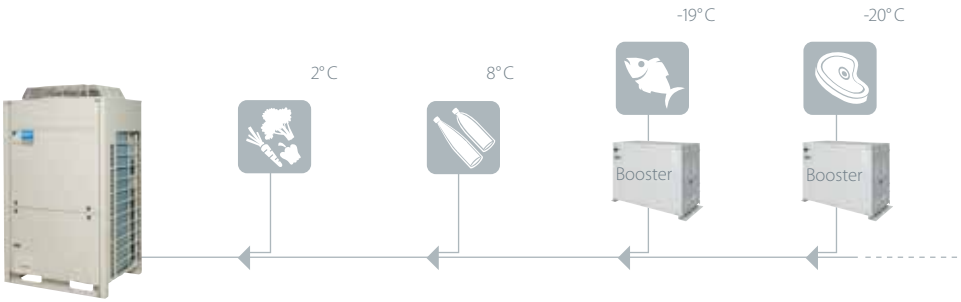
Booster unit

› A booster unit allows freezer showcases/rooms to be connected to ZEAS and Conveni-Pack outdoor units
› Reduced piping requirements, from 4 to 2 pipes, compared to a conventional system
› Low sound mode available reducing sound emissions significantly

LCBKQ3AV19

Booster with ZEAS:

MEDIUM + LOW TEMPERATURE refrigeration



Low Temperature Refrigeration					LCBKQ-AV1	3
Refrigerating capacity	Low temperature	Nom.			kW	3.35
Dimensions	Unit	Height			mm	480
		Width			mm	680
		Depth			mm	310
Weight	Unit				kg	47
Compressor	Type					Hermetically sealed swing compressor
	Piston displacement				m^3/h	10.16
	Number of revolutions				rpm	6,540
	Output				W	1,300
	Starting method					Direct on line (inverter driven)
	Frequency ON/OFF					Less than 6 times/hour
Fan	Type					Propeller fan
	Air flow rate	Cooling	Nom.		m^3/min	1.6
Operation range	Evaporator	Cooling	Min.~Max.		°CDB	-45~-20
	Ambient temperature	Min.~Max.			°C	-15~43
Refrigerant	Type/GWP					R-410A / 2,087.5
	Control					Electronic expansion valve
Refrigerant oil	Type					Daphne FVC50K + FVC68D
	Charged volume				l	0.85 / 0.5
Piping connections	Piping length	System	Booster unit - IU			30m or less
Power supply	Phase/Frequency/Voltage				Hz/V	1~/50/220-240

(1) Evaporating temp. -35°C; outdoor temp. 32°C; suction SH 10K; saturated temp. to discharge pressure of booster unit -10°C
Its functioning relies on fluorinated greenhouse gases.

KEEP COOL, SAVE MONEY

Daikin refrigeration products are designed to reduce environmental impact. That is why Daikin ZEAS and Conveni-Pack already comply with the new F-gas regulation which came into force on 1 January 2015. Daikin systems also set industry standards when it comes to energy efficiency. Which enables you to save money while you help to save the planet.

Learn more at www.daikineurope.com/refrigeration

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