



MULTIPLE SCROLL CHILLERS

APPLIED SYSTEMS

R-410A



www.daikin.eu



EWAQ-DAYN COOLING ONLY
EWYQ-DAYN HEAT PUMP





ABOUT DAIKIN

Daikin has a worldwide reputation based on over 80 years' experience in the successful manufacture of high quality air conditioning equipment for industrial, commercial and residential use.

Daikin Europe N.V.

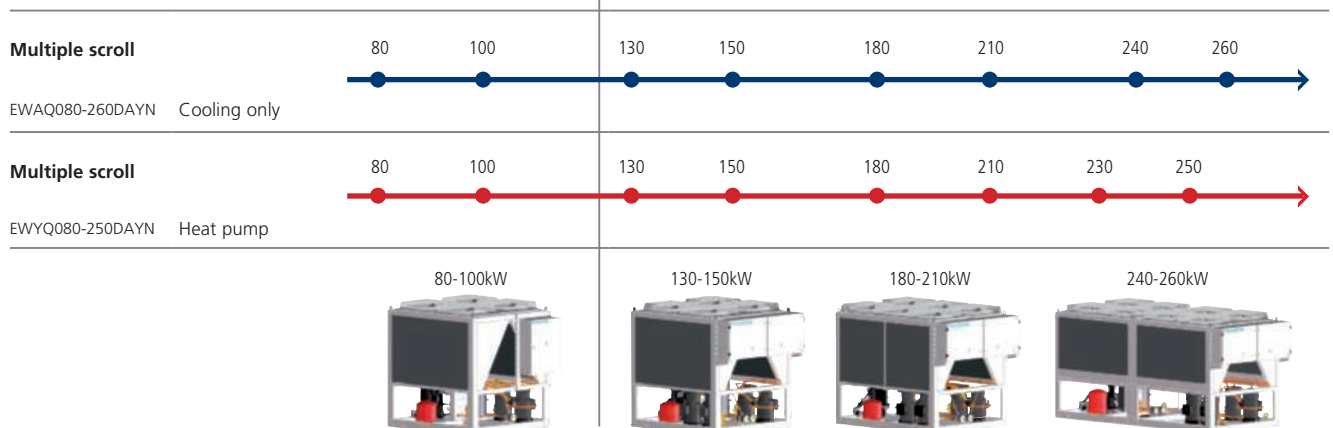
INTRODUCTION

The new Daikin Hydrocube multiple scroll chiller represents a combination of technological innovation and control strategy within a single chilled water package. The unit offers a comprehensive and energy efficient solution capable of adapting to meet the needs of the most exacting project requirements. The unit has a wide application range, is reliable and efficient due to its multiple

compressors and refrigerant circuits running on R-410A and features electronic expansion valves and a low noise level. Installation is easy by virtue of its integrated hydronics. Furthermore, electronic control of the unit is considerably improved by the new control platform plus its connectivity to the Daikin Intelligent manager and I-touch controller.

WIDE APPLICATION RANGE

Cooling only versions and heat pump versions are available between 80 and 260 kW



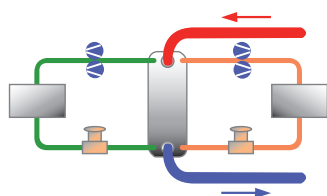
- EWAQ-DAYN **N** = Standard model
- EWAQ-DAYN **P** = Standard model + single pump (OPSP)
- EWAQ-DAYN **B** = Standard model + single pump (OPSP) + buffer tank (OPBT)



INCREASED RELIABILITY AND EFFICIENCY VIA MULTIPLE REFRIGERANT CIRCUITS AND MULTIPLE COMPRESSORS PER CIRCUIT

Multiple scroll compressors

Multiple scroll compressors per unit increase reliability and improve partial load efficiency. A high partial load efficiency with an average ESEER of 4.16 is feasible over the whole range. The unit incorporates highly reliable and efficient scroll compressors (average EER = 2.8), for outstanding performance at a low sound level over a wide range of operating conditions.



Multiple refrigerant circuits

Tandem scroll compressors on fully independent refrigerant circuits ensure high reliability: if one refrigerant circuit breaks down, the remaining circuits keep operating. A dual circuit heat exchanger (from >100kW) provides excellent part load conditions and exceptional control in part load operation.



Electronic expansion valves as standard

The advanced electronic expansion valve reacts quickly to changes in conditions within the unit's wide operating range. Direct control of the system superheat maximises usage of the evaporator at much lower condensing temperatures. This leads to optimised energy consumption at low ambient or partload operation.

INTERGRATED HYDRONICS

The multiple scroll chillers come with various associated hydronic component packages to suit customer requirements. Standard fitted hydronics – water filter, air purge and flow switch – are fully integrated within the chiller unit and additional space is available for further optional components. Unit layout is such that all hydronic components can be accessed easily from 3 sides for maintenance purposes.

Integration of the optional components enables the chiller to be made operational in the shortest possible time without the need to add pumps, buffer tanks and expansion tanks etc.

Optional hydronics

Various pump options are available comprising different modular concepts providing flexibility in customer choice.

- › **Single pump** (OPSP) – available ESP at nominal flow rate of 120kPa, shut-off valves on the water side and water manometer. A 35 or 50 litre expansion tank is also included.
- › **High ESP pump** (OPHP) – available ESP at nominal flow rate of 200kPa.
- › **Twin pump** (OPTP) – twin pump motors with a single housing.
- › **Built-in buffer tank** (OPBT) – includes a 200 litre buffer tank and is based on the OPSP or higher specification. The choice of this option substantially reduces chiller installation time.
- › **Regulating valve** – included with pump options to enable the control of the water flow rate in the system.
- › **Low temperature options**
 - Low LWE down to -10°C (OPZL)
 - Evaporator heater tape for low ambient climates (OP10)



1. Air vent
2. Flow Switch
3. Buffer tank
4. Pump
5. Brased plate heat exchanger
6. Expansion vessel



LOW NOISE LEVEL

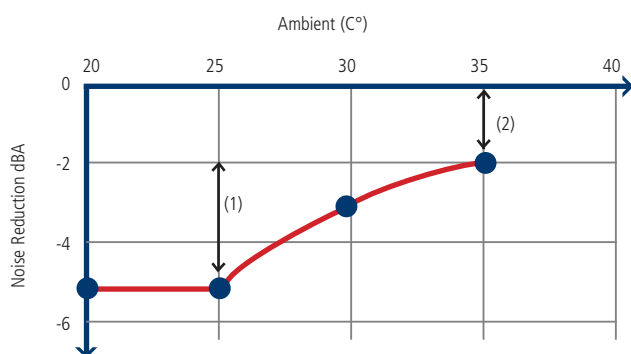
Noise suppression – an important factor of everyday life – is given high priority by Daikin.

For those particularly sound sensitive applications where the standard average sound level of 89 dBA does not offer the desired noise level, OPLN (option low noise) further reduces noise by 5 dBA. Particular attention has been given to any component that can generate noise or vibration.

Option low noise consists of compressor jackets, insulated cabinet and inverter fans.

Inverter fans offer a linear sound reduction in function of the ambient.

Inverter fans (OPIF):



- (1) Reduction of fan noise
(2) Reduction of compressor noise

In addition, the inverter fans offer stable condensing pressure at low ambient temperatures, allowing more efficient partload operation of the unit.

R-410A REFRIGERANT

R-410A R-410A was the logical choice for the Daikin multiple scroll chiller because today it is one of the most promising refrigerants in terms of efficiency, stability and environmental impact.

R-410A offers a small swept volume, a good heat exchange capacity and leads to reduced component sizes of items such as heat exchangers and tubing.

EASY INSTALLATION AND MAINTENANCE

All hydronics can be accessed simply from three sides, while the separate switchbox is also easily accessible from the side of the unit, facilitating the maintenance of the chiller.

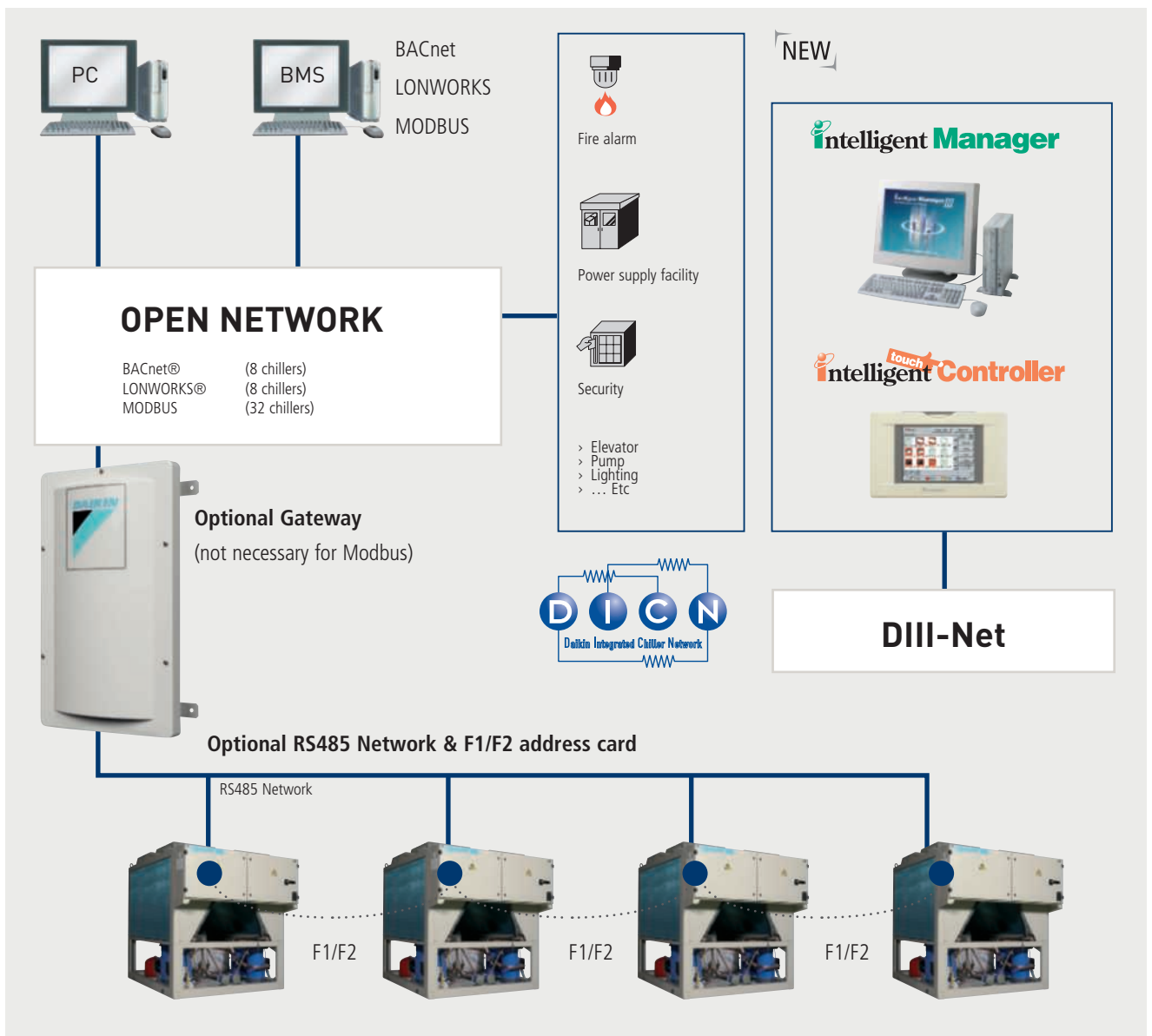
The compactness of the unit allows it to be easily transported and manoeuvred into its final position. Due to the integrated hydronic components, the chiller can be easily connected to the system.

HIGH CORROSION RESISTANCE

The robust all-weather chassis can stand up to demanding urban and industrial environments. The high-quality Daikin plate work consists of a galvanized steel plate with a zinc phosphate coating, and is epoxy powder painted. Condensers are standard PE treated, increasing resistance to acid rain and saline corrosion.



ELECTRONIC CONTROL





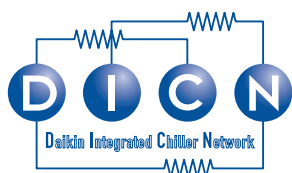
New control platform

The Multiple Scroll Chiller incorporates the latest Daikin controller (PCASO) with a new powerful LCD interface, offering accurate control of all functional parameters in an extremely user-friendly way.



Daikin integrated chiller network (DICN)

The Daikin in-house developed hardware and software offers the possibility of DICN functionality, allowing simultaneous operation of up to 4 chillers. By using the optional address card EKACPG (one per integrated chiller), the DICN enables you to operate a 1.1 megaWatt chiller from a single controller.



Integration in building management systems

The PCASO control platform can be integrated into various Building Management Systems. An RS485 supervisory network, more commonly known as MODBUS, can control up to 32 chillers. By using an optional gateway for either BACnet or LONWORKS, a maximum of 8 chillers per gateway can be controlled.

Protocols are:

- BACnet
- LONWORKS
- MODBUS

Communication with other Daikin units (DIII-Net)

For easy integration with Daikin DX products, the chillers can communicate via the F1/F2 terminals on DIII-net. In addition communication to Daikin D-BACS devices such as Intelligent Manager and I-Touch controller is possible.

SPECIFICATIONS

EWAQ-DAYN			EWAQ080DAYN	EWAQ100DAYN	EWAQ130DAYN
Nominal capacity	cooling	kW	80	105	131
Capacity Steps		%	0-50-100	0-50-100	0-25-50-75-100
Nominal input	cooling	kW	26.4	36.2	46.6
EER			3.03	2.90	2.81
ESEER			4.12	4.00	4.34
Casing	colour		Ivory white/Munsell code 5Y7.5/1		
	material		Polyester painted galvanised steel plate		
Dimensions (HxWxD)		mm	2,311x2,000x2,566	2,311x2,000x2,566	2,311x2,000x2,631
Machine weight		kg	1,350	1,400	1,500
Water Heat Exchanger	type		Brased plate		
	minimum water volume in the system	l	358	470	295
	nominal water flow rate	l/min	229	301	377
	nominal water pressure drop	kPa	59	58	52
Hydraulic components	unit water volume	l	15	15	17
	nominal water pressure drop unit	kPa	66	67	64
	nominal air flow	m³/min	780	780	800
Fan	model	quantity	4	4	4
	speed	rpm	880	880	900
	motor output	W	500	500	600
Compressor	type		Scroll compressor		
	model	quantity	2 x SJ180	2 x SJ240	4 x SJ161
Sound Power	cooling	dBA	86	86	88
Refrigerant circuit	refrigerant type		R-410A		
	refrigerant charge	kg	33	33	(19 + 19)
	no of circuits		1	1	2
	refrigerant control		Electronic expansion valve		
Power Supply			400V / 50Hz / 3~		

OPTIONS & ACCESSORIES

OPTIONS

Reference	Products	Integrated Hydronics					
		Single pump contact	Twin pump contact	Single pump	Twin pump	High ESP pump	Buffer tank
		OPSC	OPTC	OPSP	OPTP	OPHP	OPBT
EWAQ-DAYN	080-100-130-150-180-210-240-260	•	•	•	•	•	•

ACCESSORIES

Reference	Products	Communication cards	LON gateway
		EKACPG	EKLONPG
EWAQ-DAYN	080-100-130-150-180-210-240-260	•	•

EWAQ150DAYN	EWAQ180DAYN	EWAQ210DAYN	EWAQ240DAYN	EWAQ260DAYN
152	182	209	236	254
0-25-50-75-100	21/29-43/50/57-71/79-100	0-25-50-75-100	22/28-40/50/56-72/78-100	0-25-50-75-100
56.3	64.5	74.6	82.8	94.0
2.70	2.82	2.80	2.85	2.70
4.22	4.36	4.32	4.20	4.00
Ivory white/Munsell code 5Y7.5/1				
Polyester painted galvanised steel plate				
2,311x2,000x2,631	2,311x2,000x3,081	2,311x2,000x3,081	2,311x2,000x4,850	2,311x2,000x4,850
1,550	1,800	1,850	3,150	3,250
Brased plate				
341	408	468	529	569
436	522	599	677	728
49	52	53	51	47
19	25	27	39	42
63	72	79	83	85
860	1,290	1,290	1,600	1,600
4	6	6	8	8
970	970	970	900	900
1,000	1,000	1,000	600	600
Scroll compressor				
4 x SJ180	(2x SJ180 + 2x SJ240)	4 x SJ240	(2x SJ240 + 2x SJ300)	4 x SJ300
89	90	90	91	91
R-410A				
(25 + 25)	(29 + 29)	(28 + 28)	(39 + 39)	(39 + 39)
2	2	2	2	2
Electronic expansion valve				
400V / 50Hz / 3~				

Noise & HP Control		LWE	Electrical			Refrigerant		Condenser
Low noise	Inverter fans	Low Glycol	Evaporator heater	Main switch	A/V meter	Pressure relief valve	Suction stop valve	Coil guards
OPRN	OPIF	OPZL	OP10	OP52	OP57	OP03	OP12	OPCG
•	• (3)	•	•	STD	•	•	•	•

Modbus gateway - Bacnet gateway	Remote user interface
EKBNPG	EKRUPG
•	•

Notes: (3) Not available with Option OPLN

SPECIFICATIONS

EWYQ-DAYN			EWYQ080DAYN	EWYQ100DAYN	EWYQ130DAYN
Nominal capacity	cooling	kW	77	100	136
	heating	Kw	87.7	114	149
Capacity steps		%	0-50-100	0-50-100	0-25-50-75-100
Nominal input	cooling	kW	26.5	36.2	47.6
	heating	kW	30.0	38.1	49.6
EER			2.91	2.76	2.86
COP			2.92	2.99	3.00
ESEER			4.00	3.81	4.31
Casing	colour		Ivory white / Munsell code 5Y7.5 / 1		
	material		Polyester painted galvanised steel plate		
Dimensions (HxWxD)		mm	2,311x2,000x2,566	2,311x2,000x2,566	2,311x2,000x2,631
Machine weight		kg	1,400	1,450	1,550
Water Heat Exchanger	type		Brased plate		
	minimum water volume in the system	l	393	511	334
	nominal water flow rate	cooling	221	287	390
		heating	251	327	427
	nominal water pressure drop	cooling	36	36	43
		heating	47	46	51
Hydraulic components	unit water volume	l	15	15	17
	nominal water pressure drop unit	cooling	42	43	55
		heating	53	56	65
Fan	nominal air flow	m³ / min	780	780	800
	model	quantity	4	4	4
	speed	rpm	880	880	900
	motor output	W	500	500	600
Compressor	type		Scroll compressor		
	model	quantity	2 x SJ180	2 x SJ240	4 x SJ161
Sound Power	cooling	dBA	86	86	88
Refrigerant circuit	refrigerant type		R-410A		
	refrigerant charge	kg	33	37	(22 + 22)
	no of circuits		1	1	2
	refrigerant control		Electronic expansion valve		
Power Supply			400V / 50Hz / 3~		

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ACCESSORIES

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EWYQ-DAYN	080-100-130-150-180-210-230-250	•	•

EWYQ150DAYN	EWYQ180DAYN	EWYQ210DAYN	EWYQ230DAYN	EWYQ250DAYN
145	183	211	231	252
165	199	225	258	281
0-25-50-75-100	21/29-43/50/57-71/79-100	0-25-50-75-100	22/28-44/50/56-72/78-100	0-25-50-75-100
55.7	63.8	75.3	82.2	93.5
58.8	68.0	77.0	84.2	96.6
2.60	2.87	2.80	2.81	2.70
2.81	2.93	2.92	3.06	2.91
4.07	4.33	4.23	4.20	4.00
Ivory white/Munsell code 5Y7.5/1				
Polyester painted galvanised steel plate				
2,311x2,000x2,631	2,311x2,000x3,081	2,311x2,000x3,081	2,311x2,000x4,850	2,311x2,000x4,850
1,600	1,850	1,900	3,200	3,300
Brased plate				
370	446	504	578	629
416	525	605	662	722
473	570	645	740	806
38	41	44	39	37
49	48	50	740	46
19	25	27	39	42
51	61	70	39	73
66	72	79	70	91
860	1290	1290	1600	1600
4	6	6	8	8
970	970	970	900	900
1,000	1,000	1,000	600	600
Scroll compressor				
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R-410A				
(22 + 22)	(32 + 32)	(32 + 32)	(39 + 39)	(39 + 39)
2	2	2	2	2
Electronic expansion valve				
400V/50Hz/3~				

Noise & HP Control		LWE	Electrical			Refrigerant		Condenser
Low noise	Inverter fans	Low Glycol	Evaporator heater	Main switch	A/V meter	Pressure relief valve	Suction stop valve	Coil guards
OPRN	OPIF	OPZL	OP10	OP52	OP57	OP03	OP12	OPCG
•	• (3)	•	•	STD	•	•	•	•
Modbus gateway Bacnet gateway					Remote user interface			
EKBNGP					EKRUPG			
•					•			

Notes: (3) Not available with Option OPLN

ENVIRONMENTAL AWARENESS

Air Conditioning and the Environment

Air conditioning systems provide a significant level of indoor comfort, making possible optimum working and living conditions in the most extreme climates.

In recent years, motivated by a global awareness of the need to reduce the burdens on the environment, some manufacturers including Daikin have invested enormous efforts in limiting the negative effects associated with the production and the operation of air conditioners.

Hence, models with energy saving features and improved eco-production techniques have seen the light of day, making a significant contribution to limiting the impact on the environment.



In all of us,
a green heart



Daikin's unique position as a manufacturer of air conditioning equipment, compressors and refrigerants has led to its close involvement in environmental issues.

For several years Daikin has had the intention to become a leader in the provision of products that have limited impact on the environment.

This challenge demands the eco design and development of a wide range of products and an energy management system, resulting in energy conservation and a reduction of waste.



Daikin Europe N.V. is approved by LRQA for its Quality Management System in accordance with the ISO9001 standard. ISO9001 pertains to quality assurance regarding design, development, manufacturing as well as to services related to the product.



ISO14001 assures an effective environmental management system in order to help protect human health and the environment from the potential impact of our activities, products and services and to assist in maintaining and improving the quality of the environment.



Daikin units comply with the European regulations that guarantee the safety of the product.



Daikin Europe N.V. participates in the Eurovent Certification Programme for Air Conditioners (AC), Liquid Chilling Packages (LCP) and Fan Coil Units (FC); the certified data of certified models are listed in the Eurovent Directory. Certification is valid for air cooled models <600kW and water cooled models <1500kW.

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