

## Water Cooled Scroll Heat Pump Hydrocube



### EWQ~KC

Water to water heat pump  
Nominal heating capacity range: 15 – 70 kW  
Nominal cooling capacity range: 13 – 61 kW  
Best performances at full load and part loads  
Designed for wide application range and compact footprint

### Performance according to EN14511-3 (2018)



## Features and benefits

**Daikin water -cooled heat pump with hermetic scroll compressor and R-410A refrigerant** The Hydrocube range is designed to optimize the energy efficiency, to bring down the operating costs and to reduce its environmental impact. It features high efficiency scroll compressors and plate to plate evaporator and condenser heat exchangers with reduced pressure drops and low refrigerant charge.

**Flexibility** The Hydrocube water cooled series meets all the possible request in terms of plant needs for comfort and process applications. The units are available for chilled and hot water production.

**Wide capacity range** The water cooled series covers a wide range of heating capacities from 15 kW to 70 kW and cooling capacities from 13 kW up to 61 kW.

**Compact design** Sizes above 64 are constituted by 2 or 3 modules in stacked configuration allowing to improve capacity - footprint ratio.

**Wide operating range** The extended operating range allows the unit to work in a wide range of cooling and heating operating temperatures (up to 55°C condenser leaving water temperature). Suitable to brine operation down to -10°C evaporator leaving water temperature (brine option provided as standard).

**Additional information related to F-GAS Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16th April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006**

	Unit model	Refrigerant type	Refrigerant GWP	N. of circuits	Refrigerant charge	
					Kg	TCO2
Single module	EWQ014KCW1N	R410	2087,5	1	1,3	2714
	EWQ025KCW1N	R410	2087,5	1	1,9	3967
	EWQ033KCW1N	R410	2087,5	1	2,7	5638
	EWQ049KCW1N	R410	2087,5	2	4,6	9605
	EWQ064KCW1N	R410	2087,5	2	6,8	14198

Note: Equipment contains fluorinated greenhouse gases. Actual refrigerant charge depends on the final unit construction, details can be found on the unit nameplate.

## General Characteristics

**General construction** Compact, modular design water-cooled heat pump for indoor installation with IP22 electrical panel. Manufactured according to the ISO9001 quality standard.

**Casing / colour** The unit casing is made of powder coated galvanised steel plate. Fully factory assembled on a base frame. External case colour ivory is white ( $\pm$ RAL7044) / Munsell code 5Y7.5/1

**Number of cooling circuits** Sizes 014 -033 are single circuit, sizes 049 -064 are twin circuit, sizes 098 -128 are four 2 modules, sizes 147 -192 are 3 modules one over the other. Each module is independent thereby ensuring a high level of system reliability.

Material Name	Installation	Single Module Requested capacity [kW]					2*Modules Requested capacity [kW]			3*Modules Requested capacity [kW]			
		14	25	33	49	64	98	113	128	147	162	177	192
EWQ014KCW1N	Unit + Control factory mounted	1											
EWQ025KCW1N			1										
EWQ033KCW1N				1									
EWQ049KCW1N					1		2	1		3	2	1	
EWQ064KCW1N						1		1	2		1	2	3

**Compressor** The units are equipped with one R-410A optimised fully hermetically sealed Daikin scroll type compressor per refrigerant circuit. As a design requirement, this compressor characteristically offers extremely smooth performance, efficiency and operational reliability. Each compressor is mounted in the unit with vibration isolation and fitted with a compressor motor overcurrent protection.

**Condenser** R-410A optimised counter flow plate heat exchanger made of stainless steel plates brazed gastight with copper, for water and glycol mixtures. The water pressure may not exceed the maximum permissible operating pressure of 10bar. Water filter is supplied as a standard.

**Evaporator R-410A** optimised counter flow plate heat exchanger made of stainless steel plates brazed gastight with copper, for water and glycol mixtures. A special refrigerant distribution system has been incorporated into the plate duct to optimize the heat transmission surface. As well as an additional increase in efficiency, this is also responsible for stable control behaviour in the heat exchanger. The plate heat exchanger is heat insulated to ensure it is diffusion-proof to prevent any heat loss. Flow switch and water filter are supplied as standard. The water pressure may not exceed the maximum permissible operating pressure of 10bar.

**Piping** Consists of copper pipes with all the necessary cooling fittings.

**Safety and control devices** Each refrigerant circuit is fitted with the following safety devices:

- High-pressure switch, low-pressure transducer, hot gas temperature sensor, overload relay.
- Each refrigerant circuit is fitted with the following control devices:
- Electronic temperature monitoring, thermal expansion valve, frost protection.

**Switching and control device** In addition to the fully automated heat pump digital controller, the control cabinet is in accordance with the valid EN directives (CE) and contains all the required switching and control components such as: Main switch, 220 V AC / 24 V DC power supply, control fuses, relay and auxiliary relay, sensors.

The electronics have an automatic restart after power failure and have the following digital inputs and outputs hard -wired to terminals:

### Digital inputs:

- Remote on/off
- Cooling / heating
- Evaporator flow switch (shipped loose)
- External alarm input

### Digital outputs:

- 2x evaporator pump contacts
- Condenser pump contact
- General alarm contact
- Reversing valve contact
- General operation contact
- Backup heater contact

### Analog outputs:

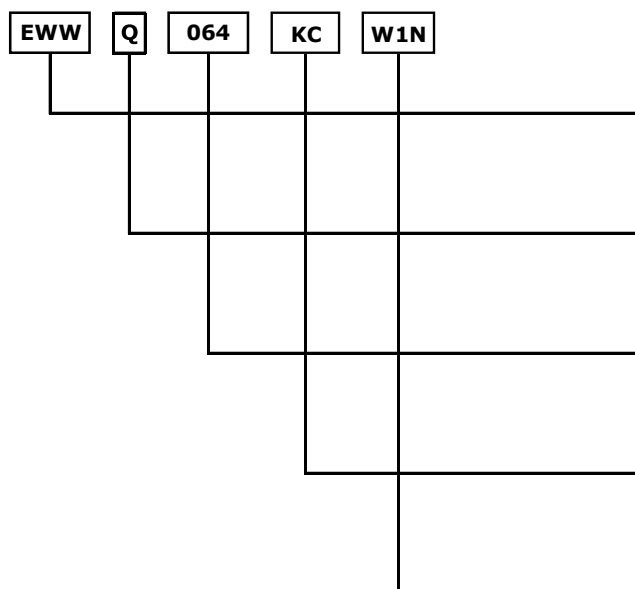
- Evaporator three-way valve or evaporator water pump speed
- Condenser three-way valve or condenser water pump speed

**Unit digital controller** The EWWQ -KCW1N units are fitted with a digital controller which allows the user to configure, operate and service the unit in a user-friendly manner. The unit digital controller consists of a numerical display, 4 control keys, 8 digits display with 18 status icons.

The following functions are supported by the electronics, among the others:

- Allocation of the setpoint and the desired switching hysteresis
- Cold water leaving controller (cooling mode)
- Hot water leaving controller (heating mode)
- Allocation of pump lead times / overrun times
- Allocation of service intervals
- Displaying the current operating parameters such as water temperature and refrigerant pressure
- Recording operating hours (compressor / pump)
- Fault code
- Password protection

## Nomenclature



### Machine type

Water cooled heat pump

### Refrigerant

R410A

### Cooling capacity class

3 digit code

### Model series

KC

### Power supply

3N 400V 50Hz

## Accessories

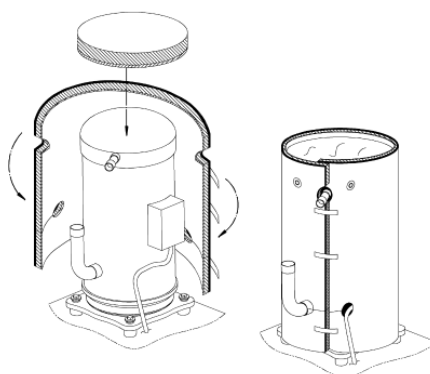
### Available accessory kits (shipped loose):

**EKRSCWI - Temperature sensor water in**

**EKRSTMS - Temperature sensor for master/slave configuration**

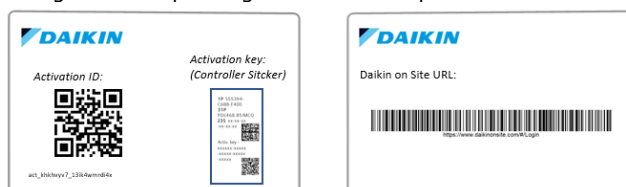
**EKLS2 - Low noise kit 22/28/35/45/55/65 Hp-units**

Compressor jacket shipped loose. It should be mounted on site around the compressors. The accessory is able to reduce the sound power by 4 dB.



### EKRSCBMS – Connectivity Card

In case the BMS communication is needed, with Modbus or BACnet protocol, the connectivity card is delivered with the unit. Through a dedicated App, available for iOS and Android, it is possible to scan the QRCode and the activation key and generate the controller license file for activating the corresponding communication protocol.



	M/S - Master (T6)	M/S - Slave (T1)	Modbus RTU (T1)	Modbus TCP-IP	Bacnet MSTP (T1)	Bacnet TCP-IP	Modem DoS
M/S - Master (T6)		Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
M/S - Slave (T1)			Not compatible	Not compatible	Not compatible	Compatible	Compatible
Modbus RTU (T1)				Compatible	Not compatible	Compatible	Compatible
Modbus TCP-IP					Compatible	Compatible	Not compatible
Bacnet MSTP (T1)						Not compatible	Compatible
Bacnet TCP-IP							Not compatible
Modem DoS							

#### EKRSCSMP - Daikin on site modem with antenna (Accessory)

Connecting the unit to Daikin on Site will be possible through a dedicated modem that can be ordered from Factory as an accessory.

It will allow remote monitoring and system optimization with Daikin proprietary cloud platform:

- Predictive maintenance to prevent breakdowns.
- Visualize energy consumption to reduce energy costs.
- Monitor and control your building no matter where you are via the Daikin Cloud Service.
- Remote diagnostic support to increase your system lifetime.
- Manage Multiple sites.

In case of mono circuit units (014, 025, 033) modem installation has to be done in a switch box provided by the customer and externally with respect to the electrical panel.

For dual units (049 and 064) the modem kit can be installed inside the unit electrical panel.

#### EKRSCPCS - Local/remote display external HMI

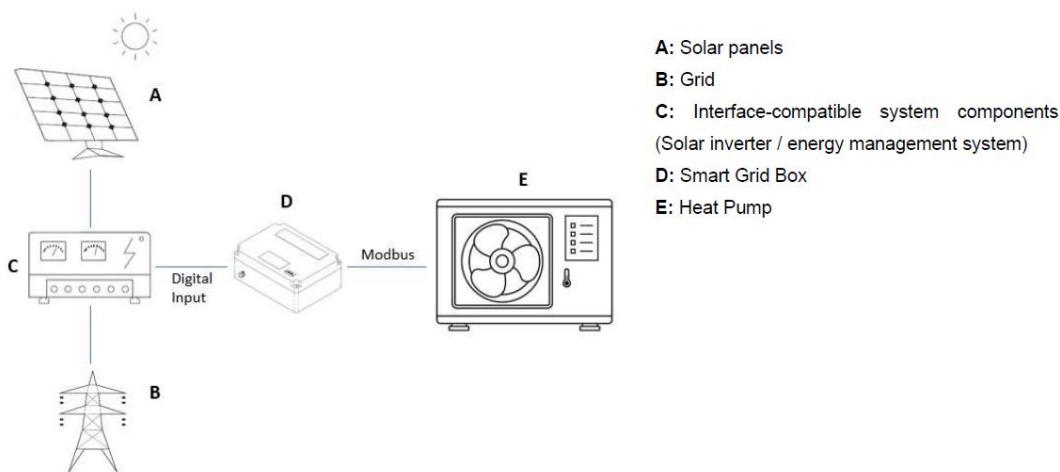
Local/remote user interface for standard commissioning and service activities. This accessory allows the standard activities being close to the unit for a maximum distance of 3 m.

#### EKRSCCLK - Lifting kit for stacked installation

Metal bracket that allows the lifting of a unit for stacked installation. One lifting kit is sufficient even for 3 stacked units. This accessory is only valid for standard configuration units and not for the condenserless version since they are not stackable.

#### EKSCSGW - Smart Grid Ready box

The Smart Grid Box is an accessory that allows the integration of the Heat Pump control for a Smart Grid application.



To integrate the Smart Grid Box into the EWWQ-KC, the system layout should be designed to be compatible with these new control functionalities. The interface-compatible system components (not supplied by Daikin Applied Europe) can transmit digital signals to the Smart Grid ready box of the heat pump, in order to control it with regard to energy consumption or other different target variables.

EWVQ~KC

MODEL		EWVQ014K CW1N	EWVQ025K CW1N	EWVQ033K CW1N	EWVQ049K CW1N	EWVQ064K CW1N
<b>COOLING PERFORMANCE <sup>(1)</sup></b>						
Capacity - Cooling	kW	13.25	23.89	30.47	47.15	61
Capacity control - Type		On/Off	On/Off	On/Off	On/Off	On/Off
Capacity control - Minimum capacity	%	100	100	100	50	50
Unit power input - Cooling	kW	3.15	5.72	7.32	11.43	14.60
EER		4.204	4.176	4.163	4.126	4.178
SEER <sup>(2)</sup>		4.02	4.23	3.63	4.48	3.88
IPLV		4.68	4.85	4.28	4.97	4.44
<b>HEATING PERFORMANCE <sup>(3)</sup></b>						
Capacity - Heating	kW	14.98	27.30	34.74	54.13	69.51
Unit power input - Heating	kW	3.89	7.14	8.73	14.38	17.46
COP		3.842	3.825	3.980	3.765	3.981
SCOP <sup>(4)</sup>		3.64	3.63	3.71	3.58	3.87
<b>CASING</b>						
Colour *		IW	IW	IW	IW	IW
Material *		GPSS	GPSS	GPSS	GPSS	GPSS
<b>DIMENSIONS <sup>(5)</sup></b>						
Height	mm	600	600	600	600	600
Width	mm	600	600	600	600	600
Length	mm	600	600	600	1200	1200
<b>WEIGHT <sup>(5)</sup></b>						
Unit Weight	kg	68	132	141	257	265
Operating Weight	kg	74	136	145	266	282
<b>HEAT EXCHANGER - EVAPORATOR</b>						
Type		Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate
Fluid		Water	Water	Water	Water	Water
Fouling Factor	m <sup>2</sup> °C/W	0	0	0	0	0
Water Volume	l	1.47	1.96	2.74	4.47	5.88
Water temperature in	°C	12	12	12	12	12
Water temperature out	°C	7	7	7	7	7
Water flow rate	l/s	0.632	1.139	1.452	2.247	2.908
Water pressure drop <sup>(6)</sup>	kPa	12.0	24.7	24.6	30.1	38.4
Insulation material *		CC	CC	CC	CC	CC
<b>HEAT EXCHANGER - CONDENSER</b>						
Type *		Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate
Fluid		Water	Water	Water	Water	Water
Fouling Factor	m <sup>2</sup> °C/W	0	0	0	0	0
Water Volume	l	1.38	2.21	3.04	6.35	8.7
Water temperature in	°C	30	30	30	30	30
Water temperature out	°C	35	35	35	35	35
Water flow rate	l/s	0.789	1.425	1.818	2.819	3.637
Water pressure drop <sup>(6)</sup>	kPa	12.6	20.1	23.3	29.3	26.8
<b>COMPRESSOR</b>						
Type		Scroll	Scroll	Scroll	Scroll	Scroll
Oil charge	l	1.50	3.00	3.00	6.00	6.00
Quantity	No.	1	1	1	2	2
<b>SOUND LEVEL <sup>(7)</sup></b>						
Sound Power – Cooling	dB(A)	69	69	76	72	79
Sound Pressure level@1m distance - Cooling	dB(A)	55.2	55.2	62.1	57.6	64.6
<b>REFRIGERANT CIRCUIT</b>						
Refrigerant type		R410A	R410A	R410A	R410A	R410A
Refrigerant charge	kg	1.3	1.9	2.7	4.6	6.8
N. of circuits	No.	1	1	1	2	2
<b>PIPING CONNECTIONS</b>						
Evaporator water inlet/outlet	mm	G1"	G1"	G1"	G1" 1/2	G1" 1/2
Condenser water inlet/outlet	mm	G1"	G1"	G1"	G1" 1/2	G1" 1/2

## EWVQ~KC

### Note

(1) Cooling performances as per EN14511-3:2018 (evaporator 12.0/7.0°C, condenser 30.0/35.0°C; operating fluid=Water, fouling factor=0 m<sup>2</sup>C/W, unit at full load). The minimum capacity indicated is referred to unit operating at standard Eurovent conditions.

(2) SEER according to EN14825, fan coils application 12.0/7.0°C water temperature (for indication only).

(3) Heating performances as per EN14511-3:2018:

Intermediate temperature application: evaporator 10.0/7.0°C, condenser 40.0/45.0°C; operating fluid=Water, fouling factor=0 m<sup>2</sup>C/W, unit at full load.

(4) SCOP as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for space heaters with 400 kW maximum rated capacity - COMMISSION REGULATION (EU) N° 813/2013/EU of 2 August 2013.

SCOP as per EN14825, average climate, medium temperature application.

(5) Dimensions and weights are for indication only and not considered binding. Before designing the installation, consult the official drawings available from the factory at request.

(6) The values refer to the pressure drops in the evaporator/condenser only.

(7) Sound power level are measured in accordance with ISO 9614 and Eurovent 8/1 for Eurovent certified units. The certification refers only to the overall sound power level; the sound pressure is calculated from the sound power level and are for information only and not considered binding.

All the data are referred to standard unit without options and are subject to change without notice.

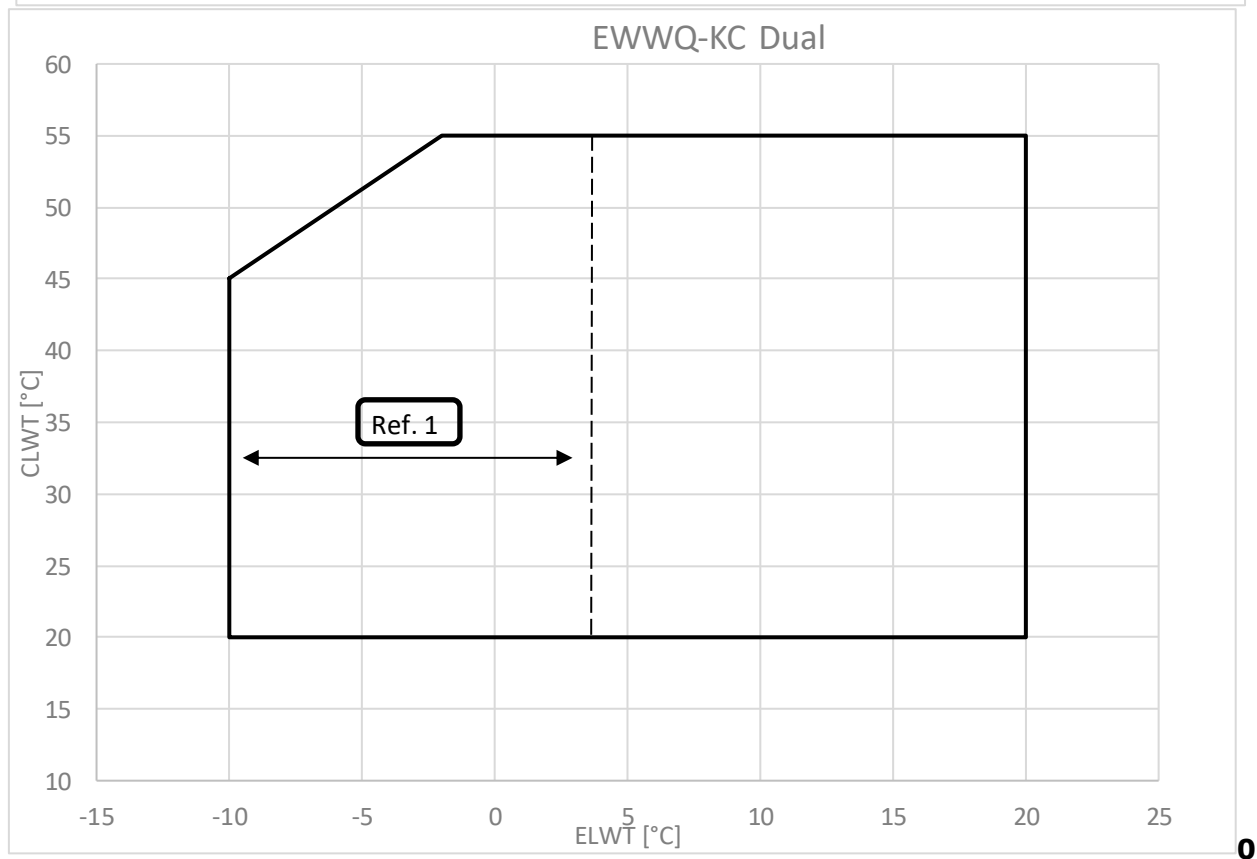
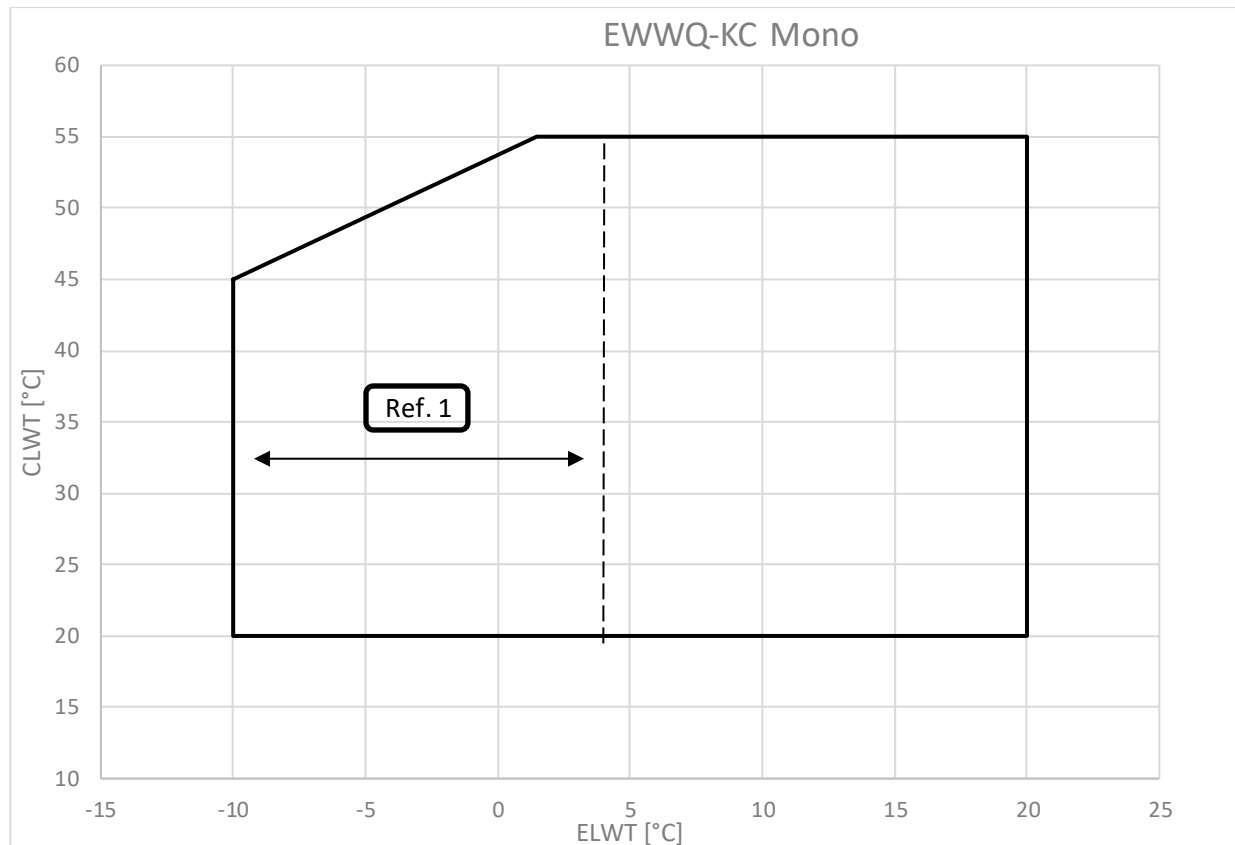


## EWWQ~KC

MODEL		EWWQ014K QW1N	EWWQ025 KCW1N	EWWQ033K CW1N	EWWQ049K CW1N	EWWQ064K CW1N
<b>POWER SUPPLY</b>						
Phases	No.	3N	3N	3N	3N	3N
Frequency	Hz	50	50	50	50	50
Voltage	V	400	400	400	400	400
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	10%	10%	10%	10%	10%
<b>UNIT</b>						
Maximum inrush current	A	57.4	109.3	124.3	124.8	143.6
Nominal running current cooling	A	5.98	9.28	13	18.7	26
Maximum running current	A	9.16	15.5	19.3	31	38.7
Maximum current for wires sizing	A	10.2	17.2	21.5	34.5	43
<b>COMPRESSORS</b>						
Phases	No.	3	3	3	3	3
Voltage	V	400	400	400	400	400
Voltage tolerance Minimum	%	-10%	-10%	-10%	-10%	-10%
Voltage tolerance Maximum	%	10%	10%	10%	10%	10%
Maximum running current	A	0	0	0	0	0
Starting method		DOL	DOL	DOL	DOL	DOL

Allowed voltage tolerance  $\pm 10\%$ . Voltage unbalance between phases must be within  $\pm 3\%$ . In case of inverter driven units, no inrush current at start up is experienced. Nominal running current in cooling is referred to the following conditions: evaporator 12/7°C; condenser 30/35°C. Maximum running current is based on max compressor absorbed current in its envelope. Maximum current for wires sizing is based on minimum allowed voltage. Maximum current for wires sizing: compressors full load ampere x 1,1. The data are referred to the standard unit without options. All data are subject to change without notice. Please refer to unit nameplate data.

## Operating Limits



**Legend :**  
**ELWT** Evaporator leaving water temperature  
**CLWT** Condenser leaving water temperature  
**Ref 1** Glycol required for operation below +4°C ELWT

## **Water flow and quality**

### **Water quality limits**

DAE Water quality requirements	BPHE
Ph (25 °C)	7.5 – 9.0
Electrical conductivity [ $\mu\text{S}/\text{cm}$ ] (25°C)	< 500
Chloride ion [ $\text{mg Cl}^- / \text{l}$ ]	< 70
Sulphate ion [ $\text{mg SO}_4^{2-} / \text{l}$ ]	< 100
Alkalinity [ $\text{mg CaCO}_3 / \text{l}$ ]	< 200
Total Hardness [ $\text{mg CaCO}_3 / \text{l}$ ]	75 ÷ 150
Iron [ $\text{mg Fe} / \text{l}$ ]	< 0.2
Ammonium ion [ $\text{mg NH}_4^+ / \text{l}$ ]	< 0.5
Silica [ $\text{mg SiO}_2 / \text{l}$ ]	-
Chlorine molecular ( $\text{mg Cl}_2/\text{l}$ )	< 0.5

### **Glycol freezing point**

The table below contains glycol freezing points for different glycol concentrations.

Type	Concentration (%)	0	10	20	30	40
Ethyleneglycol	Freezing point	0	-4	-9	-16	-23
	Minimum LW	5	2	0	-5	-11
Propylene glycol	Freezing point	0	-3	-7	-13	-22
	Minimum LW	5	3	-2	-4	-10

### **Water flow and plant water content limits**

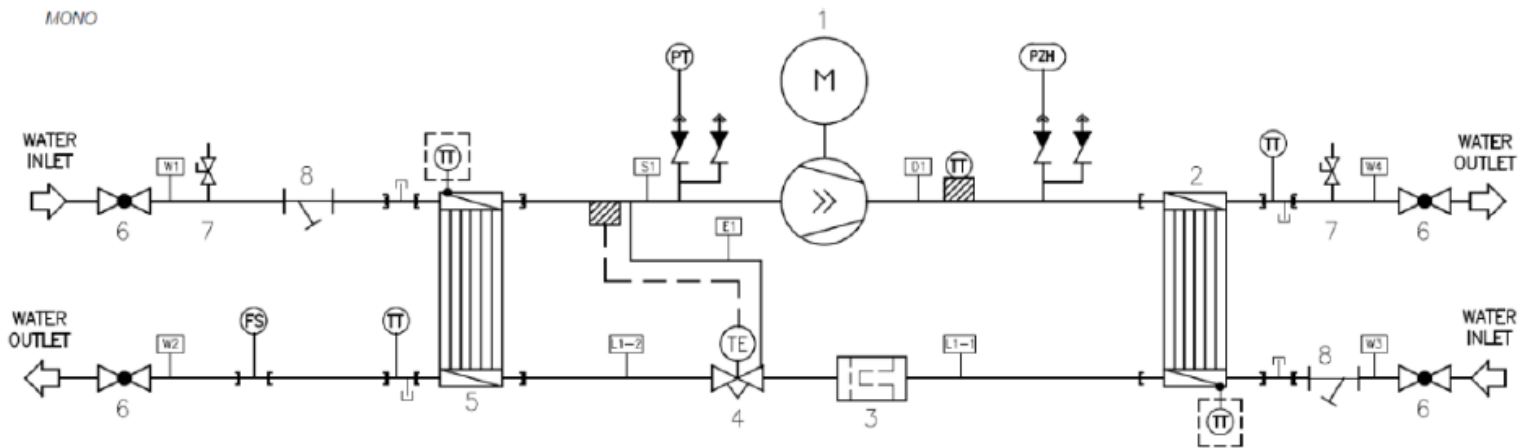
To assure proper operation of the unit a minimum water volume is required in the system and the water flow must be within the operation range as specified in the table below.

	Minimum water volume (l)	Minimum water flow	Maximum water flow
EWQ014KCW1N	62	31 l/min	75 l/min
EWQ025KCW1N	134	53 l/min	123 l/min
EWQ033KCW1N	155	76 l/min	186 l/min
EWQ049KCW1N	205	101 l/min	247 l/min
EWQ064KCW1N	311	152 l/min	373 l/min

## Piping diagram

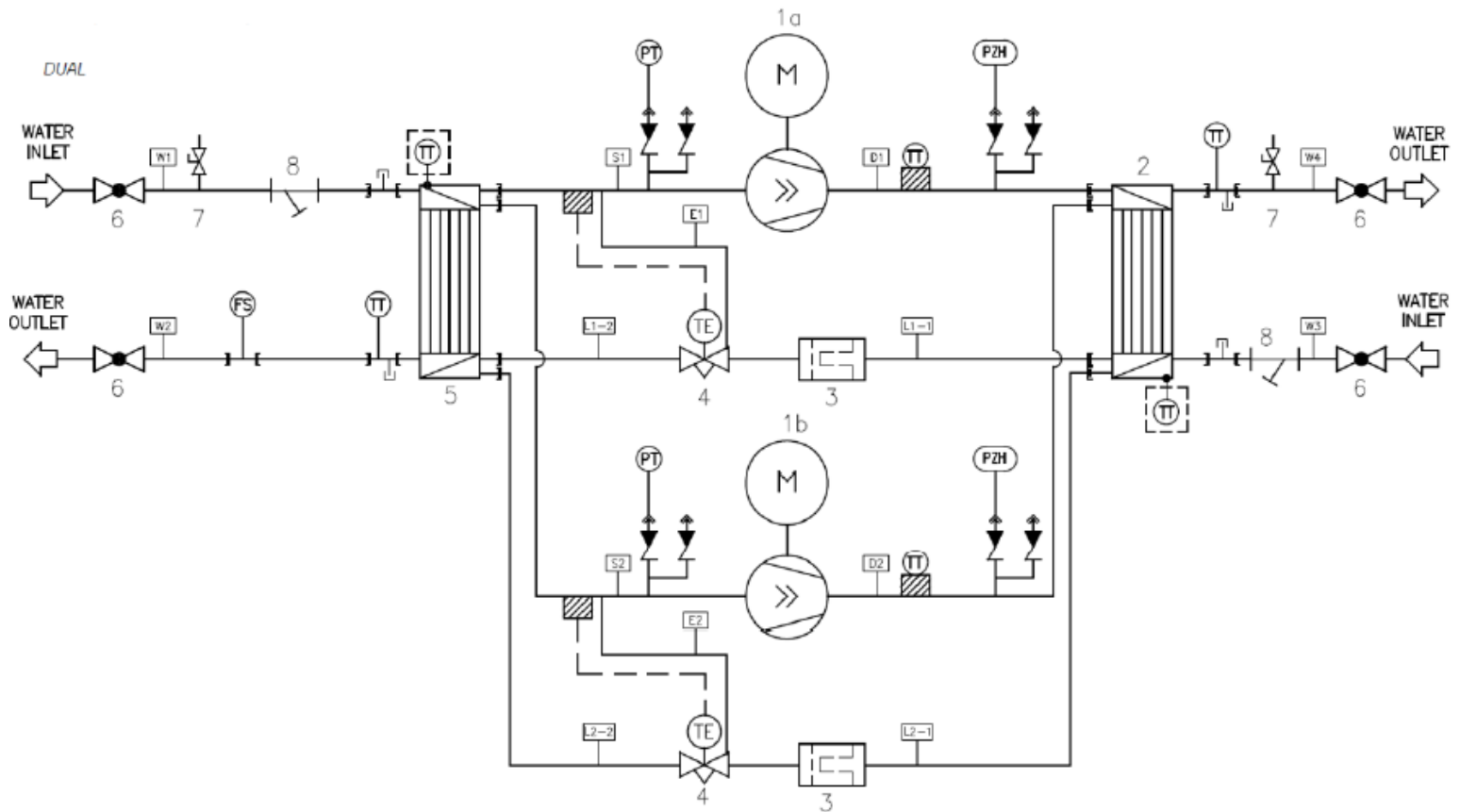
EWVQ 014-033 KCW1N

MONO



EWVQ 049-064 KCW1N

DUAL



**LEGEND**

POS.	COMPONENT
1	COMPRESSOR
2	CONDENSER (NPHE)
3	DRIER FILTER
4	THERMOSTATIC EXPANSION VALVE
5	EVAPORATOR (BPHE)
6	BALL VALVE (OPTIONAL)
7	AIR PURGE VALVE (OPTIONAL)
8	WATER FILTER (OPTIONAL)
9	ACCUMULATOR
10	DISCHARGE STOP VALVE
11	SIGHT GLASS
12	LIQUID SOLENOID VALVE
13	LIQUID STOP VALVE

POS.	COMPONENT CONNECTION
D1	COMPRESSOR-CONDENSER
L1-1/L2-1	CONDENSER-THERM.EXP. VALVE
L1-2/L2-2	THERM.EXP. VALVE-EVAPORATOR
S1	EVAPORATOR-COMPRESSOR
S1-1	EVAPORATOR-ACCUMULATOR
S1-2	ACCUMULATOR-COMPRESSOR
w1/w3	WATER INLET ASSEMBLY (OPTIONAL)
w2/w4	WATER OUTLET ASSEMBLY (OPTIONAL)
E1/E2	EQUALIZER PIPE
INSTRUMENTS	
TT	TEMPERATURE SENSOR
PT	PRESSURE TRANSDUCER (6,5 bar)
PZH	HIGH PRESSURE SWITCH (40,7 bar)
FS	FLOW SWITCH

## Technical specifications

**General** The unit will be designed and manufactured in accordance with the following European directives:

DIRECTIVE 2014/35/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.

DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.

DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2006 on machinery, and amending Directive 95/16/EC.

DIRECTIVE 2014/68/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 15 May 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of pressure equipment.

DIRECTIVE 2009/125/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products.

And to the following harmonized standards/specifications (used in part or whole as described in the technical construction file):

EN 60204-1:2006 A1:2009 Safety of machinery

EN 60335-2-40 Household and similar electrical appliances - Safety: Particular requirements for electrical heat pumps, air conditioners and dehumidifier

EN 378-1:2016, EN 378-2:2016, EN 378-4:2016 Safety and environmental requirements; design, construction, testing, marking and documentation

The unit will be delivered to the job site completely assembled and charged with refrigerant and oil. The installation of the unit must comply with the manufacturer's instructions for rigging and handling equipment.

The unit will be able to start up and operate (as standard) at full load with:

- evaporator leaving fluid temperature between ..... °C and ..... °C
- condenser leaving fluid temperature between ..... °C and ..... °C

**Refrigerant** Only R-410A can be used.

**Performance** The unit shall supply the following performances:

Number .....unit(s)

Cooling capacity for single unit.....kW

Power input for single unit in cooling mode.....kW

Evaporator heat exchanger entering water temperature in cooling mode.....°C

Evaporator heat exchanger leaving water temperature in cooling mode.....°C

Evaporator heat exchanger water flow.....l/s

Condenser heat exchanger entering water temperature in cooling mode.....°C

Condenser heat exchanger leaving water temperature in cooling mode.....°C

Condenser heat exchanger water flow.....l/s

Operating voltage range should be 400V ±10%, 3N ph, 50Hz.

**Unit description** The unit shall include as standard: one or two independent refrigerant circuit per module, each of them equipped with an hermetic type rotary scroll compressors, thermal expansion device, refrigerant direct expansion plate to plate heat exchangers, R-410A refrigerant, motor starting components, control system and all components necessary for a safe and stable unit operation. The unit will be factory assembled on a robust base frame made of galvanized steel, protected by epoxy paint.

**Sound level and vibrations** Sound pressure level at 1 meter distance in free field, hemispheric conditions, shall not exceed .....dB(A). The sound pressure levels must be rated in accordance to ISO 3744

**Dimensions** Unit dimensions shall not exceed following indications:

Unit length.....mm

Unit width.....mm

Unit height.....mm

**Compressors** The units shall be equipped with:

High performance hermetic scroll compressors optimized to work with R-410A, with reduced vibration and sound emissions.

• High efficiency values shall be guaranteed by:

- High volumetric efficiency in the whole range of application, through the continuous contact between the fixed and the orbiting scroll deleting the dead space and the re-expansion of the refrigerant gas;
- Low pressure drops due to the absence of inlet and discharge valves and to the uniform compression cycle;
- Reduction of the heat exchange between the gas during suction and discharge due to the separation of gas flows;

- The reduced noise shall be obtained by:
  - The absence of the inlet and discharge valves
  - The uniform compression cycles
  - The absence of pistons which ensures reduced vibration and pulsation of the refrigerant
- The engine shall be cooled by the suction refrigerant fluid.
- Shall be present a thermal protection for the three phases complete with sensors on the stator windings to avoid overheating caused by lack of phase, insufficient cooling, mechanical locks, power supply out of tolerance;
- The compressors shall be one on each independent refrigerating circuit.
- The compressors shall be fitted on rubber antivibration mounts.
- The compressors shall be provided complete with oil charge.

**Evaporator (PHE)** The units shall be equipped with a direct expansion plate to plate type evaporator. The evaporator will be made of stainless steel brazed plates closed cell with thermal insulation material.

- The evaporator will have 1 or 2 refrigerant circuit.
- The evaporator will be manufactured in accordance to PED approval.
- Flow switch must be installed on plant.
- Water filter must be installed on plant.

**Condenser (PHE)** The units shall be equipped with a plate to plate type condenser. The condenser will be made of stainless steel brazed

- The condenser will have 1 or 2 refrigerant circuit.
- The condenser will be manufactured in accordance to PED approval.
- Water filter must be installed on plant.

**Refrigerant circuit** The unit shall have one or two refrigerant circuits per module according to the capacity.

- The circuits shall include as standard the following safety devices: High and low pressure switch, hot gas temperature monitoring, overload relay.

**Electrical control panel Power and control** Power and control sections shall be located into the main electrical panel. The power section shall include Main switch, auxiliary and control cut-outs, transformers, control fuses, relay and auxiliary relay, sensors, -Unit digital controller. The main panel doors shall be interlocked to the main switch to guarantee safe operations when the doors are open.

**Controller** Units controllers shall fit a digital controller which allows the user to configure, operate and service the unit in a user-friendly manner. The -Unit digital controller shall consist of a numerical display, 4 control keys and 4 LEDs.

The following functions shall be supported:

- Allocation of the setpoint and the desired switching hysteresis
- Cold water return controller (cooling mode)
- Hot water return controller (heating mode)
- Allocation of pump lead times / overrun times
- Allocation of service intervals
- Displaying the current operating parameters such as flow and return temperatures
- Recording operating hours (compressor / pump)
- Fault code query
- Password protection

**High level communication** As an option, the unit can be fitted with an interface for integrating it into a Modbus Building Management System (BMS)

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