



United Technologies

PRODUCT SELECTION DATA



- Hot water up to 65°C
- High energy efficiency level
- Hydronic module with Class A circulator
- Superior reliability

High-Temperature Monobloc Air-to-Water Heat Pumps
with Integrated Hydronic Module

61AF 014-019-A



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AQUASNAP
Heating

61AF 014-019-A

Nominal heating capacity 14-20 kW

The Aquasnap high-temperature heat pump range was designed for commercial applications such as the heating of offices, apartments and hotels as well as domestic hot water production in new and refurbished buildings.

Features

The main features of this product range are:

- **Energy savings**
The 61AF range is certified to the Eurovent energy efficiency class A with a coefficient of performance (COP) of over 4. This complies with the COP required by the Ecolabel certification.
- **Ease-of-installation**
The high-temperature Aquasnap heat pumps incorporate a hydronic module with a variable speed pump, in option.
- **Easy integration**
The low noise levels of the 61AF heat pump and its very compact chassis reduce the noise disturbance from the unit.
- **Application flexibility**
The operating range allows outside temperatures down to -20°C and leaving water temperatures up to 65°C for domestic hot water applications.
- **Availability**
 - Intelligent unit control permits unit operation in extreme conditions, minimising unit shut-down times.
 - Hot water production at 65°C is available continuously.

Carrier quality is your guarantee for the safety and durability of the installation.

The high-temperature heat pump range incorporates the latest technological features:

- scroll compressors with vapour injection
- low-noise fans made of a composite material
- auto-adaptative microprocessor control
- electronic expansion valve
- variable speed pump.

The high-temperature Aquasnap heat pumps can be equipped with a hydronic module that is integrated into the heat pump chassis, limiting the installation to straightforward operations like the wiring and the connection of the hot water supply and return piping.

Quiet operation

- **Compressors**
 - Low-noise scroll compressors with low vibration level.
 - The compressor assembly is installed on an independent chassis and supported by anti-vibration mountings.
 - Dynamic suction and discharge piping supports, minimising vibration transmission (Carrier patent).
- **Evaporator section**
 - Vertical evaporator coils
 - Protection grilles on anti-vibration mountings to protect the heat exchanger against possible shocks.
 - Latest-generation low-noise Flying Bird fans are now even quieter and do not generate intrusive low-frequency noise.
 - Rigid fan installation for reduced start-up noise.

Easy and fast installation

- **Integrated hydronic module (option)**
 - Variable speed water pump.
 - Water filter protects the water pump against circulating debris (option).
 - Overpressure valve, set to 3 bar for the 61AF 014 and to 4 bar for the 61AF 019.
 - Thermal insulation and frost protection down to -20°C, using an electric resistance heater.
- **Physical features**
 - The unit has a small footprint and a low height (1103 mm for the 61AF 014 and 1550 mm for the 61AF 019), allowing it to blend in with any architectural styles.
 - The unit is enclosed by easily removable panels, covering all components (except condensers and fans).
- **Simplified electrical connections**
 - Single power supply point with neutral.
 - Main disconnect switch with high trip capacity (standard only for 61AF 019).
 - Transformer for safe 24 V control circuit supply included.
- **Fast commissioning**
 - Systematic factory operation test before shipment.
 - Quick-test function for step-by-step verification of the instruments, electrical components and motors.

Economical operation

- **Seasonal heating performance optimized**
 - In accordance with standard EN 14825/2013 in average climate, the Seasonal Coefficient of performance (SCOP) reaches 2.83 for an energy label of A+.
 - The electronic expansion device (EXV) allows operation at a lower condensing pressure (COP optimisation).
 - Dynamic superheat management for better utilisation of the condenser surface.
- **Reduced maintenance costs**
 - Maintenance-free scroll compressors with vapour injection.
 - Pro-Dialog+ control offers fast diagnosis of possible incidents and their history.

Environmental care

- **Ozone-friendly R-407C refrigerant**
 - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential.
 - Very efficient - ensures an increased energy efficiency ratio (COP).
- **Leak-tight refrigerant circuit**
 - Brazed refrigerant connections for increased leak-tightness.
 - Reduction of leaks due to elimination of capillary tubes (TXVs).
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge.

Superior reliability

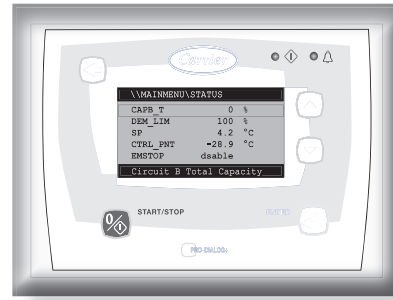
- State-of-the-art concept
 - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling.
- Exceptional endurance tests
 - Corrosion resistance tests in salt mist in the laboratory.
 - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports.
 - Transport simulation test in the laboratory on a vibrating table.

Pro-Dialog+ control

Pro-Dialog+ combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and of the condenser water pump for optimum energy efficiency.

- Energy management
 - Seven-day internal time schedule clock: permits unit on/off control and operation at a second set point.
 - Set point reset based on the outside air temperature or the return water temperature or on the water heat exchanger delta T.
 - Master/slave control of two heat pumps operating in parallel with operating time equalisation and automatic change-over in case of a unit fault (option).
 - Start/stop based on the outside air temperature.
- Ease-of-use
 - The new backlit LCD interface includes a manual control potentiometer to ensure legibility under any lighting conditions.
 - The information is displayed clearly in English, French, German, Italian and Spanish (for other languages please consult Carrier).
 - The Pro-Dialog+ navigation uses intuitive tree-structure menus, similar to the Internet browsers. They are user-friendly and permit quick access to the principal operating parameters: number of compressors operating, suction/discharge pressure, compressor operating hours, set point, air temperature, entering/leaving water temperature.
 - As standard the unit includes a board for the control of a boiler and four electric resistance heater stages.

Pro-Dialog+ operator interface



Remote operating mode with volt-free contacts (standard)

A simple two-wire communication bus between the RS485 port of the Aquasnap high-temperature heat pumps and the Carrier Comfort Network offers multiple remote control, monitoring and diagnostic possibilities.

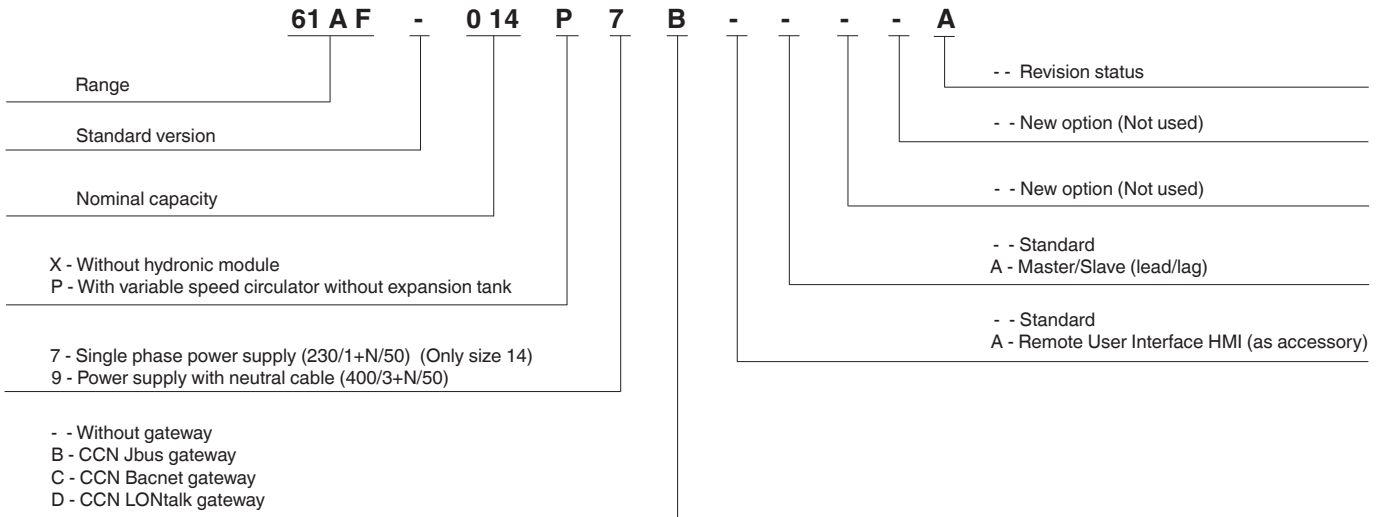
Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of a heating system. Please consult your Carrier representative for more information on these products.

- Start/stop: opening of this contact will shut down the heat pump.
- Dual set point: closing of this contact activates a second heating set point (example: unoccupied mode).
- Demand limit: closing of this contact limits the maximum heat pump capacity to a predefined value.
- User safety: this contact is connected in series with the water flow switch and can be used for any customer safety loop.
- Water pump control.
- Alert indication: this volt-free contact indicates the presence of a minor fault.
- Alarm indication: this volt-free contact indicates the presence of a major fault that has led to the shut-down of the refrigerant circuit.

Remote interface (accessory)

This accessory includes a box that can be mounted inside the building. The power supply is provided via a 220 V/24 V transformer supplied. This interface allows access to the same menus as the unit interface and can be installed up to 300 m from the 61AF unit.

Type key



Accessories

Accessories	Description	Advantages	Use
Water filter	External water filter on the hydronic module	Water pump protection against circulating debris	61AF 014-019

Hydronic module (option)

The hydronic module option reduces the installation time. The heat pump is factory-equipped with the main hydronic components required for the installation: screen filter, water pump, relief valve, water pressure transducer, flow switch.

The Pro-Dialog+ control allows integration of system and water pump protection devices (insufficient water flow rate).

The pump supplied with the hydronic module is a variable speed pump. With variable speed flow, the system no longer requires the control valve at the unit outlet.

However, for applications with two-way valves a bypass system must be kept to guarantee the minimum flow rate.

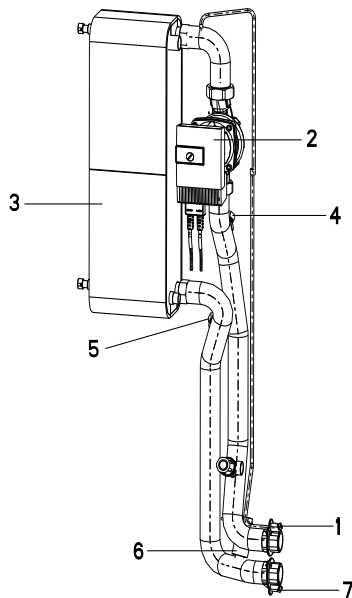
Pro-Dialog+ includes two operating modes:

- Constant pump speed
- Constant delta T control.

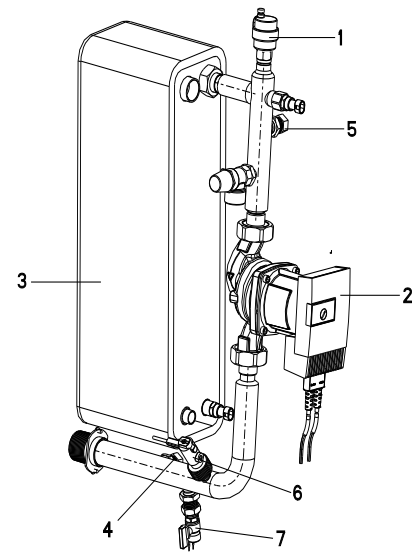
An automatic pump start-up algorithm protects the heat exchanger and the hydronic module piping against frost down to -10°C outside air temperature, as standard. If necessary, increased frost protection down to -20 °C is possible by adding heaters to the hydronic module piping.

The hydronic module option is integrated into the heat pump without increasing its dimensions and saves the space normally used for the water pump.

Hydronic module 61AF 014



Hydronic module 61AF 019



Legend

- 1 Air purge
- 2 Water pump
- 3 Brazed plate heat exchanger
- 4 Water pressure gauge
- 5 Water pressure gauge
- 6 Flow switch
- 7 Water drain

Legend

- 1 Air purge
- 2 Water pump
- 3 Brazed plate heat exchanger
- 4 Water pressure gauge
- 5 Water pressure gauge
- 6 Flow switch
- 7 Water drain

Physical and electrical data, units with hydronic module

		014-7	014-9	019
61AF				
Operating weight*				
Unit with hydronic module	kg	169	169	216
Hydronic module				
Maximum operating pressure	kPa	300	300	400
Pumps				
Water pump			Variable speed circulator	
Power input**	kW	0.13	0.13	0.13
Maximum current draw ***	A	1.1	1.1	1.1
Water connections (with hydronic module)				
Connections	inch	1 female	1 female	1 male in/1-1/4 male out
Outside diameter	mm	25	25	25 in/32 out

* Weight shown is a guideline only. To find out the unit refrigerant charge, please refer to the unit nameplate.

** To obtain the maximum power input for a unit with hydronic module, add the maximum unit power input to the pump power input.

*** To obtain the maximum operating current draw for a unit with hydronic module, add the maximum unit current draw to the pump current draw.

Physical data

61AF			014-7	014-9	019-9	
Heating						
Standard unit	H1	Nominal capacity	kW	14.1	13.7	19.8
Full load performances *	H1	COP	kW/kW	3.34	3.52	3.49
	H1	Eurovent class heating			A	A
	H2	Nominal capacity	kW	13.9	13.5	20.2
	H2	COP	kW/kW	3.90	4.17	4.28
	H2	Eurovent class heating			A	A
	H3	Nominal capacity	kW	14.2	13.8	19.8
	H3	COP	kW/kW	2.93	3.03	2.96
	H4	Nominal capacity	kW	14.0	13.7	20.1
	H4	COP	kW/kW	2.44	2.50	2.43
Full load performances**	H1	Gross nominal capacity	kW	14.0	13.6	19.7
	H1	Gross COP	kW/kW	3.38	3.56	3.54
	H2	Gross nominal capacity	kW	13.8	13.5	20.1
	H2	Gross COP	kW/kW	3.96	4.24	4.36
	H3	Gross nominal capacity	kW	14.1	13.8	19.7
	H3	COP	kW/kW	2.94	3.04	2.98
	H4	Gross nominal capacity	kW	14.0	13.6	20.0
	H4	COP	kW/kW	2.44	2.50	2.44
Seasonal efficiency***	H3	SCOP	kW/kW	2.72	2.84	2.84
	H3	η_s heat	%	106	111	111
	H3	Prated	kW	14	14	19
	H3	Energy Class		A+	A+	A+
	H2	SCOP	kW/kW	3.13	3.32	3.22
	H2	η_s heat	%	122	130	126
	H2	Prated	kW	14	14	18
	H2	Energy Class		A	A+	A+
Operating weight⁽¹⁾						
Standard unit (without hydronic kit)			kg	159	159	206
Standard unit (plus hydronic module option)			kg	169	169	216
Sound levels						
Sound power level ⁽²⁾			dB(A)	71	71	72
Sound pressure level at 10 m ⁽³⁾			dB(A)	40	40	41
Dimensions						
Length			mm	1103	1103	1135
Depth			mm	333	333	559
Height			mm	1278	1278	1579
Compressor				One, hermetic scroll, 48.3 r/s, one capacity stage		
Refrigerant				R-407C		
Charge			kg	4.0	4.0	8.0
			teqCO2	7.1	7.1	14.2
Capacity control				Pro-Dialog+		
Minimum capacity			%	100	100	100
Condenser				Direct-expansion plate heat exchanger		
Water volume			l	3.7	3.7	3.9
Max. water-side operating pressure with and without hydronic module			kPa	300	300	400
Fan				Two, axial twin-speed fans		
Total air flow (high speed)			l/s	2050	2050	2000
Speed			r/s	11.7	11.7	14.5
Evaporator				Grooved copper tubes and aluminium fins		
Pump				Variable speed pump		
Water connections with/without hydronic module				Victaulic		
Connections			inch	1 female	1 female	1 male in/1-1/4 male out
Outside diameter			mm	25	25	25 in/32 out
Chassis paint colour				Colour code: RAL 7035		

* In accordance with standard EN14511-3:2013

** Not in accordance with standard EN14511-3:2013. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

*** In accordance with standard EN14825:2013, average climate

H1 Heating mode conditions: water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature 7°C db/6°C wb, evaporator frosting factor 0 m².K/W

H2 Heating mode conditions: water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature 7°C db/6°C wb, evaporator frosting factor 0 m².K/W

H3 Heating mode conditions: water heat exchanger water entering/leaving temperature 47°C/55°C, outside air temperature 7°C db/6°C wb, evaporator frosting factor 0 m².K/W

H4 Heating mode conditions: water heat exchanger water entering/leaving temperature 55°C/65°C, outside air temperature 7°C db/6°C wb, evaporator frosting factor 0 m².K/W

⁽¹⁾ Weight shown is a guideline only. Please refer to the unit nameplate

⁽²⁾ In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

⁽³⁾ In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

□ Certifié Eurovent.



Eurovent certified values

Electrical data

61AF - standard unit		Without pump			With pump		
		014-7	014-9	019	014-7	014-9	019
Power circuit							
Nominal power supply	V-ph-Hz	230-1-50	400-3-50	400-3-50	230-1-50	400-3-50	400-3-50
Voltage range	V	207-253	360-440	360-440	207-253	360-440	360-440
Control circuit supply		24 V, via internal transformer			24 V, via internal transformer		
Maximum start-up current (Un)*							
Standard unit	A	-	66	102	-	67	103
Unit with electronic starter option	A	47	-	-	48	-	-
Unit power factor at maximum capacity**		0.82	0.82	0.82	0.82	0.82	0.82
Maximum unit power input**		kW	6.4	5.9	8.8	6.5	8.9
Nominal unit current draw***		A	22.9	7.9	12.4	24.0	13.5
Maximum unit current draw (Un)****		A	30.7	10.8	16.0	31.8	17.1
Maximum unit current draw (Un-10%)†		A	36.4	11.9	16.6	37.5	17.7

* Maximum instantaneous start-up current (maximum operating current of the compressor + fan current + locked rotor current of the compressor).

** Power input, compressor and fan, at the unit operating limits (saturated suction temperature 10°C, saturated condensing temperature 65°C) and nominal voltage of 400 V (data given on the unit nameplate).

*** Standardised Eurovent conditions: condenser entering/leaving water temperature = 40°C/45°C, outside air temperature db/wb = 7°C/6°C.

**** Maximum unit operating current at maximum unit power input and 400 V (values given on the unit nameplate).

† Maximum unit operating current at maximum unit power input and 360 V.

Electrical data and operating conditions notes:

- 61AF 014-019 units have a single power connection point located immediately upstream of the main disconnect switch.
- The control box includes the following standard features:
 - a main disconnect switch (size 019 only),
 - starter and motor protection devices for the compressor, the fan and the pump,
 - the control devices.
- Field connections:
All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 61AF units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (machine safety - electrical machine components - part 1: general regulations - corresponds to IEC 60204-1) are specifically taken into account, when designing the electrical equipment.

Notes:

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation directives. Conformance with EN 60204-1 is the best means of ensuring compliance with the Machinery Directive § 1.5.1.
- Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.

- The operating environment for the 61AF units is specified below:

1. Environment* - Environment as classified in EN 60721 (corresponds to IEC 60721):
 - outdoor installation*
 - ambient temperature range: -20°C to +40°C, class 4K4H
 - altitude: ≤ 2000 m
 - presence of hard solids, class 4S2 (no significant dust present)
 - presence of corrosive and polluting substances, class 4C2 (negligible)
2. Power supply frequency variation: ± 2 Hz.
3. The neutral (N) conductor must not be connected directly to the unit (if necessary use a transformer).
4. Overcurrent protection of the power supply conductors is not provided with the unit.
5. The factory-installed disconnect switch is of a type suitable for power interruption in accordance with EN 60947-3 (corresponds to IEC 60947-3)
6. The units are designed for connection to TN networks (IEC 60364). For IT networks the earth connection must not be at the network earth. Provide a local earth, consult competent local organisations to complete the electrical installation.

Caution: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

- * The required protection level for this class is IP43BW (according to reference document IEC 60529). All 61AF units are protected to IP44CW and fulfil this protection condition.

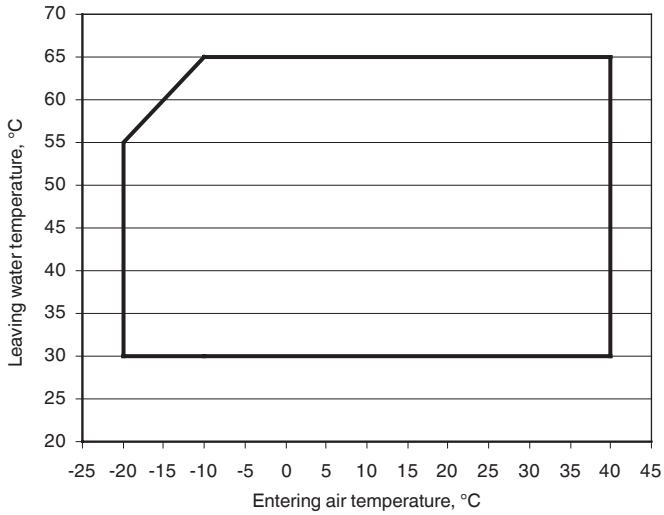
Operating limits

Operating range

61AF	Minimum	Maximum
Condenser		
Entering water temperature at start-up	°C 8	57
Leaving water temperature during operation	°C 30	65
Entering/leaving water temperature difference	K 3	10
Evaporator		
Entering air temperature*	°C -20	40

* Outside temperature: For transport and storage of the 61AF units the minimum and maximum allowable temperatures are -20°C and +50°C. It is recommended that these temperatures are used for transport by container.

Note: Do not exceed the maximum operating temperature.



— Full load

Plate heat exchanger water flow rate

61AF	Minimum flow rate	Maximum flow rate with	Maximum flow rate without
	l/s	hydraulic module, l/s*	hydraulic module, l/s**
014-7	0.2	1.1	1.1
014-9	0.2	1.1	1.1
019	0.3	1.3	1.6

* Maximum flow rate at an available pressure of 15 kPa minimum.

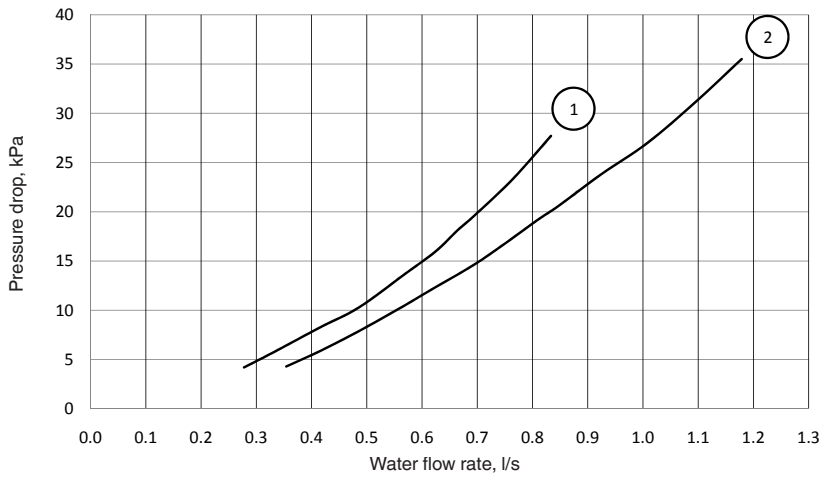
** Maximum flow rate at a water temperature difference of 3K in the plate heat exchanger.

Note: For a domestic hot water application (leaving water temperature = 65°C), the water temperature difference must be at least 8 K.

Available static system pressure

Plate heat exchanger pressure drop - for pure water at 20°C

61AF 014-019



1 61AF 014
2 61AF 019

Available system pressure for units with pump

The available pressure curves for the 61AF units are given for the maximum variable speed.

Data applicable for:

- Fresh water 20 °C
- In case of use of glycol, the maximum water flow is reduced.

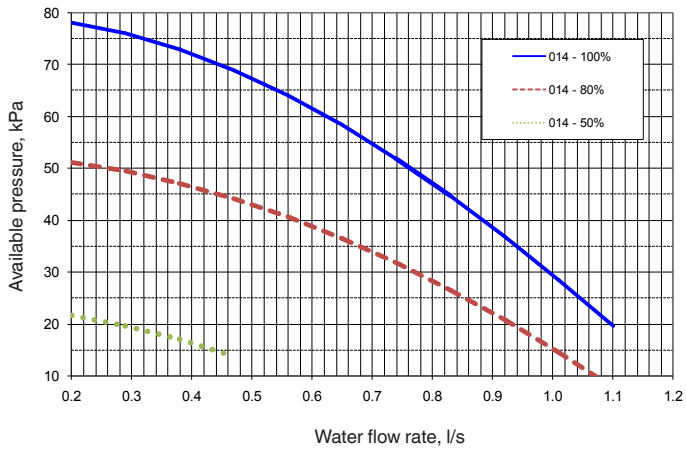
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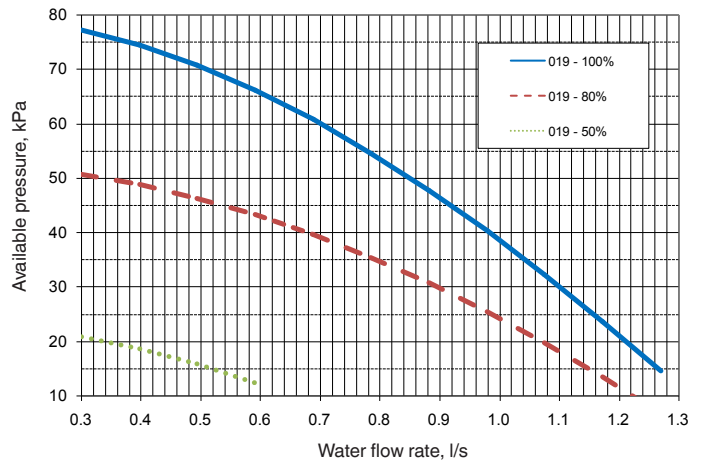
Data applicable for:

- Fresh water 20 °C
- In case of use of glycol, the maximum water flow is reduced.

61AF 014

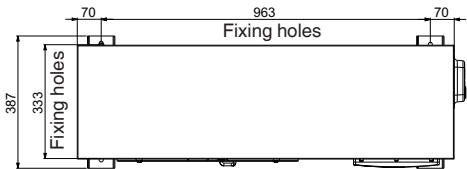
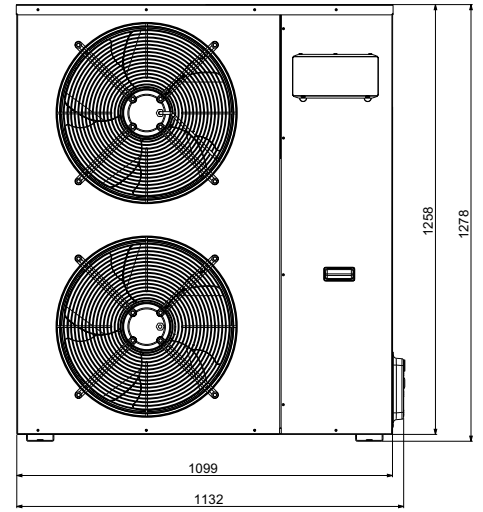
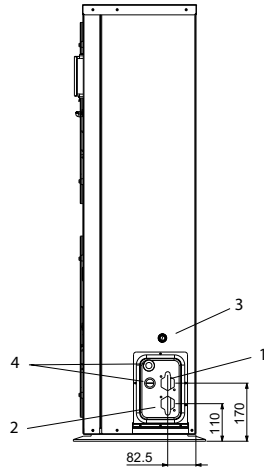
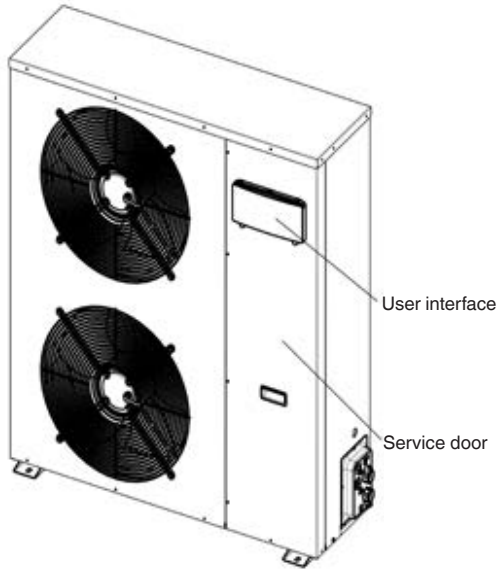


61AF 019



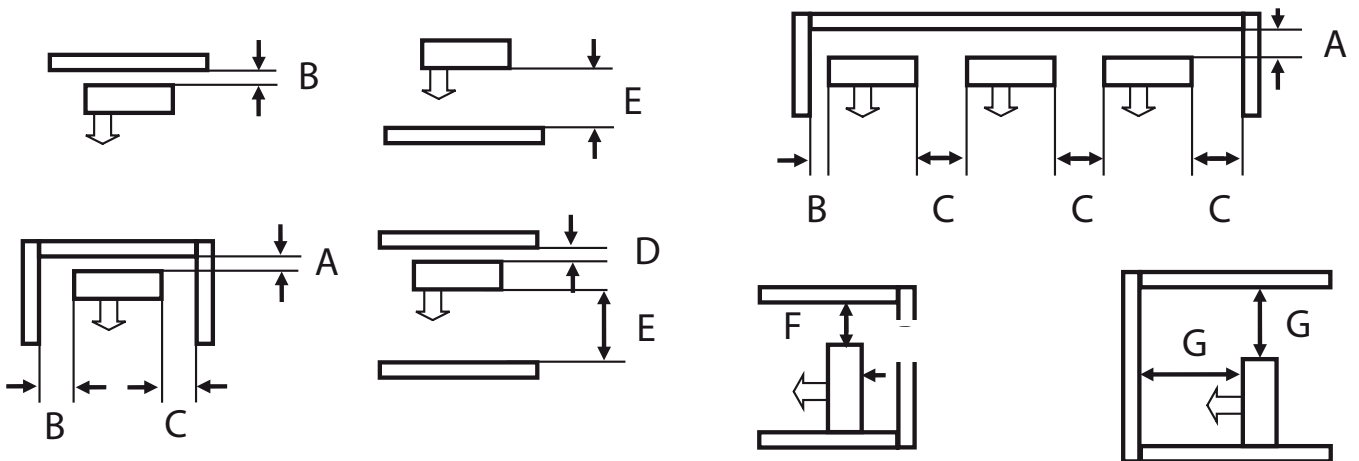
Dimensions, mm

61AF 014 unit with and without hydronic module



- 1. Water outlet
- 2. Water inlet
- 3. Relief valve outlet
- 4. Electrical connections

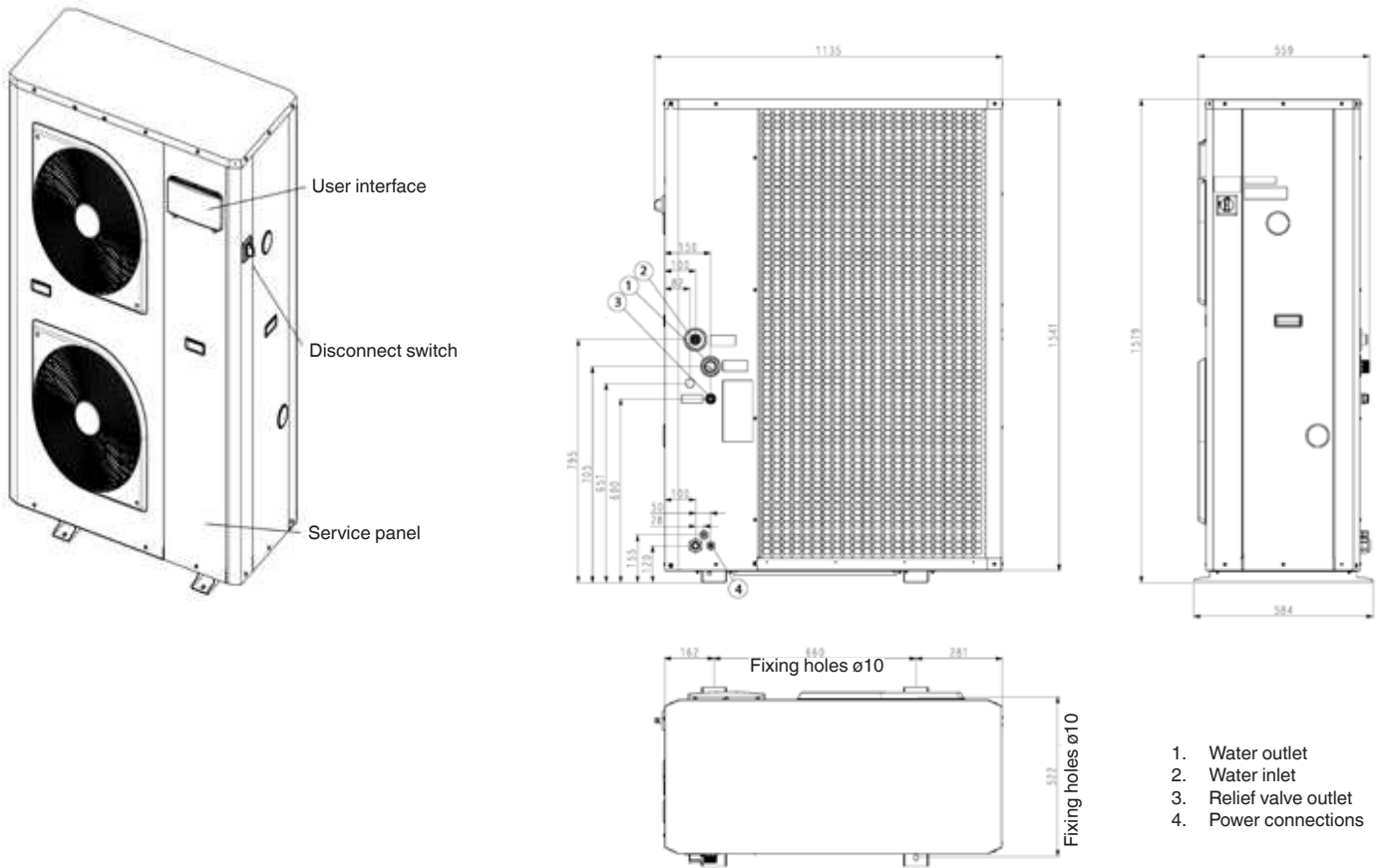
Clearances, mm



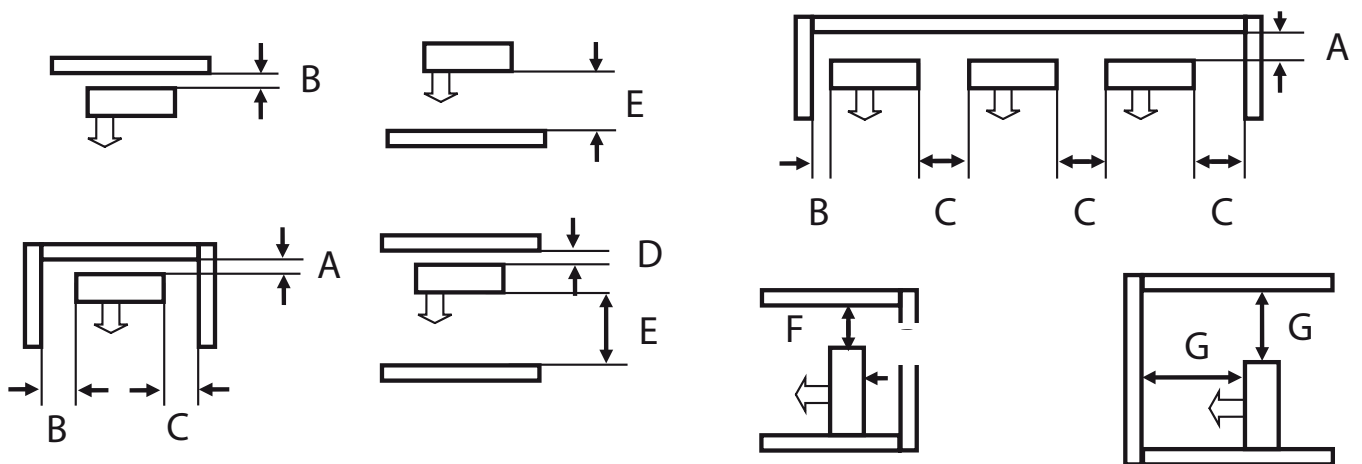
61AF 014	A	B	C	D	E	F	G
	100	250	500	100	670	400	670

Dimensions, mm

61AF 019 unit with and without hydronic module



Clearances, mm



61AF 019	A	B	C	D	E	F	G
	300	200	400	200	700	500	1000

Heating capacities in accordance with EN14511-3 : 2013

61AF 014-019

LWT °C		Outside air dry-bulb (wet-bulb) temperature, °C																							
		-20 (-20,5) / 64.2% RH				-15 (-16) / 52.2% RH				-10 (-11) / 66.6% RH				-7 (-8) / 72.5% RH				2 (1) / 83.8% RH				7 (6) / 86.8% RH			
		Qh	COP	q	Δp	Qh	COP	q	Δp	Qh	COP	q	Δp	Qh	COP	q	Δp	Qh	COP	q	Δp	Qh	COP	q	Δp
kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa		
014-7	30	6.4	2.15	0.31	4.5	7.6	2.46	0.36	6.0	8.4	2.69	0.43	7.9	8.7	2.77	0.47	9.2	10.9	3.43	0.61	14.4	13.8	4.20	0.66	16.5
014-9		6.0	2.29	0.29	4.0	7.2	2.64	0.34	5.5	8.0	2.88	0.41	7.3	8.4	2.97	0.45	8.6	10.6	3.69	0.59	13.7	13.5	4.54	0.64	15.7
019-9		9.5	2.36	0.45	6.6	11.0	2.70	0.53	8.7	11.6	2.83	0.62	11.3	11.4	2.80	0.67	13.1	14.0	3.44	0.86	20.1	20.5	4.71	0.98	25.2
014-7	35	6.4	2.02	0.31	4.4	7.6	2.31	0.36	5.9	8.4	2.51	0.43	7.7	8.7	2.58	0.47	9	10.9	3.18	0.61	14	13.9	3.90	0.66	16.2
014-9		6.0	2.14	0.29	4.0	7.2	2.45	0.35	5.4	8.0	2.67	0.41	7.1	8.4	2.74	0.45	8.4	10.6	3.37	0.59	13.3	13.5	4.17	0.65	15.5
019-9		9.4	2.20	0.45	6.4	11.0	2.49	0.53	8.4	11.6	2.62	0.61	10.9	11.5	2.61	0.67	12.6	14.1	3.19	0.85	19.2	20.2	4.28	0.97	24.0
014-7	40	6.4	1.90	0.31	4.3	7.6	2.16	0.37	5.7	8.4	2.33	0.43	7.5	8.7	2.39	0.47	8.8	10.8	2.92	0.61	13.6	14.0	3.62	0.67	16.0
014-9		6.1	2.00	0.29	3.9	7.2	2.28	0.35	5.3	8.0	2.46	0.41	7	8.3	2.52	0.45	8.2	10.5	3.08	0.59	12.9	13.6	3.83	0.65	15.3
019-9		9.3	2.04	0.45	6.2	10.9	2.30	0.53	8.2	11.6	2.43	0.61	10.5	11.6	2.43	0.66	12.2	14.2	2.96	0.84	18.5	20.0	3.87	0.96	23.1
014-7	45	6.4	1.80	0.31	4.3	7.6	2.03	0.37	5.6	8.4	2.17	0.43	7.3	8.7	2.22	0.47	8.5	10.8	2.68	0.6	13.2	14.1	3.34	0.68	15.9
014-9		6.1	1.86	0.29	3.9	7.2	2.12	0.35	5.2	8.0	2.27	0.41	6.8	8.3	2.32	0.45	8	10.5	2.80	0.59	12.5	13.7	3.52	0.66	15.2
019-9		9.4	1.90	0.45	6.1	10.9	2.13	0.53	8.0	11.7	2.25	0.61	10.3	11.8	2.27	0.66	11.9	14.5	2.73	0.84	18.1	19.8	3.49	0.95	22.3
014-7	50	6.5	1.70	0.31	4.2	7.6	1.90	0.37	5.6	8.4	2.04	0.43	7.2	8.8	2.08	0.47	8.4	10.7	2.46	0.6	12.8	14.2	3.09	0.68	15.8
014-9		6.2	1.75	0.30	3.9	7.3	1.97	0.35	5.2	8.1	2.11	0.41	6.7	8.4	2.16	0.45	7.9	10.4	2.55	0.58	12.2	13.8	3.22	0.67	15.1
019-9		9.4	1.78	0.45	6.1	11.0	1.97	0.53	7.9	11.8	2.08	0.61	10.2	12.0	2.10	0.67	11.8	14.7	2.52	0.84	17.7	19.8	3.15	0.95	21.9
014-7	55	+	+	+	+	7.7	1.80	0.23	2.5	8.4	1.94	0.27	3.2	8.9	1.99	0.29	3.7	10.6	2.31	0.38	5.7	14.2	2.93	0.43	7.1
014-9		+	+	+	+	7.3	1.85	0.22	2.3	8.2	2.00	0.26	3	8.6	2.05	0.28	3.5	10.3	2.38	0.36	5.4	13.8	3.03	0.42	6.8
019-9		+	+	+	+	11.1	1.86	0.34	3.5	11.9	1.97	0.39	4.5	12.1	1.99	0.42	5.2	15.0	2.41	0.53	7.8	19.8	2.96	0.60	9.6
014-7	60					+	+	+	+	8.6	1.82	0.22	2.2	9.0	1.87	0.24	2.6	10.6	2.13	0.3	3.8	14.1	2.69	0.34	4.7
014-9						+	+	+	+	8.3	1.87	0.21	2.1	8.7	1.92	0.23	2.4	10.3	2.18	0.29	3.6	13.7	2.77	0.33	4.5
019-9						+	+	+	+	12.2	1.84	0.31	3.1	12.4	1.86	0.34	3.6	15.4	2.25	0.43	5.3	19.9	2.70	0.48	6.5
014-7	65									8.8	1.70	0.22	2.2	9.2	1.75	0.24	2.6	10.6	1.94	0.3	3.8	14.0	2.44	0.34	4.6
014-9										8.4	1.74	0.21	2.1	8.9	1.79	0.23	2.4	10.3	1.98	0.29	3.6	13.7	2.50	0.33	4.4
019-9										12.5	1.71	0.32	3.2	12.8	1.74	0.35	3.6	15.9	2.08	0.43	5.3	20.1	2.43	0.49	6.5

Legend

LWT Leaving water temperature, °C
 Qh Heating capacity, kW
 COP Coefficient of performance, kW/kW
 q Condenser water flow rate, l/s
 Δp Condenser pressure drop, kPa
 + Lower temperature difference required for selected LWT

Application data

Standard units, refrigerant: R-407C
 Condenser entering/leaving water temperature difference: 5 K for LWT values <55°C
 Condenser entering/leaving water temperature difference: 8 K for LWT values = 55°C
 Condenser entering/leaving water temperature difference: 10 K for LWT values >55°C
 Condenser fluid: water
 Fouling factor: 0 (m² K)/W
 Performances in accordance with EN14511-3:2013.

Heating capacities in accordance with EN14511-3 : 2011

61AF 014-019

LWT °C		Outside air dry-bulb (wet-bulb) temperature, °C																							
		12 (11) / 88.9% RH				15 (14) / 89.9% RH				20 (19) / 91.2% RH				25 (24) / 92.1% RH				30 (29) / 92.9% RH				35 (34) / 83.8% RH			
		Qh	COP	q	Δp	Qh	COP	q	Δp	Qh	COP	q	Δp	Qh	COP	q	Δp	Qh	COP	q	Δp	Qh	COP	q	Δp
kW	kW/kW	l/s	kPa	kW	kW/kW	l/s	kPa	kW	kW/kW	l/s	kPa	kW	kW/kW	l/s	kPa	kW	kW/kW	l/s	kPa	kW	kW/kW	l/s	kPa		
014-7	30	15.2	4.51	0.72	19.2	16.0	4.69	0.76	21.0	17.2	4.96	0.82	23.8	17.9	5.11	0.85	25.4	18.6	5.24	0.89	27.0	19.2	5.38	0.92	28.7
014-9		14.7	4.90	0.70	18.3	15.5	5.11	0.74	20.0	16.8	5.45	0.80	22.9	17.5	5.62	0.83	24.4	18.1	2.79	0.87	26.0	18.8	5.95	0.90	27.6
019-9		22.2	5.01	1.06	28.8	22.3	5.04	1.06	29.1	22.5	5.08	1.07	29.5	22.7	5.12	1.08	29.9	22.8	5.16	1.09	30.3	23.0	5.20	1.10	30.7
014-7	35	15.2	4.18	0.73	18.8	16.0	4.35	0.76	20.5	17.3	4.63	0.83	23.6	18.0	4.77	0.86	25.2	18.7	4.89	0.89	26.7	19.4	5.02	0.93	28.4
014-9		14.8	4.48	0.71	18.0	15.6	4.68	0.74	19.6	16.9	5.00	0.81	22.6	17.6	5.17	0.84	24.2	18.3	5.32	0.87	25.8	18.9	5.47	0.91	27.3
019-9		22.2	4.61	1.06	28.2	22.6	4.69	1.08	29.1	22.8	4.73	1.09	29.5	23.0	4.76	1.10	30.0	23.2	4.80	1.11	30.4	23.3	4.83	1.12	30.8
014-7	40	15.2	3.86	0.73	18.5	16.0	4.01	0.77	20.1	17.3	4.26	0.83	23.1	18.2	4.42	0.87	25.0	18.9	4.54	0.90	26.6	19.5	4.65	0.94	28.2
014-9		14.8	4.10	0.71	17.7	15.6	4.27	0.75	19.3	16.9	4.56	0.81	22.1	17.8	4.75	0.85	24.1	18.5	4.88	0.88	25.6	19.1	5.02	0.92	27.2
019-9		22.2	4.22	1.07	27.7	23.0	4.33	1.10	29.4	23.2	4.37	1.11	29.8	23.4	4.40	1.12	30.2	23.6	4.43	1.13	30.6	23.7	4.46	1.14	31.0
014-7	45	15.2	3.55	0.73	18.2	16.0	3.68	0.77	19.8	17.4	3.91	0.83	22.7	18.4	4.07	0.88	25.0	19.1	4.18	0.92	26.6	19.8	4.29	0.95	28.2
014-9		14.9	3.75	0.71	17.4	15.6	3.90	0.75	19.0	16.9	4.15	0.81	21.7	18.0	4.35	0.86	24.1	18.7	4.47	0.90	25.6	19.3	4.59	0.93	27.2
019-9		22.4	3.84	1.07	27.5	23.2	3.95	1.11	29.3	23.7	4.01	1.13	30.3	23.9	4.04	1.15	30.7	24.0	4.07	1.15	31.1	24.2	4.10	1.16	31.5
014-7	50	15.3	3.26	0.74	17.9	16.1	3.38	0.77	19.5	17.4	3.58	0.84	22.3	18.7	3.76	0.90	25.1	19.4	3.85	0.93	26.7	20.0	3.94	0.96	28.3
014-9		14.9	3.42	0.72	17.2	15.7	3.55	0.75	18.7	17.0	3.77	0.82	21.4	18.3	3.98	0.88	24.2	18.9	4.09	0.91	25.7	19.6	4.19	0.94	27.2
019-9		22.3	3.44	1.07	26.7	23.5	3.58	1.13	29.3	24.3	3.67	1.16	31.0	24.4	3.70	1.17	31.4	24.6	3.72	1.18	31.8	24.8	3.75	1.19	32.2
014-7	55	15.3	3.10	0.46	8.0	16.0	3.22	0.48	8.7	17.4	3.41	0.52	10.0	18.8	3.61	0.57	11.3	19.4	3.70	0.59	12.1	20.1	3.79	0.61	12.8
014-9		14.9	3.23	0.45	7.7	15.7	3.36	0.47	8.4	17.0	3.57	0.51	9.6	18.3	3.79	0.55	10.9	19.0	3.91	0.57	11.6	19.7	4.02	0.59	12.3
019-9		22.2	3.25	0.67	11.7	23.5	3.41	0.71	13.0	24.5	3.53	0.74	13.9	24.7	3.55	0.75	14.1	24.9	3.58	0.75	14.3	25.1	3.60	0.76	14.5
014-7	60	15.4	2.88	0.37	5.5	16.1	2.98	0.39	5.9	17.4	3.16	0.42	6.8	18.8	3.34	0.45	7.7	19.7	3.45	0.48	8.3	20.4	3.54	0.49	8.8
014-9		15.0	2.98	0.36	5.3	15.7	3.08	0.38	5.7	17.0	3.28	0.41	6.5	18.3	3.48	0.44	7.4	19.3	3.62	0.47	8.1	19.9	3.72	0.48	8.5
019-9		22.2	2.96	0.54	7.9	23.7	3.12	0.57	8.8	25.2	3.27	0.61	9.8	25.3	3.29	0.61	9.9	25.5	3.31	0.62	10.0	25.7	3.33	0.62	10.1
014-7	65	15.6	2.64	0.38	5.5	16.2	2.72	0.39	5.9	17.5	2.87	0.42	6.7	18.8	3.03	0.46	7.6	20.0	3.17	0.49	8.5	20.7	3.24	0.50	9.0
014-9		15.2	2.71	0.37	5.3	15.9	2.80	0.38	5.7	17.1	2.97	0.41	6.5	18.4	3.14	0.45	7.3	19.6	3.30	0.48	8.2	20.3	3.38	0.49	8.6
019-9		22.4	2.65	0.54	7.9	23.9	2.78	0.58	8.8	25.7	2.94	0.62	10.0	26.3	2.99	0.64	10.3	26.5	3.01	0.64	10.5	26.6	3.03	0.65	10.6

Legend

LWT Leaving water temperature, °C
 Qh Heating capacity, kW
 COP Coefficient of performance, kW/kW
 q Condenser water flow rate, l/s
 Δp Condenser pressure drop, kPa

Application data

Standard units, refrigerant: R-407C
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 Condenser entering/leaving water temperature difference: 10 K for LWT values >55°C
 Condenser fluid: water
 Fouling factor: 0 (m² K)/W
 Performances in accordance with EN14511-3:2013.



Order No.: 16114-20, 11.2015. Supersedes order No.: 16114-20, 04.2014.
Manufacturer reserves the right to change any product specifications without notice.



Quality and Environment
Management Systems
Approval

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