21kW AIR COOLED LIQUID CHILLER

Aircon Rentals
Making the difference

CODE: 1CHL-0021

ACCESSORIES

The 21kW Air cooled liquid chiller/heat pump range was designed for commercial applications such as the air conditioning of offices and hotels.

The units integrate the latest technological innovations: Non-ozone depleting refrigerant R410A, DC inverter twin-rotary compressors, low-noise variable speed fans and microprocessor control.

The 21kW Air cooled liquid chiller units are available with hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the water supply and return piping.

- Quiet in operation
- Easy and fast installation
- Economical operation
- Environment care
- Superior reliability
- NHC Control
- Inverter technology compressor and fans

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Physical Data

30RQV				021
Cooling				
Standard unit	C1	Nominal capacity	kW	18,6
Full load performances*	C1	EER	kW/kW	3,1
	C1	Eurovent class cooling		A
	C2	Nominal capacity	kW	25,8
	C2	EER	kW/kW	3,8
	C2	Eurovent class cooling		A
Seasonal efficiency		ESEER	kW/kW	3,85
Heating				
Standard unit	H1	Nominal capacity	kW	21,1
Full load performances*	H1	COP	kW/kW	4,1
	H1	Eurovent class heating		A
	H2	Nominal capacity	kW	20,0
	H2	COP	kW/kW	3,3
	H2	Eurovent class heating		A
	H3	Nominal capacity	kW	19,1
	H3	COP	kW/kW	2,7
Seasonal efficiency**	H3	SCOP	kW/kW	2,9
	H3	ηs heat	%	113
	H3	Prated	kW	15,43
	H3	Annual Energy consumption	KWh	10980
	H3	Energy class		A+
Sound levels				
Standard unit				
Sound power level (2)			dB(A)	74
Sound pressure level at 10 m (3)			dB(A)	43
Dimensions - Standard unit				
Length (5)			mm	1109
Width			mm	584
Height			mm	1579
Operating Weight (1)				
Standard unit			kg	199,4
Compressors			Rotary compressor	1
Refrigerant			R410A	
Charge (1)			kg	8
Capacity control			NHC control	
Minimum capacity (6)			%	41%
Air heat exchanger			Grooved copper tubes, aluminium fins	
Fans - Standard unit			Axial type fan	
Quantity				2
Maximum total air flow			l/s	2400
Maximum rotational speed			rps	16
Water heat exchanger			Brazed plate heat exchanger	
Water volume			l	1,9
Max water-side operating pressure without hydronic module			kPa	1000
Hydronic module (option)			Pump, relief valve, paddle flow switch, expansion tank (option)	
Pump			Centrifugal pump (fixed speed or variable speed)	
Expansion tank volume			l	8
Max. water-side operating pressure with hydronic module (4)			kPa	300
Water connections (Without Hydronic Module)				
Inlet diameter (BSP GAS)			inch	1
Outlet diameter (BSP GAS)			inch	1
Water connections (With Hydronic Module)				
Inlet diameter (BSP GAS)			inch	1-1/4
Outlet diameter (BSP GAS)			inch	1
Water Filling System (Option)				
Diameter (BSP GAS)			inch	1/2
Chassis paint colour			Colour code:	RAL 7035

* In accordance with standard EN 14511-3:2013
** In accordance with standard EN 14825:2013, Average climate
C1 Cooling mode conditions : evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fooling factor 0m² K/W
C2 Cooling mode conditions : evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fooling factor 0m² K/W
H1 Heating mode conditions : Water heat exchanger water entering/leaving temperature 30°C/35°C, fooling factor 0m² K/W. Outside air temperature 7°C db / 6°C wb
H2 Heating mode conditions : Water heat exchanger water entering/leaving temperature 40°C/45°C, fooling factor 0m² K/W. Outside air temperature 7°C db / 6°C wb
H3 Heating mode conditions : Water heat exchanger water entering/leaving temperature 47°C/55°C, fooling factor 0m² K/W. Outside air temperature 7°C db / 6°C wb
(1) Values are guidelines only. 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 20 µPa, (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).
(4) Min. water-side operating pressure with fixed speed hydronic module is 50 kPa and with variable speed hydronic module is 40 kPa.
(5) Length = 1141 mm if main disconnect switch
(6) Cooling Eurovent condition

Physical and Electrical Data

HYDRONIC MODULE	
Expansion tank volume	8
Maximum water-side operating pressure kPa	300

PUMPS	
Water pump	Pump, screen filter, expansion tank, flow switch, relief valve
Power input* kW	0.82
Nominal operating current draw*	1.60

Electrical Data

POWER CIRCUIT		
Nominal power supply	V-ph-Hz	400-3+N-50
Voltage range	V	360-440
Control circuit supply		24V AC via internal transformer
Nominal unit current drawn (Un) *	A	14,3
Maximum unit power input (Un) **	kW	12,4
Cos Phi unit at maximum power **		0,93
Maximum unit current drawn (Un-10%)***	A	21,2
Maximum unit current drawn (Un) ****	A	19,2
Maximum Start-up current, standard unit †	A	Not Applicable (less than the operating current)

* Conditions equivalent to the standardised Eurovent conditions (evaporator water entering-leaving temperature = 12 °C/7 °C, outside air temperature = 35 °C).

** Power input, compressors and fans, at the unit operating limits (saturated suction temperature 15 °C, saturated condensing temperature 68.3 °C) and nominal voltage of 400 V (data given on the unit nameplate).

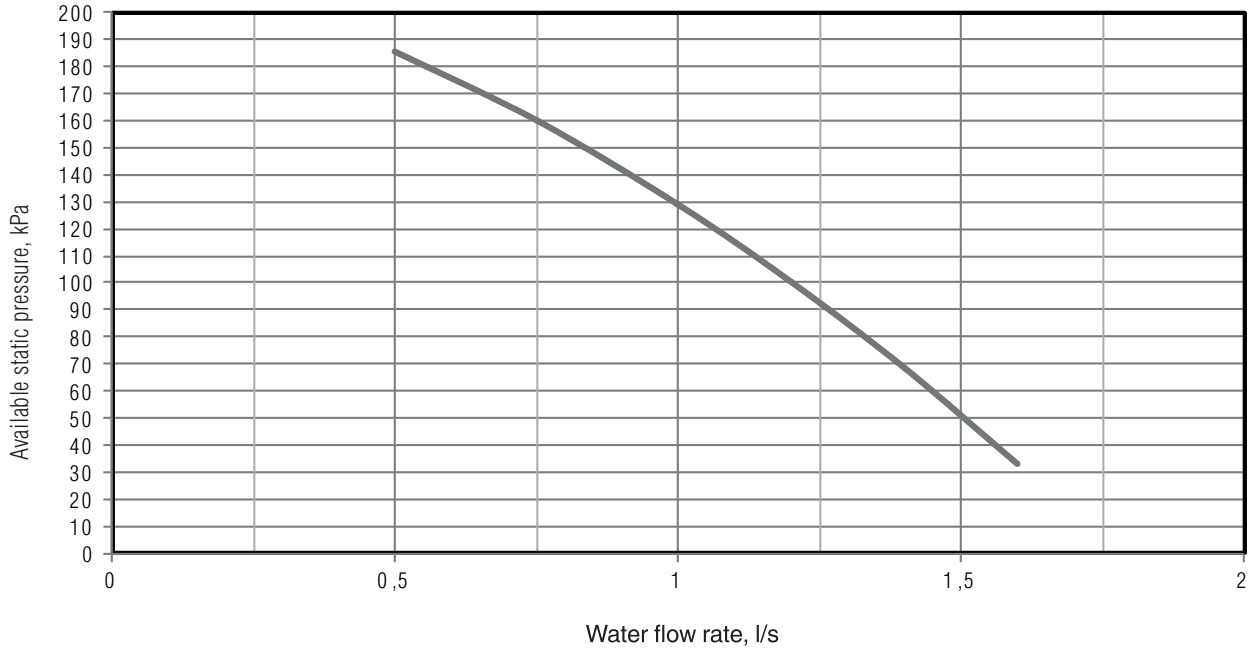
*** Maximum unit operating current at maximum unit power input and at 360 V.

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

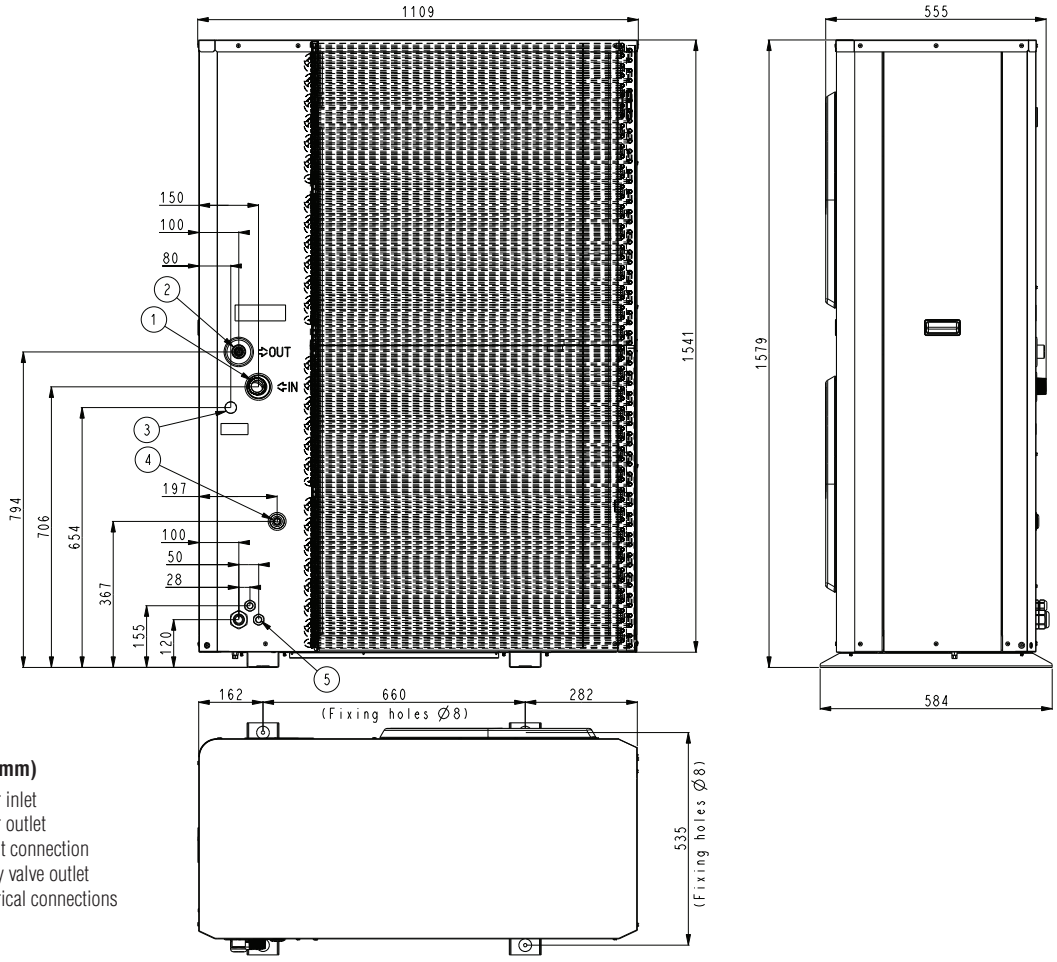
† Maximum instantaneous start-up current at operating limits (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).
Fan motor electrical data: at Eurovent equivalent conditions and motor ambient air temperature of 50 °C at 400 V: 3.8 A, start-up current 20 A, power input 1.75 kW

Available static system pressure

Available external static pressure for unit with fixed speed hydronic module 17 and 21kW

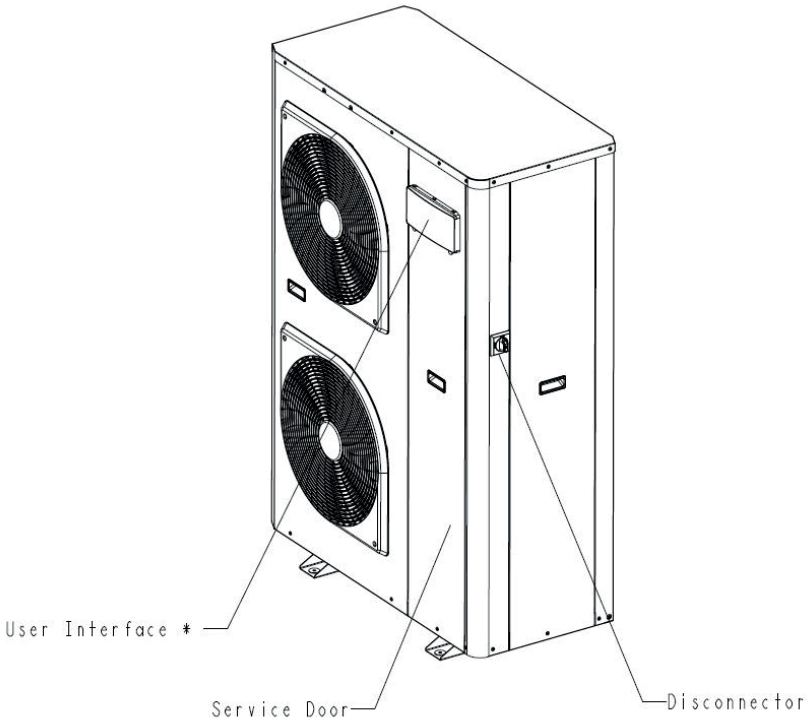


Dimensions/clearances



Legend (mm)

1. Water inlet
2. Water outlet
3. Fill kit connection
4. Safety valve outlet
5. Electrical connections



Cooling Capacities

		Outside air temperature, °C																				
		10							15							25						
	LWT	Qc			EER			q	Qc			EER			q	Qc			EER			q
	°C	kW			kW/kW			l/s	kW			kW/kW			l/s	kW			kW/kW			l/s
		Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom
30RQV 21	5	20,47	14,08	23,95	4,73	4,63	3,68	0,98	20,02	12,51	24,01	4,38	3,12	3,69	0,96	19,50	13,54	23,31	3,87	4,06	3,30	0,93
30RQV 21	7	21,57	14,90	25,83	4,83	4,83	4,02	1,03	21,12	13,24	25,69	4,49	3,26	3,93	1,01	20,65	14,38	24,63	4,02	4,27	3,40	0,99
30RQV 21	10	23,27	16,18	28,40	4,95	5,13	4,35	1,11	22,83	7,91	28,12	4,64	4,60	4,19	1,09	22,45	8,23	26,69	4,23	4,22	3,53	1,07
30RQV 21	15	26,91	18,43	32,59	5,56	5,63	4,72	1,29	26,75	9,30	32,59	5,40	5,76	4,65	1,28	25,65	9,60	30,32	4,59	4,99	3,74	1,23
30RQV 21	18	28,87	19,85	35,49	5,67	5,92	5,01	1,38	29,16	9,71	35,50	5,79	5,30	4,92	1,40	27,70	10,52	32,63	4,79	5,57	3,85	1,33

		Outside air temperature, °C													
		35							45						
	LWT	Qc			EER			q	Qc			EER			q
	°C	kW			kW/kW			l/s	kW			kW/kW			l/s
		Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom
30RQV 21	5	17,70	8,14	21,82	2,96	3,14	2,57	0,84	14,86	6,37	16,08	2,25	2,21	2,22	0,71
30RQV 21	7	18,58	8,67	23,08	3,10	3,33	2,65	0,89	15,79	6,79	17,07	2,34	2,33	2,30	0,75
30RQV 21	10	20,43	9,50	25,03	3,09	3,42	2,77	0,98	17,21	7,45	18,60	2,47	2,51	2,43	0,82
30RQV 21	15	23,40	11,00	28,49	3,36	3,91	2,95	1,12	19,76	8,62	21,34	2,70	2,83	2,65	0,95
30RQV 21	18	25,81	11,97	30,67	3,80	4,24	3,05	1,24	21,38	9,38	23,08	2,83	3,03	2,77	1,02

Legend

LWT Leaving water temperature, °C
Qc Cooling capacity, kW
Nom Nominal
Min Minimum
Max Maximum
EER Energy Efficiency Ratio, kW/kW
q Evaporator water flow rate, l/s

Application data

Standard units, refrigerant: R-410A
Evaporator entering/leaving water temperature difference: 5 K or minimum mass flow rate
Evaporator fluid: water
Fouling factor: 0 m^2 K/W

Performances in accordance with EN 14511-3:2011.

Heating Capacities

		Outside air temperature, °C																				
		10 (9)							7 (6)							2 (1)						
	LWT	Qh			COP			q	Qh			COP			q	Qh			COP			q
	°C	kW			kW/kW			l/s	kW			kW/kW			l/s	kW			kW/kW			l/s
		Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom
30RQV 21	35	22,88	8,78	32,72	4,48	3,80	3,62	1,09	21,10	7,56	22,17	4,10	4,37	2,94	1,01	15,62	7,27	19,91	2,90	3,08	2,47	0,90
30RQV 21	45	21,71	7,78	31,49	3,59	2,86	2,99	1,04	19,97	6,78	21,55	3,30	3,37	2,45	0,97	14,83	6,84	18,93	2,34	2,41	2,03	0,86
30RQV 21	55	20,47	7,24	24,92	2,92	2,21	2,73	0,99	19,07	6,31	23,24	2,69	2,63	2,53	0,92	13,70	6,37	17,02	1,90	1,91	1,83	0,79

		Outside air temperature, °C																				
		-7 (-8)							-10 (-11)							-15 (-16)						
	LWT	Qh			COP			q	Qh			COP			q	Qh			COP			q
	°C	kW			kW/kW			l/s	kW			kW/kW			l/s	kW			kW/kW			l/s
		Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom
30RQV 21	35	10,39	6,50	15,31	2,51	2,74	2,22	0,69	9,56	5,82	10,30	2,37	2,55	2,35	0,64	7,57	4,94	7,58	2,15	2,25	2,15	0,58
30RQV 21	45	9,74	7,56	14,70	1,99	2,02	1,80	0,66	8,94	6,88	9,66	1,89	1,89	1,87	0,61	7,00	5,80	7,01	1,71	1,68	1,71	0,58
30RQV 21	55	9,03	7,07	11,28	1,60	1,60	1,55	0,62	8,24	6,38	8,98	1,52	1,50	1,52	0,58	-	-	-	-	-	-	-

		Outside air temperature, °C						
		-20 (-21)						
	LWT	Qh			COP			q
	°C	kW			kW/kW			l/s
		Nom	Min	Max	Nom	Min	Max	Nom
30RQV 17	35	6,32	4,11	6,40	1,93	1,98	1,92	0,58
30RQV 17	45	5,84	4,75	5,85	1,54	1,49	1,54	0,58
30RQV 17	60	-	-	-	-	-	-	-