





Quality & Environmental Management Systems Approvals





30XAS 242-482

Nominal cooling capacity 235-484 kW

The 30XAS Aquaforce liquid chillers are the premium solution for industrial and commercial applications where installers, consultants and building owners require optimal performances and maximum quality.

The Aquaforce liquid chillers are designed to meet current and future requirements in terms of energy efficiency and operating sound levels. They use the best technologies available today:

- Twin-rotor screw compressor with a variable capacity valve.
- Single refrigerant R-134a.
- Low-noise generation IV Flying Bird fans made of composite material.
- Aluminium micro-channel heat exchangers (MCHX).
- Pro-Dialog+ control system.

To meet to all environmental and economic requirements, the Aquaforce is available in two versions:

One offers an extremely low noise level while at the same time boasting superior energy efficiency.

The other offers unequalled energy efficiency to satisfy the most stringent demands of building owners wanting to reduce operating costs to the minimum. This version is also recommended for applications in geographical zones where the air temperature is very high.

Features and advantages

Very economical operation

- Extremely high full load and part load energy efficiency: Eurovent energy efficiency class "A to C", average EER of 3.05 kW/kW (high-efficiency option)
 - Average ESEER of 3.89 kW/kW
 - Twin-rotor screw compressor equipped with a highefficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
 - All aluminium condenser with micro-channels that is more efficient than a copper/aluminium coil.
 - Flooded shell-and-tube evaporator to increase the heat exchange efficiency.
 - Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface (superheat control).
 - Economizer system with electronic expansion device for increased cooling capacity

Low operating sound levels

Compressor

- Discharge dampers integrated in the oil separator (Carrier patent).
- Silencer on the economiser return line.
- Acoustic compressor and oil separator enclosure reducing radiated noise.

Condenser section

- Condenser coils in V-shape with an open angle, allowing quieter air flow across the coil
- Low-noise 4th generation Flying Bird fans, made of a composite material (Carrier patent) are now even quieter and do not generate intrusive low-frequency noise
- Rigid fan mounting preventing start-up noise (Carrier patent)

Easy and fast installation

- Integrated hydronic module (option)
 - Centrifugal high-pressure dual water pump, with operating time balancing and automatic changeover to the back-up pump if a fault develops
 - Water filter protecting the water pump against circulating debris
 - High-capacity membrane expansion tank ensures pressurisation of the water circuit
 - Thermal insulation and aluminium protection
 - Pressure sensor to check filter pollution and for direct numerical display of the water flow rate with an estimate of the instantaneous cooling capacity at the control interface
 Water flow control valve
- Simplified electrical connections
 - Main disconnect switch with high trip capacity
- Transformer to supply the integrated control circuit (400/24 V)
- Fast commissioning
- Systematic factory operation test before shipment
 Quick-test function for step-by-step verification of the
- instruments, expansion devices, fans and compressor

Environmental care

- R-134a refrigerant
 - Refrigerant of the HFC group with zero ozone depletion potential
 - 30% reduction in the refrigerant charge through the use of micro-channel heat exchangers
- Leak-tight refrigerant circuit
 - Reduction of leaks as no capillary tubes and flare connections are used
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - Liquid line service valve for simplified maintenance

Absolute reliability

- Screw compressor
 - Industrial-type screw compressor with oversized bearings and motor cooled by suction gas
 - All compressor components are easily accessible on site minimising down-time
 - Protection increased by an electronic board
- Air condenser
- All aluminium micro-channel heat exchangers (MCHX) with a corrosion resistance that is 3.5 times higher than for a traditional coil. The all aluminium design eliminates the formation of galvanic currents between aluminium and copper that cause coil corrosion in saline or corrosive environments
- Evaporator

Thermal insulation with aluminium sheet finish for perfect resistance to external aggression (mechanical and UV protection)

- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling (Carrier patent)
 - Automatic compressor unloading in case of abnormally high condensing pressure. If condenser coil fouling or fan failure occurs, the Aquaforce continues to operate, but at reduced capacity

- Exceptional endurance tests
 - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
 - Transport simulation test in the laboratory on a vibrating table. The test is based on a military standard and equivalent to 4000 km by truck.
 - Salt mist corrosion resistance test in the laboratory for increased corrosion resistance
- Control, safety

30XAS units are equipped with high-pressure safety switches with manual reset and dual safety valves on the high- and low-pressure side as standard. Each of the safety valves is mounted on a three-way valve to facilitate testing and replacement.

Pro-Dialog+ control

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

Pro-Dialog+ interface



- Energy management
 - Seven-day internal time schedule clock: permits chiller 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 chillers operating in parallel with operating time equalisation and automatic changeover in case of a unit fault (accessory)
- Change-over based on the outside air temperature
 Integrated features
 - Night mode: capacity and fan speed limitation for reduced noise level
 - With hydronic module: water pressure display and water flow rate calculation
- Ease-of-use
 - The new backlighted 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. They are user-friendly and permit quick access to the principal operat-ing parameters: compressor operating, suction/discharge pressure, compressor operating hours, set point, air temperature, entering/leaving water temperature.

Remote operating mode with volt-free contacts (standard)

A simple two-wire communication bus between the RS485 port of the Aquasnap 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 an air conditioning system. Please consult your Carrier representative for more information on these products.

- Start/stop: opening of this contact will shut down the unit
- Dual set point: closing of this contact activates a second set point (example: unoccupied mode)
- Water pump 1 and 2 control (contacts supplied with the hydronic module option): these outputs control the contactors of one or two evaporator water pumps
- 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
- Demand limit 1 and 2: closing of these contacts limits the maximum chiller capacity to three predefined values
- User safety: this contact can be used for any customer safety loop, closing of the contact generates a specific alarm.

Remote interface (accessory)

This interface allows access to the same menus as the unit interface and can be installed up to 300 m away. 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.

06T screw compressor



The Carrier 06T screw compressors benefit from Carrier's long experience in the development of twin-rotor screw compressors.

The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load. A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity.

This system allows optimal adjustment of the compressor cooling capacity and ensures exceptionally high stability of the chilled water leaving temperature. Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high outside temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The compressor is equipped with a separate oil separator that minimises the amount of oil in circulation in the refrigerant circuit and with its integrated silencer considerably reduces discharge gas pulsations for much quieter operation.

All-aluminium micro-channel heat exchanger (MCHX)



Already utilised in the automobile and aeronautical industries for many years, the MCHX used in the Aquaforce is entirely made of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in traditional heat exchangers. Unlike traditional heat exchangers the MCHX heat exchanger can be used in moderate marine and urban environments. From an energy efficiency point-of-view the MCHX heat exchanger is approximately 10% more efficient than a traditional coil and allows a 30% reduction in the amount of refrigerant used in the chiller.

The low thickness of the MCHX reduces air pressure losses by 50% and makes it less susceptible to fouling (e.g. by sand) than a traditional coil. Cleaning of the MCHX heat exchanger is very fast using a high-pressure washer.

Options and accessories

Options	No.	Description	Advantages	Use
Corrosion protection, traditional coils	2B	Factory application of Blygold Polual treatment on the copper/aluminium coils	Improved corrosion resistance, recommended for industrial, rural and marine environments	30XAS 242-482
Corrosion protection, traditional coils	ЗA	Fins made of pre-treated aluminium (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	30XAS 242-482
Unit equipped for air discharge ducting	10	Fans with available pressure equipped with discharge connection flanges	Facilitates connection to the discharge ducts	30XAS 242-482
IP 54 control box	20A	Increased leak tightness of control boxes	Increased control box protection	30XAS 242-482
Grilles	23	Metal grilles on the unit front, rear and sides	Enhanced aesthetics, protection against intrusion to the unit interior	30XAS 242-482
Enclosure panels	23A	Side panels at each end of the coil	Enhanced aesthetics	30XAS 242-482
Winter operation	28	Fan speed control via frequency converter	Stable unit operation when the air temperature is between -10°C and -20°C	30XAS 242-482
Evaporator frost protection	41A	Resistance heaters on the evaporator	Evaporator frost protection down to -20°C outside temperature	30XAS 242-482
Evaporator and hydronic module frost protection	41B	Resistance heaters on the evaporator and the hydronic module	Evaporator and hydronic module frost protection down to -20°C outside temperature	30XAS 282-482
Heat reclaim	50	Complete recovery of the heat rejected by the condenser	Free hot-water production as well as cold-water production	30XAS 242-482
Service valve	92	Shut-off valves on the compressor suction piping, the economiser line, the compressor discharge piping and at the evaporator inlet	Simplified maintenance	30XAS 242-482
Discharge valve	93A	Shut-off valves on the compressor discharge piping	Simplified maintenance	30XAS 242-482
High-pressure dual-pump hydronic module	116C	See hydronic module chapter	Easy and fast installation, operating safety	30XAS 282-482
High energy efficiency	119	Improved condenser performance	Energy cost reduction, full load operation at higher air temperatures	30XAS 242-482
JBus gateway	148B	Two-directional communications board, complies with JBus protocol	Easy connection by communication bus to a building management system	30XAS 242-482
BacNet gateway	148C	Two-directional communications board, complies with BacNet protocol	Easy connection by communication bus to a building management system	30XAS 242-482
LON gateway	148D	Two-directional communications board, complies with LON protocol	Easy connection by communication bus to a building management system	30XAS 242-482
Energy Management Module EMM	156	See chapter "Energy Management Module"	Easy connection by wired connection to a building management system	30XAS 242-482
Russian code compliance	199	GOST certification	Conformance with Russian regulations (GOST)	30XAS 242-482
Australian code compliance	200	Pressure vessels approved in accordance with the Australian code	Conformance with Australian regulations	30XAS 242-482
Unit without enclosure	253	Compressor not equipped with acoustic enclosure	More economical	30XAS 242-482
Traditional coils (Cu/Al)	254	Coils made of copper tubes with aluminium fins	Possibility to add specialised condenser treatment	30XAS 242-482
Traditional coils (Cu/Al) without slots	255	Coils made of copper tubes with aluminium fins without slots	Recommended for the Middle East, sand storms. Possibility to add specialised condenser treatment.	30XAS 242-482
Suction piping insulation	256	Thermal insulation of the suction piping with flexible, anti-UV insulant	Prevents condensation on the suction piping	30XAS 242-482
Low sound level	257	Sound insulation (suction piping)	Unit sound power level reduction of -2 to -3 dB(A)	30XAS 242-482
Very low sound level (second attenuation level)	258	Additional sound insulation	Unit sound power level reduction of -1 to -3 dB(A), depending on un it size, compared to option 257	30XAS 242-482
MCHX anti-corrosion protection	263	Carrier factory treatment of the MCHX heat exchanger for applications in aggressive environments	The Super Enviro-Shield option was developed to extend the application range of MCHX heat exchangers in severe environmental conditions: this option is compulsory in industrial and coastal environments.	30XAS 242-482
Accessories		Description	Advantages	Use
CCN JBus gateway		See option 148B	See option 148B	See option 148B
CCN BacNet gateway		See option 148C	See option 148C	See option 148C
CCN LON Talk gateway		See option 148D	See option 148D	See option 148D
Connection sleeve		Piping to be welded with Victaulic connection	Ease-of-installation	30XAS 242-482
Energy Management Module EMM		See controls manual	Easy connection by wired connection to a building management system	30XAS 242-482
Lead-lag kit		Supplementary water outlet temperature sensor kit, field-installed, allows master/slave operation of two chillers connected in parallel.	Optimised operation of two chillers connected in parallel with operating time balancing.	30XAS 242-482

Physical data

	30XAS		242	282	342	442	482
.),	Nominal cooling capacity*						
¥	Standard unit	kW	235	272	328	421	465
	Power input	kW	83	90	106	143	160
	EER	kW/kW	2,82	3,02	3,10	2,95	2,91
	Eurovent class cooling		С	В	В	В	В
	ESEER	kW/kW	3.87	3.98	4.06	3.95	4.05
	IPLV	kW/kW	4 29	4.55	4 72	4 55	4.62
	Nominal cooling capacity*		.,=0	1,00	.,	1,00	.,02
Y	Unit with option 119**	kW	240	280	338	438	484
•	Power input	kW	81	88	103	138	15/
			2.00	2 17	2.07	2 10	0.14
	Eurovent alega goaling	NVV/NVV	2,90 D	5,17	5,27	5,10	5,14 A
		1.3.67/1.3.67	0 70	A 0.74	A 0.00	A 0.00	A 0.00
	ESEER		3,72	3,74	3,86	3,82	3,88
		KVV/KVV	4,16	4,23	4,44	4,36	4,44
	Operating weight***	kg	2560	2980	3040	3800	3890
	With option 116C**	kg	-	3240	3360	4160	4320
	With options 254 or 255**	kg	2710	3230	3310	4120	4240
	Sound levels						
	Standard unit						
	Sound power level****	dB(A)	94	94	93	97	96
	Sound pressure level at 10 m ⁺	dB(A)	62	62	61	65	64
	Standard unit + option 257						
	Sound power level****	dB(A)	92	92	91	95	94
	Sound pressure level at 10 m ⁺	dB(A)	60	60	59	62	61
	Standard unit + option 258						
	Sound power level****	dB(A)	89	89	88	92	91
	Sound pressure level at 10 m ⁺	dB(A)	57	57	56	59	58
	High energy efficiency unit (option 119**)	()					
	Sound power level****	dB(A)	96	96	96	98	98
	Sound pressure level at 10 mt	dB(A)	64	64	63	66	66
	High energy efficiency unit (option 119**) + or	tion 257	•••	-			
	Sound nower level****	dB(A)	95	95	95	97	97
	Sound pressure level at 10 mt	$dB(\Lambda)$	63	62	62	65	64
		UD(A)	06T semi-bermetic	CCRW COMPRESSOR 50	02) r/s	00	04
	Pofrigorant		D-19/o	screw compressor, sc	///3		
	No. of oirquite		n-104a	4	1	1	1
	No. of circuits	1.0	1	70	1	1	1
	Reingerant charge	ку	60	72	73	83	00
	Refrigerant charge option 254/255	кд	85	95	105	120	130
	Capacity control		PRO-DIALOG+, ele	ctronic expansion val	ve (EXV)		
	Minimum capacity	%	30	30	30	30	30
	Condensers		All aluminium micro	-channel heat exchan	ger		
	Condenser fans		Axial Flying Bird IV I	ans with rotating shro	oud		
	Standard units and units with option 119 - 254**						
	Quantity		4	5	6	7	8
	Total air flow, standard unit	l/s	13667	17083	20500	23917	27333
	Fan speed, standard unit	r/s	11.7	11.7	11.7	11.7	11.7
	Total air flow - unit with option 119**	l/s	18055	22569	27083	31597	36111
	Fan speed - unit with option 119**	r/s	15.7	15.7	15.7	15.7	15.7
	Evaporator		Flooded shell-and-t	ube type			
	Water content	1	53	53	53	75	75
	Without hydronic module						
	Water connections, inlet/outlet		Victaulic				
	Diameter	in	5	5	5	5	5
	Outside diameter	mm	141.3	141.3	141.3	141.3	141.3
	Max. water-side pressure	kPa	1000	1000	1000	1000	1000
	With hydronic module (option 116C**)						
	Water connections inlet/outlet		Victaulic				
	Diameter	in	-	4	4	4	4
	Outside diameter	 mm		114.3	114.3	114.3	114 3
	Expansion tank volume	1	_	50	50	50	50
	Max water-side prossure	, kPo	_	400	400	400	400
	Chapping point colour	кга	- Colour ac day DAL 70	400	400	400	400
			JUIUUI LUUE. NAL/U				

Standard Eurovent LCP/A/P/C/AC conditions in cooling mode: evaporator entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.
 Options: 116C = high-pressure dual-pump hydronic module; 119 = high energy efficiency units; 254 = units with copper/aluminium coils with slots; 255 = units with copper/aluminium coils with plain fins; 257 = low sound level; 258 = very low sound level.
 Weights are guidelines only. The refrigerant charge is also given on the unit nameplate.
 10⁻¹² W - In accordance with ISO 9614-1 and certified by Eurovent.

+ Average sound pressure level, unit in a free field on a reflective surface. In accordance with ISO 9614-1 (10-12 W). For information, calculated from the sound power level Lw(A)

Note: Option 119 (high energy efficiency) can be used together with options 254 and 255. Contact your Carrier representative to obtain the performances.

Electrical data

30XAS		242	282	342	442	482	
Power circuit							
Nominal power supply	V-ph-Hz	400-3-50					
Voltage range	V	360-440					
Maximum supply cable section	mm ²	2 x 150	2 x 95	2 x 150	2 x 150	2 x 240	
Short-circuit stability current (TN system)*	kA	38	50	50	50	50	
Control circuit		24 V via interna	al transformer				
Start-up current**	A	303	388	388	587	587	
Standard unit							
Cosine Phi maximum***		0.89	0.88	0.88	0.87	0.87	
Cosine Phi nominal****		0.85	0.85	0.86	0.84	0.85	
Maximum power input†	kW	101	113	134	184	213	
Nominal current draw****	A	141	153	174	258	278	
Maximum current draw (Un)†	A	165	185	218	305	353	
Maximum current draw (Un -10%)***	А	180	198	231	324	375	
High energy efficiency unit (option 119)							
Cosine Phi maximum***		0.88	0.88	0.88	0.87	0.87	
Cosine Phi nominal****		0.84	0.85	0.85	0.83	0.84	
Maximum power input†	kW	105	118	139	190	221	
Nominal current draw****	A	141	153	175	254	271	
Maximum current draw (Un)†	А	172	194	229	318	368	
Maximum current draw (Un -10%)***	A	187	207	242	337	390	

* kA eff: efficiency value: rms for English version

** Instantaneous start-up current (locked rotor current in star connection of the compressor).

**** Values obtained at operation with maximum unit power input.
 **** Values obtained at standard Eurovent unit operating conditions: air 35°C, water 12/7°C.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

Note:

Motor and fan electrical data if the unit operates at Eurovent conditions (motor ambient temperature 50°C): 1.9 A Start-up current: 8.4 A

FOwer	input.	100	• •

30XAS with hydronic module (optic	242	282	342	442	482		
High-pressure pump							
Motor power	kW	-	4	5.5	7.5	11	
Power input	kW	-	5.1	7.2	9.2	13.2	
Maximum current draw	А	-	8.2	11.7	15	21.2	

Notes:

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

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

Electrical data notes and operating conditions for 30XAS units:

- 30XAS 242-482 units have a single power connection point located immediately upstream of the main disconnect switch.
- The control box includes the following standard features:
- One general disconnect switch
- Starter and motor protection devices for the compressor, the fans and the pump
- 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 30XAS units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60 204-1 (corresponds to IEC 60204-1) (machine safety - electrical machine components - part 1: general regulations) are specifically taken into account, when designing the electrical equipment.

IMPORTANT

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation directives.
- Conformance with EN 60 204 is the best means of ensuring compliance with the Machines 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 30XAS units is specified below:
- Environment* Environment as classified in EN 60 721 (corresponds to IEC 1. 60721):
 - outdoor installation*
 - ambient temperature range: -20°C to +55°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.
- The neutral (N) line must not be connected directly to the unit (if necessary З. use a transformer).
- 4. Overcurrent protection of the power supply conductors is not provided with the unit.
- 5. The factory-installed disconnect switch(es)/circuit breaker(s) is (are) of a type suitable for power interruption in accordance with EN 60947-3 (corresponds to IEC 60947-3).
- The units are designed for simplified connection on TN(s) networks (IEC 60364). For IT networks derived currents may interfere with network monitoring elements, and it is recommended to create an IT type divider for the system units that require this and/or a TN type divider for Carrier units. Please consult the appropriate local organisations to define the monitoring and protection elements and carry out the electrical installation.

NOTE: 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 30XAS units are protected to IP44CW and fulfil this protection condition.

Part load performances

With the rapid increase in energy costs and the care about environmental impacts of electricity production, power consumption of air conditioning equipment has become an important topic. The energy efficiency of a liquid chiller at full load is rarely representative of the actual performance of the units, as on average a chiller works less than 5% of the time at full load.

IPLV (in accordance with ARI 550/590-98)

The IPLV (integrated part load value) allows evaluation of the average energy efficiency based on four operating conditions defined by the ARI (American Refrigeration Institute). The IPLV is the average weighted value of the energy efficiency ratios (EER) at different operating conditions, weighted by the operating time.

IPLV (integrated part load value)

Load %	Air temperature °C	Energy efficiency	Operating time %
100	35	EER,	1
75	26.7	EER	42
50	18.3	EER	45
25	12.8	EER	12
IPLV = E	ER, x 1% + EER, x 42%	+ EER, x 45% + EER,	x 12%

The heat load of a building depends on many factors, such as the outside air temperature, the exposure to the sun and the building occupancy.

Consequently it is preferable to use the average energy efficiency, calculated at several operating points that are representative for the unit utilisation.

ESEER (in accordance with EUROVENT)

The ESEER (European seasonal energy efficiency ratio) permits evaluation of the average energy efficiency at part load, based on four operating conditions defined by Eurovent. The ESEER is the average value of energy efficiency ratios (EER) at different operating conditions, weighted by the operating time.

ESEER (European seasonal energy efficiency ratio)

Load %	Air temperature °C	Energy efficiency	Operating time %
100	35	EER ₁	3
75	30	EER	33
50	25	EER	41
25	20	EER	23
ESEER =	EER, x 3% + EER, x 33	% + EER, x 41% + EE	R, x 23%

Sound spectrum

30XAS - standard unit									30XAS - unit with option 119*										
		Octave bands, Hz Sound							und power Octave bands, Hz								Sound power		
		125	250	500	1k	2k	4k	levels				125	250	500	1k	2k	4k	levels	
242	dB	69	85	92	88	83	77	db(A)	94	242	dB	78	87	93	90	86	79	dB(A)	96
282	dB	72	90	88	87	85	74	db(A)	94	282	dB	79	91	90	90	87	78	dB(A)	96
342	dB	72	85	88	88	86	79	db(A)	93	342	dB	79	87	90	91	88	81	dB(A)	96
442	dB	71	82	89	95	86	76	db(A)	97	442	dB	80	86	91	96	88	80	dB(A)	98
482	dB	72	82	91	94	83	75	db(A)	96	482	dB	80	86	92	95	87	80	dB(A)	98

dB

98

96

482

30XA	30XAS - standard unit with option 257*											
		Sound p	ower									
		125	250	500	1k	2k	4k	levels				
242	dB	85	94	91	85	79	74	db(A)	92			
282	dB	88	93	93	83	78	71	db(A)	92			
342	dB	86	94	90	85	79	77	db(A)	91			
442	dB	89	98	92	89	82	79	db(A)	95			
482	dB	89	94	92	90	81	76	db(A)	94			

30XA	30XAS - standard unit with option 258*											
		Sound powe										
		125	250	500	1k	2k	4k	levels				
242	dB	85	91	88	83	76	71	db(A)	89			
282	dB	88	90	89	82	76	68	db(A)	89			
342	dB	86	91	85	83	77	74	db(A)	88			
442	dB	89	96	89	87	78	75	db(A)	92			
482	dB	89	91	89	87	78	73	db(A)	91			

342	dB	79	87	90	91	88	81	dB(A)	96
442	dB	80	86	91	96	88	80	dB(A)	98
 482	dB	80	86	92	95	87	80	dB(A)	98
30XA	S - un	it with o	option 1	19 + 25	7*				
		Octav	/e band	Sound p	ower				
				-,					
		125	250	500	1k	2k	4k	levels	
 242	dB	125 96	250 95	500 93	1k 89	2k 84	4k 80	db(A)	95
 242 282	dB dB	125 96 96	250 95 95	500 93 94	1k 89 89	2k 84 84	4k 80 80	db(A) db(A)	95 95
 242 282 342	dB dB dB	125 96 96 97	250 95 95 95	500 93 94 92	1k 89 89 90	2k 84 84 85	4k 80 80 82	db(A) db(A) db(A)	95 95 95

* Options: 119 = high energy efficiency units; 257 = low sound level; 258 = very low sound level.

93

86

82

94

db(A)

97

Operating limits

Evaporator water temperature	°C	Minimum	Maximum
Water entering temperature at start-up		-	45*
Water entering temperature during operation		6.8	21
Water leaving temperature during operation		3.3	15

Note: If the leaving water temperature is below 4°C, a glycol/water solution or the frost protection option must be used.

Condenser air temperature	°C	Minimum	Maximum
Storage		-20	68
Operation:			
Standard unit		-10	55**
With option 28: winter operation		-20	55**
With option 119: high energy efficiency***		-10	55****

Note: If the air temperature is below 0° C, a glycol/water solution or the frost protection option must be used.

* Based on the installation type and the air temperature

** Part load, based on the water temperature

*** Recommended for operation above 46°C

**** Part-load operation

Evaporator water flow rate (I/s) 30XAS Minimum Maximum* 242 3.2 30.7 282 30.7 3.7 342 4.4 30.7 442 5.8 41.0 482 6.5 41.0

The maximum water flow rate corresponds to a pressure drop of 100 kPa.

Operating range

30XAS standard unit



30XAS high energy efficiency unit or option 119



Legend

Operating range, unirt equipped with option 28 "Winter operation"

Below 0°C air temperature the unit must either be equipped with the evaporator frost protection option (41A or 41B), or the water loop must be protected against frost by using a frost protection solution (by the installer).

Part load average

Hydronic module (option 116C)





Legend Components of unit and hydronic module Pressure sensor (A-B = Δp evaporator) Pressure sensor Pressure sensor (C-D = Δp water filter) Pressure sensor Victaulic screen filter Exnansion tank

- B C D
- Expansion tank
- Safety valve Available pressure pump 3 4
- 567
- Valuate provide pump Drain valve Water flow control valve Evaporator Evaporator defrost heater (option) . 8 9
- Hydronic module defrost heater
- 10 11 12 13 14
- Air vent (exaporator) Water purge (evaporator) Expansion compensator (flexible connections) Flow switch Water temperature sensor

System components (supplied by customer) Air vent Flexible connection

- 15 16 17
- 18
- Shut-down valves Charge valve Hydronic module (option)

Available static system pressure for installation with the hydronic module (option 116C)



Fan with available pressure (option 10)

This option allows a duct connection at the discharge side of the condenser fan. The unit is supplied with axial fans with a speed of 15.8 r/s (option 119), each equipped with a duct connection frame. The chiller can operate up to 60 Pa with reduced performance.

Selection example

The base capacities are those of option 119 (page 6 of this document). To obtain capacities at various pressure drops use the correction factors in the table opposite.

Selection at Eurovent conditions

30XAS options	\$ 119 +10	Sizes 282-482											
Correction fac	tor	Fan pressure drop, Pa											
		0	20	40	60								
Air flow	% l/s	1	0.965	0.925	0.879								
Cooling capacit	y % kW	0	-0.5	-1.0	-1.5								
EER	% kW/kW	0	-1.5	-3.5	-5.0								
Power input	% kW	0	+1.0	+2.5	+3.5								

Example

30XAS 282 with 40 Pa pressure drop Values for option 119 at the following conditions: 35°C outside air temperature 12/7°C entering/leaving water temperature

30XAS 282		0 Pa	Coefficient	40 Pa
Air flow	l/s	22569	92.5%	20876
Cooling capacity	kW	280	99.0%	277
EER	kW/kW	3.17	96.5%	3,06
Power input	kW	88	102.5%	90

Total heat reclaim (option 50)

Suitable for heating, domestic hot water preparation, agriculture and food industry, industrial processes and other hot-water requirements.

With the total heat reclaim option it is possible to reduce the energy consumption bill considerably compared to conventional heating equipment such as fossil fuel boilers or electric water tanks.

Operating principle

If hot water production is required, the compressor discharge gases are directed towards the heat reclaim condenser. The refrigerant releases its heat to the hot water that leaves the condenser at a temperature of up to 60° C. In this way 100% of the heat rejected by the liquid chiller can be used to produce hot water. When the demand for heat is satisfied, the hot gas is again directed towards the air condenser where the heat is rejected to the outside air by the fans. Hot water temperature control is ensured by the chiller Pro-Dialog+ control.

Note: Heat reclaim is only possible, if the unit produces cold water at the same time.

Condenser water temperature (°C)	Minimum	Maximum
Entering temperature at start-up	12.5*	55
Entering temperature during operation	20	55
Leaving temperature during operation	25	60
Evaporator water temperature (°C)		
Entering temperature at start-up	-	45
Entering temperature during operation	6.8	21
Leaving temperature during operation	3.3	15

* The entering water temperature at start-up must not fall below 12.5°C. For installations with a lower temperature a three-way valve must be used.

Note: If the evaporator leaving water temperature is below 4° C, a glycol-water solution or the frost protection option must be used.

In part-load operation, the limitation of the condenser leaving water temperature is due to the operating range of the screw compressor. If the condenser leaving water temperature is above the limit value given in the curves on the right, the unit will automatically change over to the mode without heat recovery:

Physical data, option 50

These are the same as for the standard unit except:

30XAS heat reclaim mode		282	342	442	482
Cooling capacity*	kW	275	325	424	468
Heating capacity*	kW	346	408	534	593
Total power input (unit)*	kW	78	91	121	137
Total energy efficiency ratio (EER/COP)	kW/kW	4.43	4.50	4.40	4.33
Operating weight**	kg	3430	3490	4360	4450
Refrigerant charge	kg	73	78	90	95
Heat reclaim condenser		Flooded shell-and-tube c	ondenser		
Water volume	1	55	55	68	68
Water connection		Victaulic			
Diameter	inch	4	4	4	4
Outside diameter	mm	114.3	114.3	114.3	114.3

* Entering and leaving water temperature: evaporator 12°C/7°C; heat reclaim condenser: 40°C/45°C

** Weights are for guidance only



Part load operating limits (evaporator leaving water temperature = 7°C)



Dimensions/clearances

1500

30XAS 242







	Legend All dimensions are given in mm.
1	Required clearances for maintenance and air flow
2	Recommended space for evaporator tube removal
	Water inlet
	Water outlet
???	Air outlet - do not obstruct
4	Power supply connection
C	Control circuit connection

30XAS 282-342

2297



1500

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request-

Dimensions/clearances

30XAS 442-482





Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

Dimensions/clearances

30XAS 282-342 - heat reclaim unit (option 50)



30XAS 442-482 - heat reclaim unit (option 50)

Specific elements for option 50

Attention: The Victaulic flange sleeves of the condenser are not installed, but supplied with the unit. The sealing joints are in the control box. The temperature sensors and the condenser flow switch are wired and fixed in the machine. They must be installed as described in the chapter "Condenser water connections" in the Installation Manual.

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.

For the positioning of the fixing points, weight distribution and centre of gravity coordinates please refer to the dimensional drawings.



Cooling capacities

		Condenser air entering temperature, °C																								
		25					30					35					40					45				
30XAS	LWT	CAP	UNIT	EER	COOL	COOL	CAP	UNIT	EER	COOL	COOL	CAP	UNIT	EER	COOL	COOL	CAP	UNIT	EER	COOL	COOL	CAP	UNIT	EER	COOL	COOL
	°C	kW	kW	kW/kW	l/s	kPa	kW	kW	kW/kW	l/s	kPa	kW	kW	kW/kW	l/s	kPa	kW	kW	kW/kW	l/s	kPa	kW	kW	kW/kW	l/s	kPa
 Standa	ard un	it																								
242	5	240	67.7	3.54	11.4	15	231	73.5	3.14	11.0	14	222	79.8	2.78	10.6	13	213	86.7	2.45	10.1	12	203	94.2	2.15	9.65	11
282		276	73.4	3.76	13.1	20	266	79.9	3.33	12.7	19	256	87.0	2.95	12.2	17	246	94.6	2.59	11.7	16	234	103	2.27	11.1	14
342		333	86.1	3.86	15.8	29	321	93.7	3.42	15.3	27	308	102	3.02	14.7	25	295	111	2.65	14.1	23	281	122	2.31	13.4	21
442		429	116	3.70	20.4	30	414	126	3.28	19.7	28	398	138	2.89	18.9	26	381	150	2.54	18.2	24	364	164	2.22	17.3	22
482		474	129	3.67	22.6	35	456	140	3.25	21.7	33	438	153	2.87	20.9	30	418	167	2.51	19.9	28	398	182	2.19	18.9	26
 242	7	253	70.7	3.58	12.1	17	244	76.7	3.18	11.6	15	235	83.3	2.82	11.2	14	225	90.5	2.49	10.7	13	215	98.2	2.19	10.2	12
282		293	76.1	3.85	14.0	22	283	82.8	3.42	13.5	21	272	90.0	3.02	13.0	19	261	97.9	2.66	12.4	18	249	107	2.34	11.9	16
342		353	89.3	3.96	16.9	32	341	97.1	3.51	16.3	30	328	106	3.10	15.6	28	313	115	2.72	14.9	26	298	126	2.37	14.2	23
442		455	121	3.77	21.7	33	438	131	3.35	20.9	31	421	143	2.95	20.1	29	403	156	2.59	19.2	27	385	170	2.26	18.3	24
482		503	135	3.74	24.0	39	485	147	3.30	23.1	36	465	160	2.91	22.2	34	445	174	2.55	21.2	31	424	190	2.22	20.2	28
242	10	274	75.5	3.63	13.1	19	264	81.8	3.23	12.6	18	254	88.6	2.86	12.1	16	243	96.0	2.53	11.6	15	218	93.5	2.33	10.4	12
282		320	80.5	3.97	15.3	26	309	87.4	3.53	14.7	24	297	94.9	3.13	14.2	22	284	103	2.76	13.6	21	271	112	2.42	13.0	19
342		386	94.3	4.10	18.5	38	373	102	3.64	17.8	35	358	111	3.21	17.1	33	342	121	2.82	16.3	30	326	132	2.46	15.5	27
442		495	128	3.87	23.7	38	477	139	3.44	22.8	36	458	151	3.03	21.9	33	438	164	2.67	20.9	30	386	160	2.42	18.4	24
482		549	142	3.86	26.2	45	529	155	3.42	25.3	42	507	169	3.01	24.2	39	485	184	2.63	23.2	36	434	185	2.35	20.7	29
242	15	312	83.0	3.76	14.9	24	300	89.5	3.35	14.4	22	287	96.6	2.97	13.7	20	265	99.0	2.67	12.7	17	217	83.7	2.59	10.4	12
282		368	88.7	4.15	17.6	34	356	96.3	3.70	17.0	32	339	104	3.28	16.2	29	324	112	2.89	15.5	26	287	109	2.64	13.7	20
342		446	104	4.30	21.3	49	429	112	3.82	20.5	46	414	122	3.38	19.8	42	394	133	2.97	18.9	39	336	123	2.74	16.1	28
442		568	141	4.01	27.2	48	545	153	3.56	26.1	44	521	165	3.15	24.9	41	487	174	2.80	23.3	36	382	138	2.76	18.3	23
 482		633	157	4.04	30.3	57	608	170	3.58	29.1	53	582	185	3.15	27.9	49	558	201	2.77	26.7	45	435	163	2.66	20.8	29
 High e	energy	effic	iency	unit (optior	n 119)																				
242	5	243	65.9	3.69	11.6	16	235	71.5	3.29	11.2	15	227	77.5	2.92	10.8	14	218	84.2	2.59	10.4	12	208	91.4	2.28	9.92	11
282		282	73.0	3.86	13.4	21	273	79.1	3.45	13.0	20	263	85.7	3.07	12.5	18	253	92.9	2.72	12.0	17	242	101	2.41	11.5	15
342		341	85.7	3.98	16.2	31	329	92.9	3.55	15.7	29	317	101	3.15	15.1	26	304	109	2.78	14.5	24	291	119	2.44	13.8	22
442		442	114	3.88	21.1	32	427	123	3.47	20.4	30	412	134	3.08	19.6	28	396	145	2.73	18.9	26	379	158	2.40	18.1	24
 482		490	127	3.87	23.3	37	474	137	3.47	22.6	35	457	148	3.09	21.8	33	439	160	2.74	20.9	31	419	174	2.41	20.0	28
242	7	257	68.6	3.75	12.3	17	249	74.3	3.35	11.9	16	240	80.6	2.98	11.5	15	231	87.5	2.64	11.0	14	222	94.9	2.33	10.6	13
282		300	75.3	3.98	14.3	23	290	81.5	3.56	13.8	22	280	88.3	3.17	13.4	20	269	95.7	2.82	12.8	19	258	104	2.49	12.3	17
342		363	88.2	4.12	17.3	34	351	95.5	3.68	16.7	32	338	103	3.27	16.1	30	324	112	2.89	15.5	27	310	122	2.54	14.8	25
442		470	118	3.99	22.4	35	454	127	3.57	21.7	33	438	138	3.18	20.9	31	420	150	2.81	20.0	29	402	163	2.47	19.2	27
 482		520	132	3.94	24.8	41	502	143	3.52	23.9	39	484	154	3.14	23.1	36	465	167	2.78	22.2	34	445	182	2.45	21.2	31
242	10	280	72.9	3.84	13.4	20	270	78.8	3.43	12.9	19	261	85.3	3.06	12.5	17	251	92.4	2.71	12.0	16	240	100	2.40	11.5	15
282		329	79.1	4.16	15.7	27	318	85.5	3.72	15.2	26	306	92.4	3.32	14.6	24	295	100	2.95	14.1	22	282	108	2.61	13.5	20
342		400	92.1	4.34	19.1	41	386	99.6	3.87	18.4	38	372	108	3.44	17.7	35	356	117	3.05	17.0	32	340	127	2.67	16.3	30
442		515	124	4.15	24.6	41	497	134	3.71	23.7	38	478	145	3.30	22.8	36	459	157	2.92	21.9	33	439	170	2.58	21.0	31
 482		569	138	4.11	27.2	48	549	150	3.67	26.2	45	528	162	3.25	25.2	42	506	176	2.87	24.2	39	484	192	2.52	23.1	36
242	15	326	76.3	4.28	15.6	26	315	82.1	3.84	15.0	25	298	88.4	3.37	14.3	22	283	101	2.80	13.5	20	261	103	2.54	12.5	17
282		381	86.1	4.43	18.3	36	368	92.6	3.97	17.6	34	354	99.8	3.55	16.9	31	338	108	3.15	16.2	28	323	116	2.78	15.5	26
342		464	100	4.63	22.2	53	448	108	4.15	21.4	50	431	117	3.69	20.6	46	415	126	3.28	19.9	43	395	137	2.88	18.9	39
442		596	135	4.40	28.5	52	574	146	3.94	27.5	49	550	157	3.50	26.3	45	527	170	3.10	25.2	42	502	184	2.73	24.0	38
 482		658	151	4.37	31.5	61	634	163	3.90	30.4	57	609	176	3.46	29.2	53	583	191	3.06	27.9	49	559	207	2.70	26.7	45



 Legend
 Leaving water temperature

 CAP kW
 Cooling capacity

 EER kW/kW
 Energy efficiency ratio

 UNIT kW
 Unit power input (compressor, fans and control circuit)

 COOL l/s
 Evaporator water flow rate

 COOL kPa
 Evaporator pressure drop

С Eurovent conditions

Application data: Standard units, refrigerant R-134a Evaporator temperature rise: 5 K Evaporator fluid: chilled water Fouling factor: 0,18 x10⁻⁴ (m² K)/W

Performances in accordance with EN 14511





This programme covers air-cooled chillers up to 600 kW and watercooled chillers up to 1500 kW.



Order No.: 13466-20, 03.2010. Supersedes order No.: 13466-20, 11.2009 Manufacturer reserves the right to change any product specifications without notice. The cover illustration is solely for illustration purposes and not contractually binding.

