TBG 1230-4310

Air-water chiller

Cooling capacity 200 ÷ 1165 kW

- **High efficiency also at partial loads**
- **Microchannel coil**
- **Low peak current (only 6 Amps!)**
- **Evaporator with low refrigerant charge**

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

DESCRIPTION

Air-cooled chiller designed to meet air conditioning needs in residential / commercial complexes or industrial applications.
These are outdoor units with oil free centrifugal compressor, axial fans, micro-channel coils, and shell and tube heat exchangers.
The base, the structure and the panels are made of steel treated with polyester paint RAL 9003.

VERSIONS

A High efficiency
E Silenced high efficiency
N Silenced very high efficiency
U Very high efficiency

FEATURES

Operating field

Operation at full load up to 43°C external air temperature depending on size and version. For further details refer to the selection software/technical documentation.

Units mono or dual-circuit

The units according to the size are mono or dual-circuit, to ensure maximum efficiency both at full load and at partial load.

Oil free centrifugal compressor

Two-stage oil-free centrifugal compressor with magnetic levitation and inverter.

Compressor features:

— Operates without oil as bearings are magnetic levitation type
— Continuous load modulation by varying rpm (from 30% to 100%)
— Low peak currents (only 6 Amps!)

Aluminium microchannel coils

The whole range uses microchannel condenser coils allowing reduction of refrigerant charge but keeping the same high efficiency.

Integrated hydronic kit

Integrated hydronic kit containing the main hydraulic components; available with various configurations, to obtain a solution that allows you to save money and to facilitate installation.

HFO R1234ze refrigerant gas

HFO R1234ze is a mixture featuring:
da ODP = 0 e GWP (Global Warming Potential) = 7, R134a GWP = 1430; with thermodynamic properties that guarantee and sometimes improve efficiencies achieved with HFC refrigerants.

CONTROL PCO^5

Microprocessor adjustment, with 7", touch screen keyboard, which allows to navigate intuitively among the various screens, allowing to modify the operating parameters and graphically view the progress of some variables in real time and the ad adjustment includes complete management of the alarms and their log.
Further features:

— Possibility to control two units in a Master-Slave configuration
— The presence of a programmable timer allows functioning time periods and a possible second set-point to be set.
— The temperature control takes place with the integral proportional logic, based on the water output temperature.

ACCESSORIES

AER485P1: RS-485 interface for supervision systems with MODBUS protocol.
AER485P1 x n° 2: RS-485 interface for supervision systems with MODBUS protocol.
AER485P1 x n° 3: RS-485 interface for supervision systems with MODBUS protocol.
AER485P1 x n° 4: RS-485 interface for supervision systems with MODBUS protocol.
AERBACP: Ethernet communication Interface for protocols Bacnet/IP, Modbus TCP/IP, SNMP
AERNET: The device allows the control, the management and the remote monitoring of a Chiller with a PC, smartphone or tablet using Cloud connection. AERNET works as Master while every unit connected is configured as Slave (max. 6 unit); also, with a simple click is possible to save a log file with all the connected unit datas in the personal terminal for post analysis.
MULTICHILLER_EVO: Control, switch-on and switch-off system of the single chillers where multiple units are installed in parallel, always ensuring constant flow rate to the evaporators.
AVX: Spring anti-vibration supports.

FACTORY FITTED ACCESSORIES

XLATB: This kit allows to extend the working range of the unit from 0 °C to -10 °C ambient temperature, thanks to an additional electric heater and a special insulating material for the heat exchanger.
GP_T: Anti-intrusion grid kit

ACCESSORIES COMPATIBILITY

Model	Ver	1230	1310	2230	2270	2310	3270	3280	3310	4270	4310
AER485P1	A,E,N,U	•	•								
AER485P1 x n° 2 (1)	A,E,N,U			•	•	•					
AER485P1 x n° 3 (1)	A,E,N,U						•	•	•	•	
AER485P1 x n° 4 (1)	A,E,N,U										•
AERBACP	A,E,N,U	•	•	•	•	•	•	•	•	•	•
AERNET	A,E,N,U	•	•	•	•	•	•	•	•	•	•
MULTICHILLER_EVO	A,E,N,U	•	•	•	•	•	•	•	•	•	•

(1) x Indicates the quantity of accessories to match.

Antivibration

Ver	1230	1310	2230	2270	2310	3270	3280	3310	4270	4310
Integrated hydronic kit: 00, DA, DB, DC, DD, DE, DF, DG, DH, DI, DJ, IA, IB, IC, ID, IE, IF, IG, IH, II, IJ, JA, JB, JC, JD, JE, JF, JG, JH, JI, JJ, KF, KG, KH, KI, KJ, PA, PB, PC, PD, PE, PF, PG, PH, PI, PJ, TF, TG, TH, TI, TJ										
A,E	AVX596	AVX. (1)	AVX597	AVX588	AVX592	AVX. (1)	AVX. (1)	AVX593	AVX. (1)	AVX. (1)
N,U	AVX. (1)	AVX500	AVX588	AVX592	AVX589	AVX. (1)	AVX593	AVX. (1)	AVX. (1)	AVX. (1)

(1) Contact us.

XLATB: Kit for low temperature

Ver	1230	1310	2230	2270	2310	3270	3280	3310	4270	4310
A,E,N,U	XLATB1	XLATB3	XLATB4	XLATB5	XLATB5	XLATB6	XLATB6	XLATB6	XLATB7	XLATB7

A grey background indicates the accessory must be assembled in the factory

Anti-intrusion grid

Ver	1230	1310	2230	2270	2310	3270	3280	3310	4270	4310
A,E	GP2T	GP3T	GP4T	GP5T	GP6T	GP7T	GP8T	GP9T	GP10T	GP11T
N,U	GP3T	GP4T	GP5T	GP6T	GP7T	GP8T	GP9T	GP10T	GP11T	GP11T

A grey background indicates the accessory must be assembled in the factory

CONFIGURATOR

Field		Description
1,2,3		**TBG**
4,5,6,7		**Size** 1230, 1310, 2230, 2270, 2310, 3270, 3280, 3310, 4270, 4310
8		**Model**
	°	Cooling only
9		**Heat recovery**
	°	Without heat recovery
10		**Version**
	A	High efficiency
	E	Silenced high efficiency
	N	Silenced very high efficiency
	U	Very high efficiency
11		**Coils**
	°	Aluminium microchannel
	I	Copper-aluminium
	O	Coated aluminium microchannel
	R	Copper pipes-copper fins
	S	Copper pipes-Tinned copper fins
	V	Copper pieps-Coated aluminium fins
12		**Fans**
	J	Inverter
13		**Power supply**
	°	400V ~ 3 50Hz with magnet circuit breakers
14,15		**Integrated hydronic kit**
	00	Without hydronic kit
	PA	Pump A
	PB	Pump B
	PC	Pump C
	PD	Pump D
	PE	Pump E
	PF	Pump F
	PG	Pump G
	PH	Pump H
	PI	Pump I
	PJ	Pump J (1)
	DA	Pump A + stand-by pump
	DB	Pump B + stand-by pump
	DC	Pump C + stand-by pump

Field		Description
	DD	Pump D + stand-by pump
	DE	Pump E + stand-by pump
	DF	Pump F + stand-by pump
	DG	Pump G + stand-by pump
	DH	Pump H + stand-by pump
	DI	Pump I + stand-by pump
	DJ	Pump J + stand-by pump (1)
	IA	Pump A equipped with inverter device to work at fixed speed
	IB	Pump B equipped with inverter device to work at fixed speed
	IC	Pump C equipped with inverter device to work at fixed speedr
	ID	Pump D equipped with inverter device to work at fixed speed
	IE	Pump E equipped with inverter device to work at fixed speed
	IF	Pump F equipped with inverter device to work at fixed speed
	IG	Pump G equipped with inverter device to work at fixed speed
	IH	Pump H equipped with inverter device to work at fixed speed
	II	Pump I equipped with inverter device to work at fixed speed
	IJ	Pump J equipped with inverter device to work at fixed speed (1)
	JA	Pump A+stand-by pump, both equipped with inverter to work at fixed speed
	JB	Pump B+stand-by pump, both equipped with inverter to work at fixed speed
	JC	Pump C+stand-by pump, both equipped with inverter to work at fixed speed
	JD	Pump D+stand-by pump, both equipped with inverter to work at fixed speed
	JE	Pump E+stand-by pump, both equipped with inverter to work at fixed speed
	JF	Pump F+stand-by pump, both equipped with inverter to work at fixed speed
	JG	Pump G+stand-by pump, both equipped with inverter to work at fixed speed
	JH	Pump H+stand-by pump, both equipped with inverter to work at fixed speed
	JI	Pump I+stand-by pump, both equipped with inverter to work at fixed speed
	JJ	Pump J+stand-by pump, both equipped with inverter to work at fixed speed (1)
	KF	Doble pump F with inverter device to work at fixed speed
	KG	Doble pump G with inverter device to work at fixed speed
	KH	Doble pump H with inverter device to work at fixed speed
	KI	Doble pump I with inverter device to work at fixed speed
	KJ	Doble pump J with inverter device to work at fixed speed (1)
	TF	Double pump F
	TG	Double pump G
	TH	Double pump H
	TI	Double pump I
	TJ	Double pump J (1)

(1) For all configurations including pump J please contact the factory.

PERFORMANCE SPECIFICATIONS

TBG - (A)

Size		1230	1310	2230	2270	2310	3270	3280	3310	4270	4310
Cooling performance 12 °C / 7 °C (1)											
Cooling capacity	kW	199,9	296,6	417,6	502,3	600,1	687,0	791,4	900,3	1033,3	1165,3
Input power	kW	57,7	86,1	121,5	146,6	174,8	199,1	231,3	262,2	305,7	345,1
Cooling total input current	A	95,5	140,7	200,9	241,2	291,4	326,6	386,9	437,1	502,3	577,6
EER	W/W	3,46	3,45	3,44	3,43	3,43	3,45	3,42	3,43	3,38	3,38
Water flow rate system side	l/h	34397	51028	71817	86370	103190	118120	136075	154785	177653	200332
Pressure drop system side	kPa	28	43	29	32	37	36	38	40	41	46

(1) Data EN 14511:2022; Heat exchanger water (services side) 12°C / 7°C; outside air 35°C

TBG - (E)

Size		1230	1310	2230	2270	2310	3270	3280	3310	4270	4310
Cooling performance 12 °C / 7 °C (1)											
Cooling capacity	kW	199,9	296,6	417,6	502,3	600,1	687,0	791,4	900,3	1033,3	1165,3
Input power	kW	57,7	86,1	121,5	146,6	174,8	199,1	231,3	262,2	305,7	345,1
Cooling total input current	A	95,5	140,7	200,9	241,2	291,4	326,6	386,9	437,1	502,3	577,6
EER	W/W	3,46	3,45	3,44	3,43	3,43	3,45	3,42	3,43	3,38	3,38
Water flow rate system side	l/h	34397	51028	71817	86370	103190	118120	136075	154785	177653	200332
Pressure drop system side	kPa	28	43	29	32	37	36	38	40	41	46

(1) Data EN 14511:2022; Heat exchanger water (services side) 12°C / 7°C; outside air 35°C

TBG - (U)

Size		1230	1310	2230	2270	2310	3270	3280	3310	4270	4310
Cooling performance 12 °C / 7 °C (1)											
Cooling capacity	kW	230,7	324,2	439,6	511,1	604,5	709,0	807,9	906,9	1011,3	1112,5
Input power	kW	65,3	91,2	124,4	143,9	170,1	201,3	230,6	257,3	290,2	323,2
Cooling total input current	A	105,7	150,9	206,2	236,4	276,6	331,9	392,1	427,3	477,6	537,6
EER	W/W	3,53	3,55	3,53	3,55	3,55	3,52	3,50	3,52	3,49	3,44
Water flow rate system side	l/h	39688	55753	75597	87882	103946	121900	138909	155919	173873	191260
Pressure drop system side	kPa	37	32	32	33	38	39	39	41	39	42

(1) Data EN 14511:2022; Heat exchanger water (services side) 12°C / 7°C; outside air 35°C

TBG - (N)

Size		1230	1310	2230	2270	2310	3270	3280	3310	4270	4310
Cooling performance 12 °C / 7 °C (1)											
Cooling capacity	kW	230,7	324,2	439,6	511,1	604,5	709,0	807,9	906,9	1011,3	1112,5
Input power	kW	65,3	91,2	124,4	143,9	170,1	201,3	230,6	257,3	290,2	323,2
Cooling total input current	A	105,7	150,9	206,2	236,4	276,6	331,9	392,1	427,3	477,6	537,6
EER	W/W	3,53	3,55	3,53	3,55	3,55	3,52	3,50	3,52	3,49	3,44
Water flow rate system side	l/h	39688	55753	75597	87882	103946	121900	138909	155919	173873	191260
Pressure drop system side	kPa	37	32	32	33	38	39	39	41	39	42

(1) Data EN 14511:2022; Heat exchanger water (services side) 12°C / 7°C; outside air 35°C

ENERGY INDICES (REG. 2016/2281 EU)

Size			1230	1310	2230	2270	2310	3270	3280	3310	4270	4310
SEER - (EN14825:2018) 12/7 with inverter fans (1)												
SEER	A,E	W/W	5,44	5,52	5,76	5,44	5,85	5,70	5,77	5,78	5,61	5,60
	N,U	W/W	5,63	6,03	5,97	5,71	6,04	5,80	5,89	5,93	5,81	5,71
Seasonal efficiency	A,E	%	214,6%	217,6%	227,5%	214,6%	231,1%	225,1%	227,6%	228,3%	221,5%	220,8%
	N,U	%	222,3%	238,0%	235,9%	225,2%	238,7%	229,0%	232,5%	234,0%	229,2%	225,5%
SEPR - (EN14825: 2018) High temperature with inverter fans (2)												
SEPR	A,E	W/W	6,34	5,98	5,99	6,54	6,35	6,60	6,05	6,07	5,98	5,97
	N,U	W/W	6,47	6,21	6,18	6,78	6,56	6,73	6,20	6,23	6,17	6,09

(1) Calculation performed with FIXED water flow rate and VARIABLE outlet temperature.
(2) Calculation performed with FIXED water flow rate.

ELECTRIC DATA

Size			1230	1310	2230	2270	2310	3270	3280	3310	4270	4310
Electric data												
Maximum current (FLA)	A,E	A	115,0	180,0	229,0	294,0	359,0	408,0	528,0	538,0	587,0	707,0
	N,U	A	125,0	189,0	239,0	304,0	368,0	418,0	538,0	547,0	597,0	707,0
Peak current (LRA)	A,E	A	26,0	36,0	151,0	220,0	230,0	180,0	249,0	424,0	209,0	608,0
	N,U	A	36,0	45,0	161,0	230,0	239,0	190,0	259,0	433,0	219,0	608,0

GENERAL TECHNICAL DATA

Size			1230	1310	2230	2270	2310	3270	3280	3310	4270	4310
Compressor												
Type	A,E,N,U	type	Centrifugal									
Compressor regulation	A,E,N,U	Type	Inverter									
Number	A,E,N,U	no.	1	1	2	2	2	3	3	3	3	4
Circuits	A,E,N,U	no.	1	1	1	2	1	2	1	1	2	2
Refrigerant	A,E,N,U	type	R1234ze									
Refrigerant charge (1)	A,E	kg	71,0	110,0	142,0	177,0	188,0	254,0	265,0	307,0	318,0	328,0
	N,U	kg	82,0	121,0	153,0	188,0	198,0	265,0	276,0	286,0	328,0	328,0
System side heat exchanger												
Type	A,E,N,U	type	Shell and tube									
Number	A,E,N,U	no.	1	1	1	1	1	1	1	1	1	1
Hydraulic connections												
Connections (in/out)	A,E,N,U	Type	Grooved joints									
Sizes (in/out)	A,E,N,U	Ø	3″	4″	5″	6″	6″	6″	6″	6″	6″	6″
Fan												
Type	A,E,N,U	type	axials									
Fan motor	A,E,N,U	type	Inverter									
Number	A,E	no.	4	6	8	10	12	14	16	18	20	22
	N,U	no.	6	8	10	12	14	16	18	20	22	22
Air flow rate	A,E	m^3/h	75280	112920	150560	188200	225840	263480	301120	338760	376400	414040
	N,U	m^3/h	112920	150560	188200	225840	263480	301120	338760	376400	414040	414040

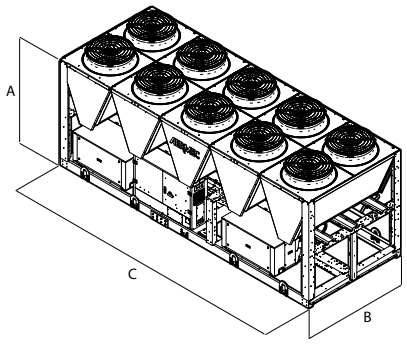
(1) The load indicated in the table is an estimated and preliminary value. The final value of the refrigerant load is indicated on the unit's technical label. For further information contact the office.

SOUND DATA

Size			1230	1310	2230	2270	2310	3270	3280	3310	4270	4310
Sound data calculated in cooling mode (1)												
Sound power level	A	dB(A)	85,2	88,4	88,2	90,1	91,4	91,3	92,9	93,1	93,1	94,2
	E	dB(A)	82,2	85,4	85,2	87,1	88,4	88,3	89,9	90,1	90,1	91,2
	N	dB(A)	83,3	85,9	85,8	87,5	88,7	88,6	90,1	90,3	90,3	91,2
	U	dB(A)	86,3	88,9	88,8	90,5	91,7	91,6	93,1	93,3	93,3	94,2
Sound pressure level (10 m)	A	dB(A)	53,3	56,5	55,8	57,6	58,8	58,5	60,0	60,1	60,0	61,0
	E	dB(A)	50,3	53,5	52,8	54,6	55,8	55,5	57,0	57,1	57,0	58,0
	N	dB(A)	51,1	53,5	53,3	54,9	55,9	55,7	57,1	57,2	57,1	58,0
	U	dB(A)	54,1	56,5	56,3	57,9	58,9	58,7	60,1	60,2	60,1	61,0

(1) Sound power calculated on the basis of measurements made in accordance with UNI EN ISO 9614-2, as required for Eurovent certification. Sound pressure (cold functioning) measured in free field, 10m away from the unit external surface (in compliance with UNI EN ISO 3744).

DIMENSIONS



Size			1230	1310	2230	2270	2310	3270	3280	3310	4270	4310
Integrated hydronic kit: 00												
Dimensions and weights												
A	A,E,N,U	mm	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
B	A,E,N,U	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
C	A,E	mm	2780	3970	5160	5950	7140	8330	9520	10710	11900	13090
	N,U	mm	3570	4760	5950	7140	8330	9520	10710	11900	13090	13090

Size			1230	1310	2230	2270	2310	3270	3280	3310	4270	4310
Integrated hydronic kit: DA, DB, DC, DD, DE, DF, DG, DH, DI, DJ, IA, IB, IC, ID, IE, IF, IG, IH, II, IJ, JA, JB, JC, JD, JE, JF, JG, JH, JI, JJ, KF, KG, KH, KI, KJ, PA, PB, PC, PD, PE, PF, PG, PH, PI, PJ, TF, TG, TH, TI, TJ												
Dimensions and weights												
A	A,E,N,U	mm	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
B	A,E,N,U	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
C	A,E	mm	3970	5160	5160	5950	7140	8330	9520	10710	11900	13090
	N,U	mm	3570	4760	5950	7140	8330	9520	10710	11900	13090	13090

Size			1230	1310	2230	2270	2310	3270	3280	3310	4270	4310
Integrated hydronic kit: 00												
Weights												
Empty weight	A	kg	2470	2980	4020	4800	5250	6490	6950	7440	8900	9510
	E	kg	2520	3060	4130	4940	5410	6680	7170	7690	9170	9810
	N	kg	2840	3590	4560	5420	5890	7150	7620	8130	9610	9800
	U	kg	2760	3480	4430	5250	5700	6930	7370	7850	9310	9500
Weight functioning	A	kg	2540	3050	4110	4930	5390	6670	7150	7650	9160	9780
	E	kg	2590	3130	4220	5070	5550	6860	7370	7900	9430	10080
	N	kg	2910	3670	4650	5550	6030	7330	7820	8340	9870	10070
	U	kg	2830	3560	4520	5380	5840	7110	7570	8060	9570	9770

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