

NSB Free-cooling

R134a

AIR/WATER chillers
with axial fans and cooling ratings from 272 to 1555 kW
Cooling output in Free-cooling mode from 280 to 1510 kW
with screw compressors



Aermec adheres to the EUROVENT Certification Programme up to 600 kW.

The products concerned appear in the EUROVENT Certified Products Guide.



Operating limits up to 46°C

Available with pumping assembly

Characteristics

- Available in 32 different sizes
- Cooling only versions
- The versions are made with R134 gas
- Available versions fitted with partial and total heat recovery unit
- High efficiency volute compressors with quiet operation and with regulation of refrigerating capacity by means of continuous modulation from 40 to 100% **(25-100% with electronic valve)**.
- Possibility of also having a **pump unit** (see configurator) that includes:
 - 1 pump, or 1 pump plus 1 reserve pump
 - two 25-litre expansion tanks
 - charging assembly
- **Operating limits up to 46°C** external air temperature.
- Fan-speed control device.
- High efficiency air-water exchanger (Free-Cooling) with smooth tubes and corrugated fins
- Three-way valve located on the water side for water switchover on the Free-Cooling coils
- Modular microprocessor control system
- Multilingual operating parameter display.
- Tube bundle exchanger optimised for R134a gas.
- Axial flow fan units for extremely quiet operation.
- Metallic protective cabinet with rustproofing polyester paint

Accessories

- **AER485P1:** RS-485 interface for supervision systems with MODBUS protocol.
- **AVX:** Sprung shock-absorber supports. For AVX compatibility, refer to the technical manual.
- **KRS:** Exchanger electric heater **to be installed in the factory**.
- **GP:** the safety grille protects external batteries from accidental impact and hail damage. **To be installed in the factory**.
- **PRV3:** This allows the refrigerator command operations to be given from a distance.
- **RIF:** Capacitor device. Connected in parallel to the motor winding. It allows to maintain a constant COS ϕ at 0.95 and also allows an input current reduction (about 10%).
- **It must be factory set when the unit is manufactured**
- **AERWEB30:** the AERWEB device allows the remote control of a chiller from a common PC by means of a serial connection. By using additional modules the device allows control of the chiller by telephone network, using the **AERMODEM**; accessory or GSM network, using the **AERMODEMGSM**. The AERWEB can pilot up to 9 chillers, each of which must be equipped with the AER485P1 accessory.
- **AK: ACOUSTIC KIT (only for E versions)**
This accessory allows further noise reduction. It can only be installed when the machine is being made and must therefore be specified when the order is placed.
- **MULTICHILLER:** Control system to command, turn on and off the individual chillers in a system in which several units are installed in parallel, always ensuring a constant delivery to the evaporators.

Compatibility of accessories																	
Mod. NSB	1251	1401	1601	1801	2101	2401	1402	1602	1802	2002	2202	2352	2502	2652	2802	3002	3202
AER485P1	✓	✓	✓	✓	✓	✓	✓(x2)	✓(x2)	✓(x2)	✓(x2)	✓(x2)	✓(x2)	✓(x2)	✓(x2)	✓(x2)	✓(x2)	✓(x2)
AK ACUSTIC KIT	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)
AVX	501	501	501	506	512	512	501	501	505	511	511	511	511	511	511	509	507
PRV3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AERWEB30	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RIF(*)	301	301	301	301	371	411	161x2	161x2	201x2	201 241	241x2	241 301	301x2	301x2	301x2	301x2	301x2
MULTICHILLER	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
KRS (*)	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5x2	5x2
GP 300M (*)(**)	✓	✓	✓													(x2)	(x2)
GP 400M (*)(**)				✓													
GP 500M (*)(**)					✓	✓											
GP 300B (*)(**)							✓	✓									
GP 400B (*)(**)									✓								
GP 500B (*)(**)										✓	✓	✓	✓	✓	✓		
Mod. NSB	3402	3602	3902	4202	4502	4802	5003	5203	5403	5703	6003	6303	6603	6903	7203		
AER485P1	✓(x2)	✓(x2)	✓(x2)	✓(x2)	✓(x2)	✓(x2)	✓(x3)	✓(x3)	✓(x3)	✓(x3)	✓(x3)	✓(x3)	✓(x3)	✓(x3)	✓(x3)	✓(x3)	✓(x3)
AK - ACUSTIC KIT	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)	✓(E)
AVX	513	516	518	518	521	521	517	515	524	525	525	527	527	530	530		
PRV3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AERWEB30	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RIFNS (*)	301x2	301x2	301 371	301 411	371 411	411x2	301x3	301x3	301x3	301x2 371	301x2 411	301 371 411	301 411x2	301 411x2	411x3		
MULTICHILLER	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
KRS (*)	5x2	5x2	5x2	5x2	5x2	5x2	5x3	5x3	5x3	5x3	5x3	5x3	5x3	5x3	5x3	5x3	5x3
GP 300M (*)(**)	✓						(x2)	✓									
GP 400M (*)(**)	✓	(x2)	✓	✓			✓	(x2)	(x3)	(x2)	(x2)	✓	✓				
GP 500M (*)(**)			✓	✓	(x2)	(x2)				✓	✓	(x2)	(x2)	(x3)	(x3)		

NOTES:

(*) These accessories can only be applied in the factory The number in brackets, e.g. (x1) indicates the quantity.

(**) The number of GPs necessary depends on the size of the selected unit (from size 1251 to size 2802 one GP is required; from size 3002 to size 4802 two GPs are required; three GPs are required for the remaining sizes).

Choice of Unit

By suitably combining the numerous options available, it is possible to configure each model in such a way as to meet the most particular of system requirements.

Field configurer:

1 2 3	4 5 6 7	8	9	10	11	12	13	14	15 16
Code		Refrigerant	Model	Heat recovery units	Version	Batteries	Evaporator	Power supply	Pump
	Size								

Code:

NSB

Size:

1251, 1401, 1601, 1801, 2101, 2401, 1402, 1602, 1802, 2002, 2202, 2352, 2502, 2652, 2802, 3002, 3202, 3402, 3602, 3902, 4202, 4502, 4802, 5003, 5203, 5403, 5703, 6003, 6303, 6603, 6903, 7203

Refrigerant:

- ° - R134a VT mechanical and minimum water temp. produced at +4°C
- Y - R134a VT mechanical and minimum water temp. produced down to -6°C
- X - R134a VT electronic and minimum water temp. produced down to -6°C

Model:

- ° - Cooling only

Heat recovery units:

- ° - Without recovery units

Version:

- A - High efficiency
- E - High efficiency in silenced version

Batteries:

- ° - Aluminium
- R - Copper
- S - Tinned copper
- V - Painted aluminium copper

Evaporator:

- ° - According to PED standards

Power supply:

- ° - 400V 3~ 50Hz with fuses
- 2 - 230V 3~ 50Hz with fuses *
- 4 - 230V 3~ 50Hz with thermomagnetic switches *
- * not available for size (2501-1401-1601-1801-2101-2401-2352-2502÷7203)
- 5 - 500V 3~ 50Hz with fuses **
- ** (not available as for 1601-1801-2101-2401-3002÷7203 size)
- 8 - 400V 3~ 50Hz with thermomagnetic switches
- 9 - 500V 3~ 50Hz with thermomagnetic switches **
- ** (not available as for 1601-1801-2101-2401-3002÷7203 size)

Pumps:

- F0 - Without pumping assembly
- AA - Pumping assembly (Pump A)
- FB - Pumping assembly (Pump A and reserve pump)
- FC - Pumping assembly (Pump C)
- FD - Pumping assembly (Pump C and reserve pump)
- FE - Pumping assembly (pump E)
- FF - Pumping assembly (Pump E and reserve pump)
- FG - Pumping assembly (Pump G)
- FH - Pumping assembly (Pump G and reserve pump)
- FJ - Pumping assembly (Pump J)
- FK - Pumping assembly (Pump J and reserve pump)

Warning:

- the standard options are shown by the symbol °;
- for the cooling only versions, option Y (contact head office for particular requirements).

Example of the commercial code: **NSB1401ER8FA**

This is an NSB unit with a 1401 size, high-efficiency version in silenced form with copper batteries, 400V 3~ 50Hz power with thermomagnetic switches and pumping group with just pump A.

As you may have noticed, each option is represented in a unique way from all the others, so it is not necessary to indicate (within the commercial code) the standard options (identified by °).

Technical data

Mod. NSB	Vers.	1251	1401	1601	1801	2101	2401	1402	1602	1802
Cooling capacity (kW)	A	272	304	338	408	465	518	285	324	377
	E	243	282	322	372	415	471	257	295	340
Total input power (kW)	A	91	104	115	144	157	177	103	119	133
	E	93	105	117	148	161	183	105	121	136
E.E.R.	A	2.98	2.92	2.94	2.84	2.97	2.92	2.77	2.73	2.82
	E	2.60	2.68	2.76	2.51	2.59	2.58	2.45	2.43	2.51
Total input current (A)	A	160	180	196	238	267	299	179	205	225
	E	158	176	194	238	264	300	177	203	222
Freecooling										
Cooling capacity (kW)	A	280	291	301	403	486	503	285	297	393
	E	268	283	297	391	466	490	249	288	379
Total input power (kW)		12	12	12	16	20	20	12	12	16
E.E.R.	A	23.33	24.27	25.10	25.21	24.29	25.17	23.73	24.76	24.56
	E	22.33	23.62	24.74	24.45	23.32	24.48	20.74	23.99	23.68
Total input current (A)		24	24	24	32	40	40	24	24	32
Water flow rate (l/h)	A	46.830	52.360	58.070	70.250	79.960	89.100	49.040	55.670	64.810
	E	41.780	48.420	55.450	63.990	71.400	81.080	44.280	50.660	58.490
Compressors	No.	1	1	1	1	1	1	2	2	2
Capacity step control	%	40 - 100 (25-100 VT electronic)								
♪Sound pressure (dBA)	FC/A	62	63	65	65	66	66	64	65	65
	E	54	55	57	57	58	58	56	57	57
Air flow rate (m³/h)	FC/A	102000	102000	102000	136000	170000	170000	102000	102000	136000
	E	70000	78000	87000	100000	112000	127000	74000	80000	96000
Fans (No.)	A	6	6	6	8	10	10	6	6	8
	E	6	6	6	8	10	10	6	8	8
Evaporators (1)	No.	1	1	1	1	1	1	1	1	1
Mod. NSB	Vers.	2002	2202	2352	2502	2652	2802	3002	3202	3402
Cooling capacity (kW)	A	429	480	501	522	553	584	642	675	746
	E	389	439	457	475	514	554	604	645	694
Total input power (kW)	A	153	168	177	186	200	215	219	230	259
	E	156	167	179	191	203	214	222	233	265
E.E.R.	A	2.81	2.86	2.83	2.81	2.76	2.72	2.93	2.94	2.88
	E	2.50	2.62	2.55	2.48	2.54	2.59	2.72	2.76	2.62
Total input current (A)	A	261	288	305	322	344	366	376	391	434
	E	255	286	302	318	337	357	370	387	431
Freecooling										
Cooling capacity (kW)	A	452	491	498	505	514	522	592	602	705
	E	420	476	483	489	502	514	580	594	688
Total input power (kW)		20	20	20	20	20	20	24	24	28
E.E.R.	A	22.59	24.56	24.91	25.24	25.69	26.10	24.68	25.10	25.16
	E	21.00	23.79	24.14	24.46	25.12	25.70	24.18	24.74	24.57
Total input current (A)		40	40	40	40	40	40	48	48	56
Water flow rate (l/h)	A	73720	82630	86240	89860	95190	100520	110420	116130	128320
	E	66.950	75.420	78.540	81.650	88.490	95.320	103.870	110.890	119.440
Compressors	No.	2	2	2	2	2	2	2	2	2
Capacity step control	%	40 - 100 (25-100 VT electronic)								
♪Sound pressure (dBA)	FC/A	66	66	66	66	67	67	67	68	68
	E	58	58	58	58	59	59	59	60	60
Air flow rate (m³/h)	FC/A	170,000	170,000	170,000	170,000	170,000	170,000	204,000	204,000	238,000
	E	124500	120000	123000	130000	130000	140000	165000	174000	187000
Fans (No.)	A - E	10	10	10	10	10	10	12	12	14
Evaporators (1)	No.	1	1	1	1	1	2	2	2	2
Mod. NSB	Vers.	3602	3902	4202	4502	4802	5003	5203	5403	5703
Cooling capacity (kW)	A	817	873	926	983	1036	1.084	1.154	1.225	1.282
	E	744	787	843	887	943	1.017	1.066	1.116	1.159
Total input power (kW)	A	288	300	321	334	354	374	403	432	444
	E	298	311	333	346	369	381	413	445	457
E.E.R.	A	2.84	2.91	2.89	2.95	2.92	2.90	2.87	2.84	2.88
	E	2.49	2.53	2.53	2.56	2.56	2.67	2.58	2.51	2.54
Total input current (A)	A	476	505	537	566	598	629	672	714	743
	E	476	502	538	564	600	625	669	713	740
Freecooling										
Cooling capacity (kW)	A	807	889	907	989	1007	1006	1108	1210	1293
	E	782	858	881	956	979	985	1079	1174	1249
Total input power (kW)		32	36	36	40	40	40	44	48	52
E.E.R.	A	25.21	24.70	25.19	24.73	25.17	25.14	25.18	25.21	24.86
	E	24.45	23.82	24.47	23.90	24.48	24.62	24.53	24.45	24.02
Total input current (A)		64	72	72	80	80	80	88	96	104
Water flow rate (l/h)	A	140.500	150.210	159.350	169.060	178.200	186.390	198.570	210.750	220.460
	E	127.980	135.390	145.070	152.480	162.160	174.890	183.430	191.980	199.380
Compressors	No.	2	2	2	2	2	3	3	3	3

	Vers.	3602	3902	4202	4502	4802	5003	5203	5403	5703
Capacity step control	%	40 - 100 (25-100 VT electronic)								
♪ Sound pressure (dBA)	FC/A	68	69	69	69	69	70	70	70	70
	E	60	61	61	61	61	62	62	62	62
Air flow rate (m³/h)	FC/A	272000	306000	306000	340000	340000	340000	374000	408000	442000
	E	200000	212000	227000	239000	254000	274000	287000	300000	312000
Fans (No.)	A - E	16	18	18	20	20	20	22	24	26
Evaporators (1)	No.	2	2	2	2	2	3	3	3	3

Mod. NSB	Vers.	6003	6303	6603	6903	7203
Cooling capacity (kW)	A	1.335	1.391	1.444	1.501	1.554
	E	1.216	1.259	1.315	1.358	1.414
Total input power (kW)	A	465	478	498	511	532
	E	479	492	514	527	549
E.E.R.	A	2.87	2.91	2.90	2.94	2.92
	E	2.54	2.56	2.56	2.58	2.58
Total input current (A)	A	775	804	836	865	897
	E	776	802	838	864	900

Freecooling

Cooling capacity (kW)	A	1.310	1.393	1.410	1.493	1.510
	E	1.272	1.347	1.371	1.446	1.469
Total input power (kW)		52	56	56	60	60
E.E.R.	A	25.20	24.87	25.18	24.88	25.17
	E	24.46	24.06	24.47	24.09	24.48
Total input current (A)		104	112	112	120	120
Water flow rate (l/h)	A	229.600	239.310	248.450	258.160	267.300
	E	209.070	216.470	226.160	233.560	243.250
Compressors	No.	3	3	3	3	3
Capacity step control	%	40 - 100 (25-100 VT electronic)				
♪ Sound pressure (dBA)	FC/A	70	70	71	71	71
	E	62	62	63	63	63
Air flow rate (m³/h)	FC/A	442000	476000	476000	510000	510000
	E	327000	339000	354000	366000	381000
Fans (No.)	A - E	26	28	28	30	30
Evaporators (1)	No.	3	3	3	3	3

(1) = Tube bundle

Supply voltage = 400V 3~ 50 Hz. Performance values refer to the following conditions :

Cooling:

- water inlet temperature 12°C;
- water outlet temperature 7°C;
- outside air temperature 35°C;
- Δt = 5 °C.

Free-cooling:

- Water inlet temperature 15°C
- Outside air temperature 2°C
- Glycol 0%

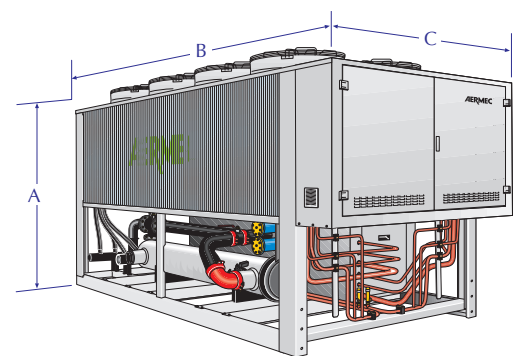
- ♪ Sound pressure measured in free field conditions at distance of 10m and direction factor = 2.

In accordance with the ISO 3744 standard

Dimensions (mm)

Mod. NSB		1251	1401	1601	1801	2101	2401	1402
Height (A)		2450	2450	2450	2450	2450	2450	2450
Width (B)		2200	2200	2200	2200	2200	2200	2200
Depth (C)	A/E	3780	3780	3780	4770	5750	5750	3780
Weight	kg A/E	3760	3770	3840	5000	5950	5980	4010
Mod. NSB		1602	1802	2002	2202	2352	2502	2652
Height (A)		2450	2450	2450	2450	2450	2450	2450
Width (B)		2200	2200	2200	2200	2200	2200	2200
Depth (C)	A/E	3780	4770	5750	5750	5750	5750	5750
Weight	kg A/E	4030	4730	5470	5790	6340	6330	6340
Mod. NSB		2802	3002	3202	3402	3602	3902	4202
Height (A)		2450	2450	2450	2450	2450	2450	2450
Width (B)		2200	2200	2200	2200	2200	2200	2200
Depth (C)	A/E	5750	7160	7160	8150	9140	10120	10120
Weight	kg A/E	6350	7210	7310	8410	9180	10580	11580

Mod. NSB		4502	4802	5003	5203	5403	5703	6003	6303	6603	6903	7203
Height (A)		2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
Width (B)		2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
Depth (C)	A/E	11100	11100	11530	12520	13510	14490	14490	15470	15470	16450	16450
Weight	kg A/E	11104	11320	12990	13790	15220	15130	15160	16560	17560	17084	17300



For transportation reasons, NSB sizes from 5703 to 7203 are sent separately, consisting of two compressors and their standard electrical box (placed in front of the machine) and one module with a compressor and the electrical box at the side of the compressors under

the slatted exchange battery. On the site, it is only necessary to connect the two units electrically. For further information, refer to the technical and/or installation manual.