NRGI 151-602

Air-water chiller

Cooling capacity 31.0 ÷ 132.2 kW

- **High efficiency also at partial loads**
- **High modulation capacity**
- **Continuous modulation of the cooling capacity**
- **Compressors and fans with Inverter**
- **Low refrigerant charge**
- **Stable temperature control of the outlet water**

DESCRIPTION

Air-cooled outdoor chiller designed to meet air conditioning needs in residential/commercial complexes or industrial applications.
These are outdoor units with streamlined scroll compressors used with R32 gas.
Condensing coil with copper pipes and aluminium louvers, plate heat exchanger and **standard electronic expansion valve.**
The base, the structure and the panels are made of galvanized steel treated with polyester paint RAL 9003.

VERSIONS

A High efficiency
E Silenced high efficiency

FEATURES

Operating field

Operation at full load up to 50°C external air temperature. Unit can produce chilled water up to -10 °C.
For more information refer to the selection program and to to the dedicated documentation.

High efficiency

These are flexible and reliable units which adapt to the most diverse load conditions thanks to the precise design and **the use of steady speed compressors together with inverter-controlled variable speed compressors** guaranteeing a high energy efficiency level both at full and partial load.

Inverter compressor + On-Off

They can be configured with a single variable speed compressor or two in tandem configuration, one steady and one variable speed. This pair guarantees high efficiency both with partial and full loads.
Sizes 151-281 have a single variable speed compressor. Sizes 302-602 have two compressors in tandem configuration.
This solution gets the best value out of the particularities and advantages of each compressor, enhancing the efficiency of each load condition and allowing for

— High seasonal efficiency
— steady and precise modulation of the chilling demand
— The stability of the outlet water temperature.

Refrigerant HFC R32

The environmental impact of the units is reduced considerably owing to the last generation R32 refrigerant.
Combining a reduced refrigerant load with a low global warming potential (GWP), these units boast low equivalent CO_2 values.

■ *The leak detector is supplied as per standard.*

New condensing Coils

The whole range uses copper - aluminium condensation coils with reduced diameter rows, allowing a lower quantity of gas to be used compared to traditional coils.

Electronic expansion valve

Single-compressor units have a standard electronic expansion valve, while units with tandem compressors have two.
The possibility to use electronic expansion valve, offers significant benefits, especially when the chiller is working with partial loads, increasing the energy seasonal efficiency of the unit.

Fans

Inverter: standard from size 151 to size 352, available as an optional for the other sizes.
Boosted, asynchronous with phase cutting: standard from size 382 to size 602.
Both types of fan permit:

— Steady air flow rate adjustment
— Low consumption and reduced sound level at partial loads
— Operation with low outdoor air temperatures
— Precise condensation control for an extended operating range.

Option integrated hydronic kit

An optional, integrated hydronic kit containing the main hydraulic components, to obtain a solution that allows you to save money and to facilitate installation.
It is available in different configurations with storage tank or with fixed or variable pumps also inverter.

■ *VARIABLE FLOW RATE: Correctly adjust the speed of the inverter-controlled pumps according to the load demand of the system, in order to reduce power consumption.*

CONTROL PCO[5]

Microprocessor control, with keyboard and LCD display, for easy access on the unit with a menu available in several languages.

— 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.
— **Floating HP control:** this function can be activated in all the units, to optimise unit operation at any point by continuously modulating the fan speed. In addition, the use of inverter fans allows increased energy efficiency with partial loads.
— **Night mode:** only in the **non-silenced** versions is it possible to set a silenced operating mode, which is useful for example at night for greater acoustic comfort but always guarantees performance even at peak load times.

INTEGRATED SOLUTION

The **"integrated solution" concept has been implemented in the system architecture**, consisting in an integrated and streamlined control of compressors and electronic valves.
This solution allowed a variety of new features to be introduced, such as:

— **Low Superheat Control**: Progressive superheating reduction in conditions of stability. This allows to increase energy performance: both in modulation and in full load conditions;
— **DLT control**: Control of electronic valves at discharge temperature in certain operating conditions. This is demonstrated in an enhanced reliability of the control and a considerable expansion of the machine's operating range.

ACCESSORIES

AER485P1: RS-485 interface for supervising systems with MODBUS protocol. 1 accessory is provided for each unit control board.
AERBAC-ONE: Ethernet communication interface for Bacnet/IP and Modbus TCP/IP protocols, HTTPS protocol for web interface, encrypted communication protocols and access credential management in accordance with the latest standards. One accessory is provided for each unit control board.
AERBACP: Ethernet communication interface for Bacnet/IP and Modbus TCP/IP protocols. 1 accessory is provided for each unit control board.
AERNET: The device remotely controls, manages and remotely monitors a chiller/heat pump using a PC, smartphone or table via a Cloud connection. AERNET acts as Master while each connected unit is configured as Slave up to a maximum of 6 control cards. The connection is made via cable and/or USB key. Wi-Fi connectivity is not available. It is also possible to save a log file with all the data from the connected units to your terminal with a simple click for possible post-analysis. With the purchase of the Router, the Customer benefits from a 24-month free period during which he can use the Aernet Service at no additional cost. At the end of this initial period, the Service may be renewed by subscribing to a 1, 2 or 3 year subscription. For further details on costs and renewal methods, please contact our office or consult the technical documentation available on our website. www.aermec.com.
MULTICHILLER-EVO: Control, switch-on and switch-off system of the single chillers where multiple units are installed in parallel (max. no. 9), always ensuring constant flow rate to the evaporators.
PGD1: Allows you to control the unit at a distance.
SGD: Electronic expansion that enables connecting to the photovoltaic system and heat pumps to accumulate heat in the DHW tank or in the heating system during the photovoltaic production phase and release it at times when heating demand is highest.
PR4: Remote panel with LCD display and touch keyboard that allows carrying out the basic controls, the programming of time ranges and the signalling of the alarms of a single unit.

■ *The accessory PR4 should only be combined with the RS485 communication interface when the serial port is occupied by another device.*

GP: Anti-intrusion grid.
VT: Anti-vibration supports.

FACTORY FITTED ACCESSORIES

DRE: Electronic device for peak current reduction.
T6: Double safety valve with exchange cock, both on the high and low pressure branches.

ACCESSORIES COMPATIBILITY

Model	Ver	151	201	281	302	332	352	382	502	552	602
AER485P1	A,E	•	•	•	•	•	•	•	•	•	•
AERBAC-ONE	A,E	•	•	•	•	•	•	•	•	•	•
AERBACP	A,E	•	•	•	•	•	•	•	•	•	•
AERNET	A,E	•	•	•	•	•	•	•	•	•	•
MULTICHILLER-EVO	A,E	•	•	•	•	•	•	•	•	•	•
PGD1	A,E	•	•	•	•	•	•	•	•	•	•
SGD	A,E	•	•	•	•	•	•	•	•	•	•

Remote panel

Model	Ver	151	201	281	302	332	352	382	502	552	602
PR4	A,E	•	•	•	•	•	•	•	•	•	•

The accessory PR4 should only be combined with the RS485 communication interface when the serial port is occupied by another device.

Antivibration

Ver	151	201	281	302	332	352	382	502	552	602
Integrated hydronic kit: 00, I1, I2, I3, I4, P1, P2, P3, P4										
A, E	VT17	VT13	VT13	VT13	VT13	VT13	VT11	VT11	VT11	VT22
Integrated hydronic kit: 01, 02, 03, 04, 05, 06, 07, 08, 09, K1, K2, K3, K4, W1, W2, W3, W4										
A, E	VT13	VT13	VT13	VT13	VT13	VT13	VT11	VT11	VT11	VT22

Anti-intrusion grid

Ver	151	201	281	302	332	352	382	502	552	602
A, E	GP3	GP4	GP4	GP4	GP4	GP4	GP2 x 2 (1)	GP2 x 2 (1)	GP2 x 2 (1)	GP2 x 3 (1)

(1) x _ indicates the quantity to buy

Device for peak current reduction

Ver	151	201	281	302	332	352	382	502	552	602
A, E	-	-	-	DRENRGI302	DRENRGI332	DRENRGI352	DRENRGI382	DRENRGI502	DRENRGI552	DRENRGI602

The accessory cannot be fitted on the configurations indicated with -
A grey background indicates the accessory must be assembled in the factory

Double safety valves

Ver	151	201	281	302	332	352	382	502	552	602
A, E	T6NRG1	T6NRG1	T6NRG1	T6NRG1	T6NRG1	T6NRG1	T6NRG1	T6NRG1	T6NRG1	T6NRG1

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

CONFIGURATOR

Field		Description
1,2,3,4		**NRGI**
5,6,7		**Size** 151, 201, 281, 302, 332, 352, 382, 502, 552, 602
8		**Operating field (1)**
	X	Electronic thermostatic expansion valve
9		**Model**
	°	Cooling only
10		**Heat recovery**
	D	With desuperheater (2)
	°	Without heat recovery
11		**Version**
	A	High efficiency
	E	Silenced high efficiency
12		**Coils**
	R	Copper pipes-copper fins
	V	Copper pieps-Coated aluminium fins
	°	Copper-aluminium
13		**Fans**
	J	Inverter
	M	Boosted with phase cutting (3)
14		**Power supply**
	°	400V ~ 3N 50Hz with magnet circuit breakers
15,16		**Integrated hydronic kit**
		Without hydronic kit
	00	Without hydronic kit
		Kit with storage tank and pump/s
	01	Storage tank with low head pump
	02	Storage tank with low head pump + stand-by pump
	03	Storage tank with high head pump
	04	Storage tank with high head pump + stand-by pump
		Kit with pump/s and storage tank with holes for heaters
	05	Storage tank with holes for heaters and single low head pump (4)
	06	Storage tank with holes for heaters and pump low head + stand-by pump (4)
	07	Storage tank with holes for heaters and single high head pump (4)
	08	Storage tank with holes for heaters and pump high head + stand-by pump (4)
		Double loop
	09	Double loop
		Kit with pump/s
	P1	Single pump low head
	P2	Pump low head + stand-by pump
	P3	Single pump high head
	P4	Pump high head + stand-by pump
		Kit with inverter pump/s to fixed speed
	I1	Single low head pump + fixed speed inverter
	I2	Single low head pump with fixed speed inverter + stand-by pump
	I3	Single high head pump + fixed speed inverter
	I4	Single high head pump with fixed speed inverter + stand-by pump
		Kit with storage tank and inverter pump/s to fixed speed
	K1	Single low head pump + storage tank + fixed speed inverter
	K2	Storage tank and low head pump with fixed speed inverter + stand-by pump
	K3	Single high head pump + storage tank + fixed speed inverter
	K4	Storage tank and low head pump with fixed speed inverter + stand-by pump
		Kit with storage tank and variable speed inverter pump/s
	W1	Single low head pump + Storage tank + variable speed inverter
	W2	Double low head pump + Storage tank + variable speed inverter
	W3	Single high head pump + Storage tank + variable speed inverter
	W4	Double high head pump + Storage tank + variable speed inverter

(1) Water produced from -10 °C ÷ 20 °C. Double electronic thermostatic valve from size 302 to 602.
(2) Warning: on the recovery side, a minimum input temperature of 35°C must always be guaranteed on the heat exchanger. For more information about the unit operating range, refer to the Magellano selection program
(3) Only for 382 - 502 - 552 - 602 sizes
(4) Storage tanks with holes for supplementary heaters (not provided) are sent from the factory with plastic protection caps. Before loading the system, if the installation of one or all resistances is not expected, all plastic caps must be replaced with the special caps, commonly commercially available.

PERFORMANCE SPECIFICATIONS

NRGI - A

Size		151	201	281	302	332	352	382	502	552	602
Cooling performance 12 °C / 7 °C (1)											
Cooling capacity	kW	39,2	52,6	58,2	69,4	77,7	83,2	93,2	103,3	114,0	132,2
Input power	kW	11,8	15,2	17,5	20,8	23,3	25,6	27,6	31,4	35,1	39,1
Cooling total input current	A	18,00	23,00	26,00	37,00	41,00	46,00	43,00	49,00	53,00	60,00
EER	W/W	3,31	3,47	3,32	3,33	3,34	3,25	3,37	3,29	3,24	3,38
Water flow rate system side	l/h	6.746	9.067	10.028	11.960	13.388	14.335	16.031	17.775	19.616	22.750
Pressure drop system side	kPa	18	33	40	35	44	50	24	23	28	29

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

NRGI - E

Size		151	201	281	302	332	352	382	502	552	602
Cooling performance 12 °C / 7 °C (1)											
Cooling capacity	kW	31,0	40,1	46,4	61,7	70,1	75,6	84,9	91,3	101,8	119,6
Input power	kW	8,9	11,0	13,1	17,9	20,2	22,5	24,6	26,9	30,8	34,2
Cooling total input current	A	13,00	17,00	19,00	32,00	36,00	41,00	39,00	43,00	47,00	53,00
EER	W/W	3,49	3,63	3,55	3,45	3,46	3,36	3,45	3,39	3,31	3,50
Water flow rate system side	l/h	5.326	6.900	7.994	10.624	12.066	13.021	14.607	15.705	17.509	20.576
Pressure drop system side	kPa	11	19	25	27	35	41	20	18	22	24

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

ENERGY DATA

Size			151	201	281	302	332	352	382	502	552	602
Fans: J												
SEER - 12/7 (EN14825: 2018)												
SEER	A	W/W	5,19	5,32	5,37	5,04	5,07	5,22	5,33	5,36	5,18	5,33
	E	W/W	5,23	5,36	5,42	5,08	5,11	5,26	5,37	5,40	5,23	5,37
Seasonal efficiency	A	%	204,40	209,80	211,90	198,40	199,70	205,70	210,00	211,40	204,30	210,00
	E	%	206,00	211,50	213,60	200,00	201,30	207,30	211,80	213,10	206,00	211,70
Water Regulation (1)	A,E	type	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO
SEER - 23/18 (EN14825: 2018)												
SEER	A	W/W	6,35	6,45	6,33	5,81	5,79	5,89	6,21	6,21	5,94	6,11
	E	W/W	6,52	6,75	6,58	5,93	5,84	5,91	6,31	6,32	6,00	6,21
Seasonal efficiency	A	%	250,90	254,90	250,20	229,50	228,40	232,40	245,20	245,30	234,60	241,50
	E	%	257,90	266,80	260,30	234,20	230,40	233,40	249,40	249,80	237,10	245,40
Water Regulation (1)	A,E	type	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO
SEPR - (EN 14825: 2018)												
SEPR	A	W/W	7,10	7,60	7,50	7,10	7,30	7,40	7,10	7,10	6,50	6,50
	E	W/W	7,10	7,50	7,40	7,20	7,40	7,40	7,10	7,20	6,60	6,60
Water Regulation (1)	A,E	type	FW/FO	FW/FO	FW/FO	FW/FO	FW/FO	FW/FO	FW/FO	FW/FO	FW/FO	FW/FO

(1) VW/VO - variable water flow rate/variable outlet temperature; FW/VO - fixed water flow rate/variable outlet temperature; VW/FO - variable water flow rate/fixed outlet temperature; FW/FO - fixed water flow rate/fixed outlet temperature.

Size			151	201	281	302	332	352	382	502	552	602
Fans: M												
SEER - 12/7 (EN14825: 2018)												
SEER	A	W/W	-	-	-	-	-	-	5,33	5,36	5,18	5,33
	E	W/W	-	-	-	-	-	-	5,37	5,40	5,23	5,37
Seasonal efficiency	A	%	-	-	-	-	-	-	210,00	211,40	204,30	210,00
	E	%	-	-	-	-	-	-	211,80	213,10	206,00	211,70
Water Regulation (1)	A,E	type	-	-	-	-	-	-	FW/VO	FW/VO	FW/VO	FW/VO
SEER - 23/18 (EN14825: 2018)												
SEER	A	W/W	-	-	-	-	-	-	6,21	6,21	5,94	6,11
	E	W/W	-	-	-	-	-	-	6,31	6,32	6,00	6,21
Seasonal efficiency	A	%	-	-	-	-	-	-	245,20	245,30	234,60	241,50
	E	%	-	-	-	-	-	-	249,40	249,80	237,10	245,40
Water Regulation (1)	A,E	type	-	-	-	-	-	-	FW/VO	FW/VO	FW/VO	FW/VO
SEPR - (EN 14825: 2018)												
SEPR	A	W/W	-	-	-	-	-	-	7,10	7,10	6,50	6,50
	E	W/W	-	-	-	-	-	-	7,10	7,20	6,60	6,60
Water Regulation (1)	A,E	type	-	-	-	-	-	-	FW/FO	FW/FO	FW/FO	FW/FO

(1) VW/VO - variable water flow rate/variable outlet temperature; FW/VO - fixed water flow rate/variable outlet temperature; VW/FO - variable water flow rate/fixed outlet temperature; FW/FO - fixed water flow rate/fixed outlet temperature.

ELECTRIC DATA

Size			151	201	281	302	332	352	382	502	552	602
Electric data												
Maximum current (FLA)	A,E	A	23,8	31,6	34,9	47,6	52,8	58,1	60,1	68,8	74,4	87,5
Peak current (LRA)	A,E	A	30,3	43,0	43,0	142,8	167,1	201,1	174,4	211,8	278,6	329,2

■ *Data calculated without hydronic kit and accessories.*

GENERAL TECHNICAL DATA

Refrigerant circuit

Size			151	201	281	302	332	352	382	502	552	602
Fans: J												
Compressor												
Type	A,E	type					Scroll					
Compressor regulation	A,E	Type	I	I	I	1+I	1+I	1+I	1+I	1+I	1+I	1+I
Number	A,E	no.	1	1	1	2	2	2	2	2	2	2
Circuits	A,E	no.	1	1	1	2	2	2	2	2	2	2
Refrigerant	A,E	type					R32					

Size			151	201	281	302	332	352	382	502	552	602
Fans: M												
Compressor												
Type	A,E	type					Scroll					
Compressor regulation	A,E	Type	-	-	-	-	-	-	1+I	1+I	1+I	1+I
Number	A,E	no.	-	-	-	-	-	-	2	2	2	2
Circuits	A,E	no.	-	-	-	-	-	-	2	2	2	2
Refrigerant	A,E	type	-	-	-	-	-	-	R32	R32	R32	R32

System side heat exchanger

Size			151	201	281	302	332	352	382	502	552	602
System side heat exchanger												
Type	A,E	type	Brazed plate									
Number	A,E	no.	1	1	1	1	1	1	1	1	1	1
Connections (in/out)	A,E	Type	Grooved joints									
Sizes (in/out)	A,E	Ø	2" 1/2									

Fans

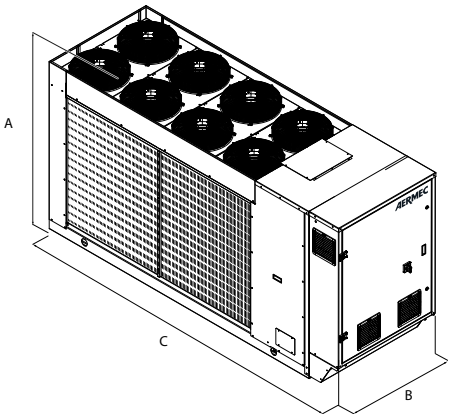
Size			151	201	281	302	332	352	382	502	552	602
Fans: J												
Fan												
Type	A,E	type	Axial									
Fan motor	A,E	type	Inverter									
Number	A,E	no.	4	6	6	8	8	8	2	2	2	3
Air flow rate	A	m^3/h	16.669	24.469	24.476	30.793	28.649	28.662	36.174	36.174	36.149	54.601
	E	m^3/h	14.488	21.255	21.255	26.704	24.966	24.966	26.850	26.850	26.781	40.488
Sound data calculated in cooling mode (1)												
Sound power level	A	dB(A)	81,8	84,6	85,9	82,2	85,0	85,1	85,4	86,5	87,7	88,1
	E	dB(A)	79,3	82,8	83,3	80,9	81,3	81,7	82,8	83,0	85,4	85,5
Sound pressure level (10 m)	A	dB(A)	50,0	52,7	54,1	50,3	53,2	53,3	53,5	54,5	55,8	56,0
	E	dB(A)	47,5	51,0	51,4	49,0	49,5	49,8	50,8	51,1	53,5	53,5

(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 measured in free field (in compliance with UNI EN ISO 3744).

Size			151	201	281	302	332	352	382	502	552	602
Fans: M												
Increased fan												
Type	A,E	type	Axial									
Fan motor	A,E	type	Asynchronous with phase cut									
Number	A,E	no.	-	-	-	-	-	-	2	2	2	3
Air flow rate	A	m^3/h	-	-	-	-	-	-	36.174	36.174	36.149	54.601
	E	m^3/h	-	-	-	-	-	-	26.850	26.850	26.781	40.488
Sound data calculated in cooling mode (1)												
Sound power level	A	dB(A)	-	-	-	-	-	-	85,4	86,5	87,7	88,1
	E	dB(A)	-	-	-	-	-	-	82,8	83,0	85,4	85,5
Sound pressure level (10 m)	A	dB(A)	-	-	-	-	-	-	53,5	54,5	55,8	56,0
	E	dB(A)	-	-	-	-	-	-	50,8	51,1	53,5	53,5

(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 measured in free field (in compliance with UNI EN ISO 3744).

DIMENSIONS



Size			151	201	281	302	332	352	382	502	552	602
Dimensions and weights												
A	A,E	mm	1.652	1.652	1.652	1.652	1.652	1.652	1.907	1.907	1.907	1.900
B	A,E	mm	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100
C	A,E	mm	2.873	3.372	3.372	3.372	3.372	3.372	3.623	3.623	3.623	4.373

Size			151	201	281	302	332	352	382	502	552	602
Integrated hydronic kit: 00												
Weights												
Weight empty + packaging	A,E	kg	826	899	899	986	1.027	1.028	1.093	1.101	1.123	1.313
Weight functioning	A,E	kg	795	867	867	955	996	997	1.062	1.072	1.094	1.284

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