

# NSMI 1251-6102 F

## Air-water chiller with free-cooling

Cooling capacity 286 ÷ 1280 kW



- High efficiency also at partial loads
- Microchannel coil
- Low electrical consumption



### DESCRIPTION

Air-cooled outdoor chiller designed to meet air conditioning needs in residential/commercial complexes or industrial applications. Outdoor units with high-efficiency screw compressors axial fans, micro-channel external coils and plant side shell and tube heat exchanger. In the unit with desuperheater, it is also possible to produce free-hot water. 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 -6 °C).

#### Units mono or dual-circuit

Unit with 1–2 refrigerant circuits. The single circuit units have the inverter compressor, while the dual-circuit have an asynchronous compressor on/off switch and an inverter, the combination provides both high efficiency at part load and full load

#### Aluminium microchannel coils

The microchannel condensing aluminum coils ensure high levels of efficiency, reduced quantities of refrigerant and lower unit weight. The treatment "O" available as configurator it ensures high resistance to corrosion even in the most aggressive environments.

#### Free-cooling water coils

These units also have a water coil dedicated to free-cooling mode.

### ACCESSORIES

- AER485P1:** RS-485 interface for supervision systems with MODBUS protocol.
- AER485P1 x n° 2:** RS-485 interface for supervision systems with MODBUS protocol.

Free-cooling offers significant energy saving in applications that require cooling all year round.

As soon as the outside air temperature allows, a valve makes the water flow towards the free-cooling battery which is cooled directly by the air. The compressors are completely shut down, if possible, leading to considerable electrical savings.

*A "P" free-cooling plus model with the oversized water battery can be chosen for applications in which a higher free-cooling performance is required.*

### 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.

### Low noise version

**Silenced versions feature a special compressor jacket which ensures a further noise reduction of approximately 4 dB.**

### CONTROL PCO<sup>5</sup>

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.

**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.  
**FB1:** Air filter to protect the micro-channel coils. Formed of a frame and a composite baffle in micro-expanded aluminium mesh, with particularly low pressure drops.

**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

**GP :** Anti-intrusion grid kit

**KRS:** Electric heater for the heat exchanger

### ACCESSORIES COMPATIBILITY

Model	Ver	1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
AER485P1	A,E	*	*	*												
AER485P1 x n° 2 (1)	A,E				*	*	*	*	*	*	*	*	*	*	*	*
AERBACP	A,E	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
AERNET	A,E	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
FB1	A,E	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MULTICHILLER_EVO	A,E	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

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

Ver	1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
A,E	GP4V	GP4V	GP5V	GP5V	GP6V	GP7V	GP7V	GP7V	GP8V	GP9V	GP10V	GP11V	GP11V	GP11V	GP11V

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

### Antivibration - NSMI free-cooling

Ver	1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102	
<b>Integrated hydronic kit: 00</b>																
A	AVX991	AVX992	AVX993	AVX966	AVX970	AVX995	AVX995	AVX995	AVX996	AVX988	AVX989	AVX990	AVX990	AVX990	AVX990	
E	AVX991	AVX992	AVX994	AVX966	AVX970	AVX995	AVX995	AVX995	AVX996	AVX988	AVX989	AVX990	AVX990	AVX990	AVX990	

### Antivibration - NSMI free-cooling plus

Ver	1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102	
<b>Integrated hydronic kit: 00</b>																
A	AVX991	AVX992	AVX993	AVX966	AVX970	AVX995	AVX995	AVX995	AVX996	AVX988	AVX989	AVX990	AVX990	AVX990	AVX990	
E	AVX991	AVX992	AVX994	AVX966	AVX970	AVX995	AVX995	AVX999	AVX996	AVX988	AVX989	AVX990	AVX990	AVX990	AVX990	

### Heater exchangers

Ver	1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
A	KRS23	KRS23	KRS23	KRS23	KRS23	KRS23	-	KRS24	KRS24	KRS24	KRS24	KRS24	KRS24	KRS24	KRS24
E	KRS23	KRS23	KRS23	KRS23	KRS23	KRS23	KRS23	KRS24	KRS24	KRS24	KRS24	KRS24	KRS24	KRS24	KRS24

The accessory cannot be fitted on the configurations indicated with -

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

## CONFIGURATOR

Field	Description
1,2,3,4	<b>NSMI</b>
	<b>Size</b>
5,6,7,8	1251, 1601, 1801, 2352, 2652, 2802, 3202, 3402, 3802, 4102, 4402, 4802, 5202, 5702, 6102
9	<b>Operating field</b>
10	<b>Model</b>
F	Free-cooling
P	Free-cooling plus (1)
11	<b>Heat recovery</b>
°	Without heat recovery
D	With desuperheater (2)
12	<b>Version</b>
A	High efficiency
E	Silenced high efficiency
13	<b>Coils / free-cooling coils</b>
°	Alluminium microchannel / Copper - aluminium
O	Painted alluminium microchannel / Copper painted aluminium
R	Copper-copper/Copper-copper
S	Copper-Tinned copper / Copper -Tinned copper
V	Copper-painted aluminium / Copper-painted aluminium
14	<b>Fans</b>
°	Standard
J	Inverter
15	<b>Power supply</b>
°	400V ~ 3 50Hz with magnet circuit breakers
16,17	<b>Integrated hydronic kit</b>
00	Without hydronic kit
	<b>Kit with n° 1 pump</b>
PA	Pump A

Field	Description
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 (3)
	<b>Pump n° 1 pump + stand-by pump</b>
DA	Pump A + stand-by pump
DB	Pump B + stand-by pump
DC	Pump C + stand-by pump
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 (3)
	<b>Kit with 2 pumps</b>
TF	Double pump F
TG	Double pump G
TH	Double pump H
TI	Double pump I
TJ	Double pump J (3)

- (1) The Free-Cooling Plus "P" models are only compatible with "00" ed "0"  
(2) The temperature of the water in the heat exchanger inlet must never drop below 35°C.  
(3) For all configurations including pump J please contact the factory.

## PERFORMANCE SPECIFICATIONS

### NSMI - free-cooling (FA/FE - PA/PE)

Size	1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102	
<b>Model: F</b>																
<b>Cooling performance chiller operation (1)</b>																
Cooling capacity	A,E	kW	286,5	385,6	455,6	496,5	587,5	649,6	718,4	784,3	832,8	929,0	989,0	1096,3	1164,2	1280,3
Input power	A,E	kW	96,6	126,7	157,5	177,7	206,3	221,2	244,7	272,7	280,5	324,3	343,8	368,4	417,3	436,6
Cooling total input current	A,E	A	166,0	212,0	261,0	309,0	356,0	381,0	417,0	456,0	470,0	547,0	580,0	644,0	692,0	728,0
EER	A,E	W/W	2,97	3,04	2,89	2,79	2,85	2,94	2,94	2,88	2,97	2,86	2,88	2,98	2,79	2,77
Water flow rate system side	A,E	l/h	49230	66245	78283	85309	100931	111607	123424	134748	143088	159614	169917	188349	200020	207622
Pressure drop system side	A,E	kPa	52	78	75	48	67	68	76	46	54	68	79	80	90	94
<b>Cooling performances with free-cooling (2)</b>																
Cooling capacity	A,E	kW	254,5	276,0	340,9	346,5	414,6	649,6	488,1	495,1	559,2	628,2	692,4	762,8	771,1	775,7
Input power	A,E	kW	15,0	15,0	18,7	18,7	22,5	26,2	26,2	26,2	30,0	33,7	37,5	41,2	41,2	41,2
Free cooling total input current	A,E	A	26,0	25,0	31,0	33,0	39,0	45,0	45,0	44,0	50,0	57,0	63,0	72,0	68,0	66,0
EER	A,E	W/W	19,97	18,41	18,19	18,49	18,43	18,22	18,60	18,87	18,65	18,62	18,47	18,50	18,70	18,81
Water flow rate system side	A,E	l/h	49230	66245	78283	85309	100931	111607	123424	134748	143088	159614	169917	188349	200020	207622
Pressure drop system side	A,E	kPa	80	121	128	88	109	109	124	94	99	108	125	127	143	157

- (1) System side water heat exchanger 12 °C/7 °C; External air 35 °C; Chiller operation 100%; Free-cooling 0%  
(2) System side water heat exchanger 12 °C / \* °C; External air 2 °C

Size	1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102	
<b>Model: P</b>																
<b>Cooling performance chiller operation (1)</b>																
Cooling capacity	A,E	kW	285,5	383,5	453,4	493,5	584,0	646,4	714,7	778,5	827,8	923,5	983,6	1090,1	1156,6	1200,5
Input power	A,E	kW	97,4	127,8	158,9	179,7	208,6	223,4	247,5	275,8	283,4	327,8	347,4	372,4	421,9	441,5
Cooling total input current	A,E	A	168,0	214,0	263,0	312,0	360,0	385,0	421,0	461,0	474,0	553,0	585,0	644,0	692,0	728,0
EER	A,E	W/W	2,93	3,00	2,85	2,75	2,80	2,89	2,89	2,82	2,92	2,82	2,83	2,93	2,74	2,72
Water flow rate system side	A,E	l/h	49048	65887	77903	84789	100332	111060	122801	133758	142233	158667	168998	187289	198712	206254
Pressure drop system side	A,E	kPa	51	78	74	47	67	67	75	45	53	67	79	79	89	92
<b>Cooling performances with free-cooling (2)</b>																
Cooling capacity	A,E	kW	271,8	296,0	365,5	371,4	444,5	512,7	523,2	530,1	599,3	673,3	742,3	817,7	826,2	830,9
Input power	A,E	kW	15,2	15,2	19,0	19,0	22,8	26,7	26,7	26,7	30,5	34,3	38,1	41,9	41,9	41,9
Free cooling total input current	A,E	A	26,0	25,0	32,0	33,0	39,0	46,0	45,0	45,0	51,0	58,0	64,0	72,0	69,0	66,0
EER	A,E	W/W	17,84	19,43	19,19	19,50	19,45	19,23	19,63	19,89	19,67	19,64	19,49	19,52	19,72	19,83
Water flow rate system side	A,E	l/h	49048	65887	77903	84789	100332	111060	122801	133758	142233	158667	168998	187289	198712	206254
Pressure drop system side	A,E	kPa	80	120	127	87	108	108	123	93	98	107	123	125	141	155

- (1) System side water heat exchanger 12 °C/7 °C; External air 35 °C; Chiller operation 100%; Free-cooling 0%  
(2) System side water heat exchanger 12 °C / \* °C; External air 2 °C

## ENERGY INDICES (REG. 2016/2281 EU)

Size	1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
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### Model: F

#### SEPR - (EN14825: 2018) High temperature with standard fans (1)

SEPR	A,E	W/W	6,95	6,32	6,23	6,60	6,73	7,06	6,85	6,65	6,98	6,74	6,83	7,24	7,11	7,28	7,05
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#### SEPR - (EN14825: 2018) High temperature with inverter fans (1)

SEPR	A,E	W/W	6,95	6,32	6,23	6,60	6,73	7,06	6,85	6,65	6,98	6,74	6,83	7,24	7,11	7,28	7,05
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(1) Calculation performed with FIXED water flow rate.

Size	1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
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### Model: P

#### SEPR - (EN14825: 2018) High temperature with standard fans (1)

SEPR	A,E	W/W	7,02	6,39	6,31	6,69	6,83	7,19	6,93	6,69	7,06	6,82	6,93	7,30	7,15	7,31	7,05
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#### SEPR - (EN14825: 2018) High temperature with inverter fans (1)

SEPR	A,E	W/W	7,02	6,39	6,31	6,69	6,83	7,19	6,93	6,69	7,06	6,82	6,93	7,30	7,15	7,31	7,05
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(1) Calculation performed with FIXED water flow rate.

## ELECTRIC DATA

Size	1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
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### Electric data

Maximum current (FLA)	A,E	A	259,9	299,9	388,4	452,7	485,9	534,4	534,4	582,4	670,9	727,4	774,9	874,2	917,2	1002,2	1036,2
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Peak current (LRA)	A,E	A	59,9	59,9	68,4	582,4	617,9	666,4	666,4	790,4	878,9	1008,4	1080,0	1180,2	1335,2	1420,2	1532,2
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## GENERAL TECHNICAL DATA

Size	1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
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### Compressor

Type	A,E	type	Screw												
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Compressor regulation	A,E	Type	I	I	I	I+On/Off	I+On/Off	I+On/Off	I+On/Off	I+On/Off	I+On/Off	I+On/Off	I+On/Off	I+On/Off	I+On/Off	I+On/Off	I+On/Off
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Number	A,E	no.	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2
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Circuits	A,E	no.	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2
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Refrigerant	A,E	type	R134a												
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### System side heat exchanger

Type	A,E	type	Shell and tube												
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Number	A,E	no.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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### System side hydraulic connections

Connections (in/out)	A,E	Type	Grooved joints												
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Sizes (in/out)	A,E	Ø	5"	6"	6"	6"	6"	6"	6"	8"	8"	8"	8"	10"	10"	10"	10"
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### Fan

Type	A,E	type	Axial												
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Fan motor	A,E	type	Asynchronous with phase cut												
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Number	A,E	no.	8	8	10	10	12	14	14	14	16	18	20	22	22	22	22
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Air flow rate	A,E	m <sup>3</sup> /h	109600	109600	137000	137000	164400	191800	191800	191800	219200	146600	274000	301400	301400	301400	301400
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## Sound data

Size	1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
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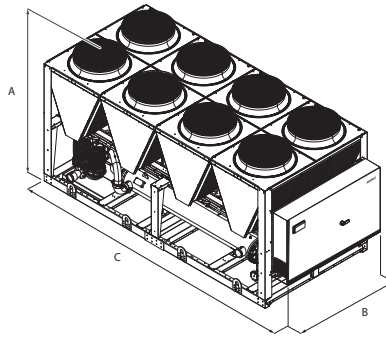
### Sound data calculated in cooling mode (1)

Sound power level	A	dB(A)	98,1	99,2	99,4	99,4	99,7	100,7	100,7	101,1	101,2	101,3	101,9	103,6	103,8	103,8	103,9
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E	dB(A)	94,2	96,0	96,3	95,7	96,2	96,6	96,6	97,8	97,9	98,3	98,6	100,2	100,2	100,2	100,3
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(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			1251	1601	1801	2352	2652	2802	3202	3402	3802	4102	4402	4802	5202	5702	6102
<b>Dimensions and weights</b>																	
A	A,E	mm	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
B	A,E	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
C	A,E	mm	4760	4760	5950	6400	7140	8330	8330	8330	9520	10710	11900	13090	13090	13090	13090

Aermec reserves the right to make any modifications deemed necessary.  
All data is subject to change without notice. Aermec does not assume responsibility or liability for errors or omissions.

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