SAF

Thermal Buffer tank kit with instantaneous Domestic Hot Water production

- **Various versions that make optimum use of the different energy sources**
- **Ease of installation, even in confined spaces**

DESCRIPTION

SAF are the new thermo-buffer for the instantaneous production of domestic hot water (DHW). They integrate both the energy storage element and the heat exchanger, along with the control functions, into a single unit.
The hot water is taken from the water main and heated instantaneously by means of a plate heat exchanger in stainless steel: the separation between the drinking water circuit and the water contained in the accumulator ensures maximum hygiene.
In this way, the benefits of instant production are combined with those associated with buffer production.
These devices are specifically designed and manufactured to be combined with heat pumps but also with traditional or biomass boilers, solar thermal systems and other renewable sources.

VERSIONS

° Standard
S With supplementary energy source management
T Set up for use with supplementary energy source
In addition to these versions, an supplementary heater (accessory) is also provided to respond to increased heating requirements.

FEATURES

— The SAF system is available with a range of thermo-accumulators with different capacities, (200-300-500l), in order to meet a whole host of different DHW requirements;
— The high-efficiency insulation prevents energy losses, to the advantage of the heat exchanger, allowing for significant reductions in running costs;
— The compactness and the new elegant and attractive design mean that it can be installed in restricted spaces, including those indoors.

ACCESSORIES

MODU-485BL: RS-485 interface for supervision systems with MODBUS protocol.
MODU485K: RS-485 simplified interface for supervision systems with MODBUS protocol.
KRX-SAF: Supplementary electric heater with thermostat control from 1200W 230V/1/50Hz with connexion of 1" 1/2.
VTV160: 3-way diverter sector valve, complete with 2-point actuator, (Kvs = 16).
VMF-E5B: White recessed panel with backlit graphic LCD display and capacitive keypad for centralised command/control of a complete hydronic system.
VMF-E5N: Black recessed panel with backlit graphic LCD display and capacitive keypad for centralised command/control of a complete hydronic system.

Accessories compatibility

				Accessories MANDATORY				RECOMMENDED	
Heat pumps	**Sizes**	**Vers.**		**SAF**	**MOD485K**	**MODU485-BL***	**VMF-E5**	**VTV160**	**KRX-SAF**
ANL	**020-202**	**H°-HP**		•	•	•	•	•	•
ANLI	**101**	**H°-HP-HX**	(1)	•	-	-	-	•	•
ANK	**020-150**	**H°-HP**		•	•	•	•	•	•
NRK	**090-150**	**00-P1-P3**		•	•	•	•	•	•
CL	**025-200**	**H°-HP**		•	•	•	•	•	•
ANKI	**020-080**	**H°-HX**	(1)	•	-	-	-	•	•
WRL	**026-161**	**H°**	(1)	•	-	-	-	•	•
WRL	**026-161**	**H°T**	(1)	•	-	-	-	-	•

* To be installed on board of the heat pump.
(1) Units designed for the management domestic hot water: MOD485K and VMF-E5 accessories not required.
It is recommended not to combine the SAF with units with storage tank.

CONFIGURATOR

Field	**Description**
1,2,3	**SAF**
4,5,6	**Size** 200, 300, 500
7	**Version (1)**
°	Standard
S	With supplementary energy source management
T	Set up for use with supplementary energy source
8	**Field for future development**
°	...

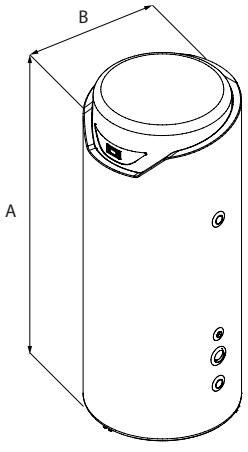
(1) Version "S-T" not available for size 200

PERFORMANCE SPECIFICATIONS

		SAF200	**SAF300S**	**SAF300T**	**SAF300**	**SAF500S**	**SAF500T**	**SAF500**
Power supply								
Power supply					230V~50Hz			
Accumulation inertial								
Storage tank capacity	l	199	279		290	465		480
Drinking water content	l	0,85	0,85	0,85	0,85	0,85	0,85	0,85
Coil water content	l	-	10	10	-	13	13	-
Maximum operating pressure	bar	6	6	6	6	6	6	6
Losses through dispersion	W	59		68			80	
Energy efficiency class (1)	type				B			
DHW minimum flow rate	l/min	2	2	2	2	2	2	2
DHW maximum flow rate	l/min	35	35	35	35	35	35	35
Maximum operating temperature	°C	95	95	95	95	95	95	95
Electric data								
Minimum input power	W	25	27	25	25	27	25	25
Maximum input power	W	75	127	75	75	127	75	75
Minimum input current	A	0,14	0,18	0,14	0,14	0,18	0,14	0,14
Maximum input current	A	0,53	1,05	0,53	0,53	1,05	0,53	0,53

(1) In accordance with Standard UNI EN 16147:2011 and in accordance with Delegated Regulation 812/2013 and 814/2013

DIMENSIONS



		SAF200	SAF300S	SAF300T	SAF300	SAF500S	SAF500T	SAF500
Dimensions and weights								
A	mm	1315	1690	1690	1690	1740	1740	1740
B	mm	710	710	710	710	850	850	850
Empty weight	kg	75	101	96	89	136	131	116
Weight functioning	kg	275	401	396	389	636	631	616

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SAP

Buffer tank with capacity from 75 to 3500 litres

FEATURES

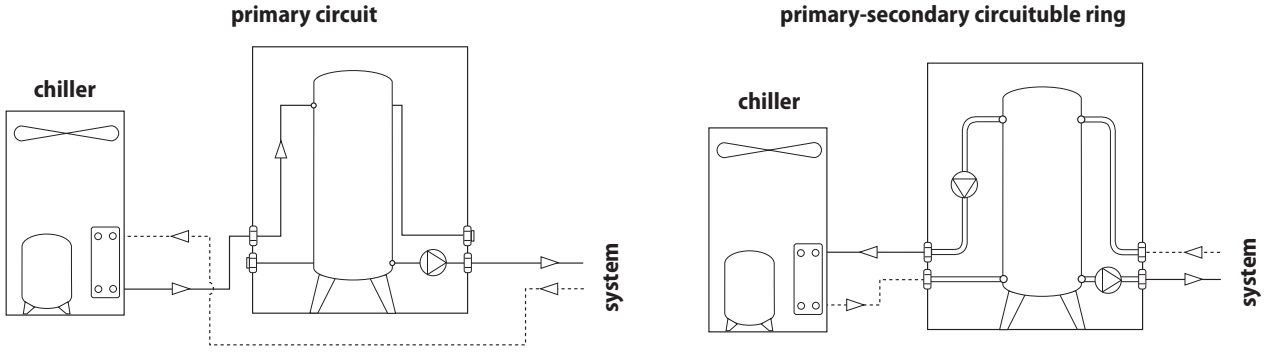
- Buffer tank with pump fully assembled to be used together with water chillers. Hydraulic connections to be site installed
- Steel enclosure with epoxy powder coating for the maximum resistance to weathering
- Electric centrifugal pumps with stainless steel impeller
- Overpressure relief valve
- Fully insulated water circuit
- Pump motors protected by circuit breakers
- SAP 0075 and 0150 can be supplied with 5 different pump models with water flow rates up to 18,000 l/h and pressures up to 140 kPa (maximum 2 pumps can be installed internally)
- SAP 0300, 0500, 0501, 0750 and 1000 can be supplied with 8 models of pumps with water flow rates up to 60,000 l/h and pressures up to 200 kPa (pump set configurations with standby pump are possible). For correct sizing of the unit consult the technical manual.
- SAP 1500, 2500 and 3500 can be supplied with 10 models of pumps with water flow rates up to 200,000 l/h and pressures up to 300 kPa (pump set configurations with standby pump are possible). For correct sizing of the unit consult the technical manual.

ACCESSORIES

- AVX: Spring anti-vibration mounts. Select the AVX model from the compatibility table included in the technical manual.
- RX - RXV: Electric immersion heater (RX: 500 W - RXV: 3 kW), installed and controlled by thermostats to prevent freezing during winter. Factory fitted only.
- VT: Anti-vibration mounts, set of four anti-vibration mounts to be installed under the unit's base.

Accessory compatibility				
SAP	RX	RXV	VT 2	VT 8
0075	•			•
0150	•			•
0300	•		•	
0500 - 0501	•		•	
0750	•		•	
1000	•		•	
1500		•		
2500		•		
3500		•		

CONNECTION SCHEMATIC EXAMPLE



TECHNICAL DATA

Mod. SAP		0075	0150	0300	0500	0501
Capacity	l	75	150	300	500	500
Expansion tank capacity	l	8	12	18	24	24
Relief valve setting	bar	6	6	6	6	6
Water connections	(1)	F	F	F	F	F
Connection diameter	Ø	1" 1/4	1" 1/2	2"	2" 1/2	2" 1/2

Mod. SAP		0750	1000	1500	2500	3500
Capacity	l	750	1000	1500	2500	3500
Expansion tank capacity	l	18 x 2	18 x 2	24 x 2	24 x 3	24 x 3
Relief valve setting	bar	6	6	6	6	6
Water connections	(1)	F	F			
Connection diameter	Ø	3"	3"			

Pump Mod.	R	T	U	V	X	Y	W	K	J	I
1500 flange (*) Ø	125	125	150	150	150	150	200	200	200	200
2500 flange (*) Ø	125	125	150	150	150	150	200	200	200	200
3500 flange (*) Ø	125	125	150	150	150	150	200	200	200	200

Power supply = 3N~ 400V 50Hz.
(1) F = Female connection (Gas)
(*) PN16UNI2278

TECHNICAL DATA

Pump motor power input													
Pump		A	B	C	E	F	G	H	I	J	K	L	M
Max. input power	W	275	330	614	895	1070	1550	2050	22000	17500	14500	3100	4100
Max. input current	A	0,5	0,69	1,1	1,6	1,9	2,8	3,6	43	36,4	30	5,6	7,2

Pump		N	P	Q	R	T	U	V	W	X	Y
Max. input power	W	1470	2600	5200	4000	5200	5800	8000	11500	9000	11000
Max. input current	A	2,6	4,4	8,8	8,5	11,5	15,5	15,5	22,5	22,5	22,5

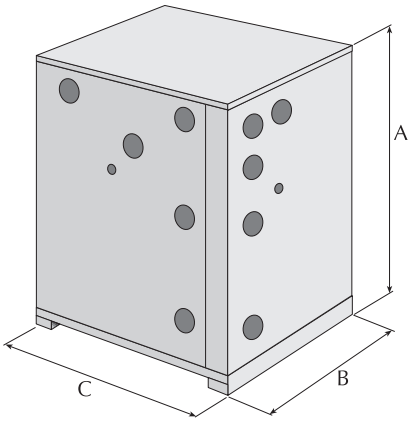
Pump combinations												
SAP 0075	AC	AE	AF	AZ	BC	BE	BF	BZ	ZC	ZE	ZF	ZZ
SAP 0150	AC	AE	AF	AZ	BC	BE	BF	BZ	CC	CE	CF	CZ
	EC	EE	EF	EZ	FC	FE	FF	FZ	ZC	ZE	ZF	ZZ
SAP 0300						CS	CZ	ES	EZ	FS	FZ	ZZ
SAP 0500				FS	FZ	GS	GZ	HS	HZ	PS	PZ	ZZ
SAP 0501				FS	FZ	GS	GZ	HS	HZ	PS	PZ	ZZ
SAP 0750				FS	FZ	GS	GZ	HS	HZ	LS	LZ	MS
					MZ	NS	NZ	PS	PZ	QS	QZ	ZZ
SAP 1000				LS	LZ	MS	MZ	NS	NZ	QS	QZ	ZZ
SAP 1500		IS	IZ	JS	JZ	KS	KZ	RS	RZ	TS	TZ	US
			UZ	VS	VZ	WS	WZ	XS	XZ	YS	YZ	ZZ
SAP 2500		IS	IZ	JS	JZ	KS	KZ	RS	RZ	TS	TZ	US
			UZ	VS	VZ	WS	WZ	XS	XZ	YS	YZ	ZZ
SAP 3500		IS	IZ	JS	JZ	KS	KZ	RS	RZ	TS	TZ	US
			UZ	VS	VZ	WS	WZ	XS	XZ	YS	YZ	ZZ

1st letter: primary circuit.
2nd letter: secondary circuit.
A, B = multi-speed water pumps.
L, M, Q = twin pump set.
S = pump and standby pump set.
Z = without pump.

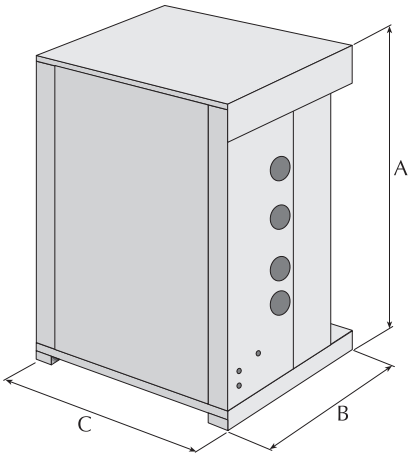
The combinations shown in the table are the only possible ones.
A large number of different flow rate/pressure combinations are available. Refer to the technical manual.

DIMENSIONS (MM)

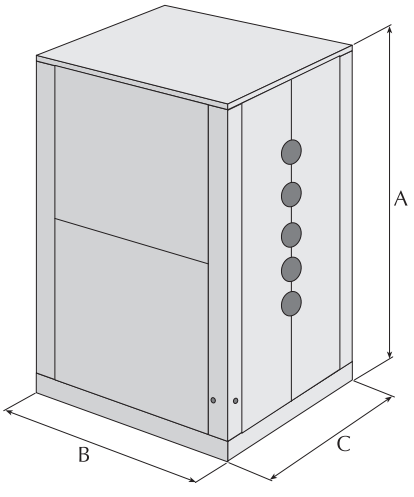
SAP 0075 - 0150



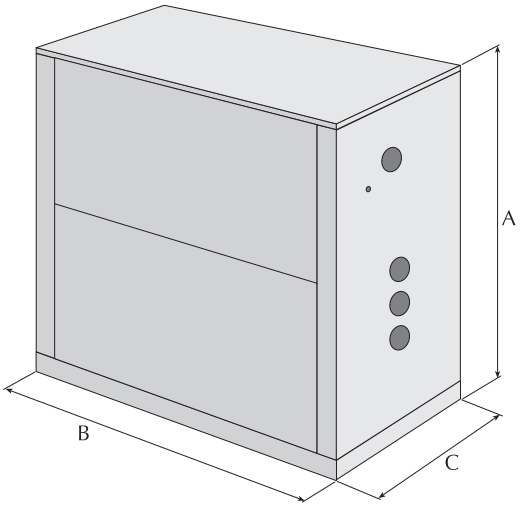
SAP 0300 - 0500



SAP 0501 - 0750



SAP 1000 - 1500 - 2500 - 3500



SAP		0075	0150	0300	0500	0501	0750	1000	1500	2500	3500
Height	A	1000	1000	1650	1650	1968	1968	2049	2049	2049	2049
Width	B	1000	1000	1100	1100	1550	1550	2200	2200	2200	2200
Depth	C	700	700	1100	1100	1000	1000	1000	1750	2000	2300
Net weight (ZZ version)	kg	120	120	190	230	310	400	445	560	710	790

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WST

Water Station
Hydronic kit plug & play solution for internal installation

- **FOR NXW RANGE**
- **PACKAGED PLUG & PLAY CONTAINING THE MAIN HYDRAULIC COMPONENTS**
- **IDEAL FOR INDUSTRIAL APPLICATIONS WHERE CHILLED WATER IS REQUIRED IN WINTER SEASONS**
- **FREECOOLING OPERATION**

CHARACTERISTICS
- Hydronic plug & play kit containing the main hydraulic and controls components of a hydraulic installation.
- The WST units are designed to ease the installation in systems where the production of chilled water is required all year round, in combination with a water-water chiller and a drycooler.

OPERATION
- Chiller: When the external air temperature is higher than the system return water temperature the cooling capacity is provided by the chiller. The WST controls the drycooler by modulating the fans on the basis of the chiller condensing pressure.
- Freecooling: When the external air temperature is then lower then WST turns off the chiller and uses the water from the drycooler to cool the system water through the freecooling heat exchanger.

HYDRAULIC CIRCUIT (DRYCOOLER SIDE)
- Water filter
- Flow switches
- Isolating valves
- Mixing valve
- Bypass valves
- Pumps
- Butterfly valves (enabling freecooling)
- High efficiency plate heat exchanger (freecooling)
- Water temperature sensors

HYDRAULIC CIRCUIT (CHILLER SIDE)
- Water filter
- Flow switches
- Isolating valves
- Pumps
- Water temperature sensors

NOTE: For the combination of the hydronic kit options (drycooler / chiller side), refer to the configurator.

CONTROL
- Microprocessor based electronic control with Modbus communications protocol.
- The WST comes standard with accessory aer485p1. Accessory to predict compulsorily nell'NXW, for communication between the units.
- Advanced electronic continuous monitoring of multiple operating parameters and ambient conditions, in order to switch between the operating modes (chiller/freecooling), when available. This permits the reduction of operating costs and provides higher energy efficiency.
- Control of the drycooler fans in order to manage the chiller condensing pressure (chiller mode), or the recovered capacity (freecooling mode).
- Cold chiller starting control by modulating the drycooler fans and the mixing valve.
- Structure and base in epoxy painted hot dipped galvanised steel.

ACCESSORIES
- VT: Anti-vibration mounts.

ACCESSORIES COMPATIBILITY

WST only cooling		01	02	03	04	05	06
AVX	without pump stand-by	325	326	327	328	328	328
	with pump stand-by	325	327	327	329	329	329

Warning: NXW unit is required to use the attachment AER485P1

TAV. PAIRINGS WST

Chiller	WST	Dry coolers recommended (2)
NXW0500 NXW0550	WST01	WTR 824 EC 980
NXW 0600 NXW 0650	WST02	WTR 834 EC 980
NXW 0700 NXW 0750	WST03	WTR 844 EC 980
NXW 0800 NXW 0900	WST 04	WTR 854 EC 980
NXW 1000 NXW 1250	WST 05	WTR 864 EC 980
NXW 1400	WST 06	WTR 874 EC 980

The combinations are referred to the following conditions, to be verified in the case of particular conditions: refers to standard conditions
Cooling
System side
Water temperature (in/out) 12°C/7°C, Glycol 0%.
Dry-cooler side
Water temperature (in/out) 38°C/43°C; Glycol 35%.

(2) EC is compulsory adjustment on the fans of Dry cooler

UNIT SELECTION

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

Field		Description
1,2,3		WST
4,5		Size
		01-02-03-04-05-06
6		Kit freecooling
	F	Frecooling
7		System water flow
	°	Standard (constant water flow rate)
8		System side connected hydronic kit (3)
	P1	n° 1 Low head system pump
	P2	n° 2 Low head system pumps
	P3	n° 1 High head system pump
	P4	n° 2 High head system pumps
9		Drycooler side connected hydronic kit (3)
	D1	n° 1 Low head system pump
	D2	n° 2 Low head system pumps
	D3	n° 1 High head system pump
	D4	n° 2 High head system pumps

(3) For the compatibility between hydronic kits refer to the adjacent table

	P1	P2	P3	P4
D1	ok	n.d.	ok	n.d.
D2	n.d.	ok	n.d.	ok
D3	ok	n.d.	ok	n.d.
D4	n.d.	ok	n.d.	ok

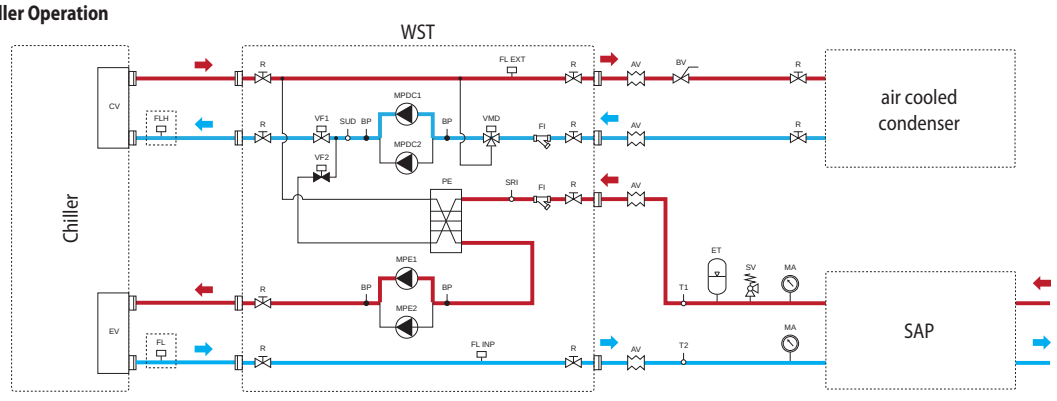
TECHNICAL DATA

Mod. WST Water Station			01	02	03	04	05	06
Cooling								
System side: Water temperature (in/out) 12°C/7°C, Glycol 0%								
Dry-cooler side: Water temperature (in/out) 38°C/43°C; Glycol 35%								
Water flow rate		l/h	17633	23458	29756	40627	51324	60613
Useful static pressure	(P1/P2)	kPa	134	133	174	164	178	119
Useful static pressure	(P3/P4)	kPa	226	217	250	235	254	198
Power input	(P1/P2)	kW	1,5	2,2	3,5	4,0	5,1	4,7
Power input	(P3/P4)	kW	2,5	3,1	4,7	5,4	6,8	6,4
Cooling in freecooling mode (100%)								
System side: Water temperature (in/out) 14°C/*; Water flow rate as in cooling operation; Glycol 0 %								
Dry-cooler side: Water temperature (in/out) 6,7°C/*; Water flow rate as in cooling operation; Glycol 35%								
Cooling capacity		kW	82,2	108,5	137,9	188,0	241,3	283,9
Water flow rate		l/h	24718	32876	41676	55673	71920	84920
Useful static pressure	(D1/D2)	kPa	71	79	109	141	144	125
Useful static pressure	(D3/D4)	kPa	125	154	180	218	202	160
Power input	(D1/D2)	kW	2,3	3,7	4,1	6,0	12,3	12,7
Power input	(D3/D4)	kW	3,0	4,9	5,4	6,7	11,8	13,9
Dry cooler side (freecooling mode)								
Water flow rate		l/h	24718	32876	41676	55673	71920	84920
Useful static pressure	(D1/D2)	kPa	119	126	138	173	187	178
Useful static pressure	(D3/D4)	kPa	172	201	209	250	245	214
Power input	(D1/D2)	kW	2,3	3,7	4,1	6,0	12,3	12,7
Power input	(D3/D4)	kW	3,0	4,9	5,4	6,7	11,8	13,9
Power input								

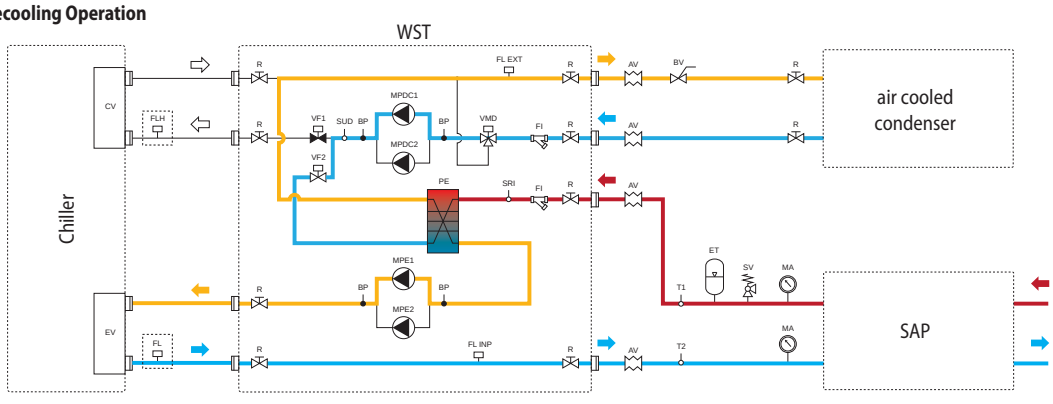
GENERAL DATA			01	02	03	04	05	06
Electrical data								
Total input current	(P1/P2)	A	2,7	3,9	5,8	6,6	8,5	7,8
	(P3/P4)	A	4,3	5,5	7,8	8,9	11,1	10,4
	(D1/D2)	A	4,0	6,0	6,6	9,9	20,8	20,3
	(D3/D4)	A	5,2	8,2	9,0	10,9	18,9	22,0
Maximum current (FLA)	P1(P2) - D1(D2)	A	8,6	13,1	16,3	19,1	31,2	37,0
	P3(P4) - D1(D2)	A	11,4	14,4	19,1	22,0	34,8	40,6
	P1(P2) - D3(D4)	A	10,0	16,0	19,1	22,7	37,0	37,0
	P3(P4) - D3(D4)	A	12,8	17,2	22,0	25,6	40,6	40,6
hydraulic connections								
hydraulic connections (in/out)		type	Victaulic	Victaulic	Victaulic	Victaulic	Victaulic	Victaulic
hydraulic connections system side		Ø	2" 1/2	2" 1/2	2" 1/2	2" 1/2	3"	3"
hydraulic connections (chiller)		Ø	2" 1/2	2" 1/2	2" 1/2	2" 1/2	3"	3"
hydraulic connections (dry cooler)		Ø	2" 1/2	2" 1/2	2" 1/2	2" 1/2	3"	3"

OPERATING SCHEMATICS

Chiller Operation

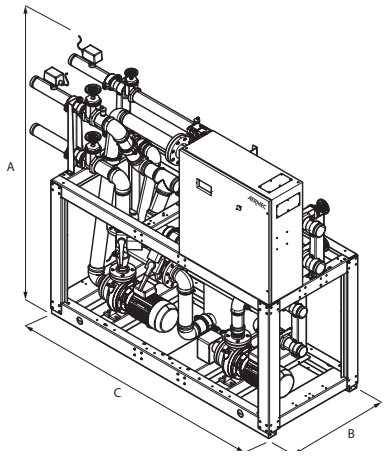


Freecooling Operation



The images and drawings contained in this document are indicative only, for the purpose of illustrating the operation

DIMENSIONAL DATA (MM)



Mod. WST water station				01	02	03	04	05	06
Height		A	mm	1835	1837	1835	1956	2206	2206
Width		B	mm	796	796	796	796	796	796
Depth	(3)	C	mm	1400	1500	2010	2282	2579	2623
Weight empty		without pump stand-by	Kg	487	577	684	893	1054	1074
		with pump stand-by	Kg	579	790	941	1140	1320	1350

(3) Including protrusions of the hydraulic connections

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