PRELIMINARY

CPS

Multifunctional Unit with Multiple Temperature Level Capability

Cooling capacity 47 - 140 Tons
Heating capacity 600,536 - 1,723,131 Btu/h

- **Simultaneous and independent production of chilled water, medium temperature hot water and high temperature hot water (also suitable for domestic use)**
- **Max. processed water temperature 163°F**
- **Uses heat recovery for simultaneous cooling and heating**
- **High efficiency also at partial loads**

DESCRIPTION

The CPS multifunction units are intended for use in residential buildings and accommodation facilities requiring the simultaneous availability of heating and cooling functionality for the rooms served, and high temperature water (delivered from machine at up to 163 °F) for heating and/ or DHW production requirements.
The versatile functions, extended operating limits and simplified installation of these units mean that they can also be used in a variety of different industrial processes.
CPS the ideal solution for both new installations and upgrading existing systems.

FEATURES

Operating field

Possibility to produce water up to 163°F, using mainly free-heating for cooling requests.

2 dual circuit units

Created by combining and optimising, in a single system, an NRP series 4-pipe multifunction air-water unit (with scroll compressors and R410A refrigerant) **for the production of chilled water and medium temperature hot water on the heating/cooling circuit side,** and a WWB series water-water heat pump (with scroll compressors and R134a refrigerant) **for the production of domestic hot water (DHW).**

Constructional characteristics of unit

CPS units can be installed and operated even in locations with limit space, offering significant time savings in terms of both system planning and installation, while tried-and-tested, optimised management logic makes it possible to create plug-and-play systems with superior reliability and efficiency.
These units consist of:
4 cooling circuits
— 2 circuits (C1/C2) with R410A gas
— 2 circuits (C2/C3) with R134a gas
3 plate heat exchanger
— 1 Plate heat exchanger for chilled water
— 1 Plate heat exchanger for medium temperature hot water
— 1 Inspectable **stainless steel** plate heat exchanger for high temperature hot water production (DHW)
The base the structure and the panels are made of steel treated with polyester paint RAL 9003.

Condensation control temperature

Fitted as standard with a device for electronic condensation control so that the unit can work even with low temperatures, adapting the air flow rate to the actual system request in order to reduce consumption.

Option integrated hydronic kit

To create a solution which offers both cost savings and facilitated installation, these units may be configured with an integrated hydronic kit on the chilled water utility side. A hydronic kit must always be used, however, on the medium temperature water side.
These kits include all the main plumbing components necessary, and are available in a variety of configurations with either a single pump or with a backup pump to offer a choice of different total head values.

■ *Flow switches must be installed on both the cold and medium temperature water utility circuits to protect the heat exchangers. Failure to do so will render the warranty null and void.*

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.
— 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.
— **Floating HP control:** available for all models with inverter fans or with DCPX. Together with continuous fan modulation, it optimises unit operation in any working point, enhancing energy efficiency with partial loads. **ESEER up to +7% with inverter fans.**
— **Night Mode:** it is possible to set a silenced operation profile. Perfect for night operation since it guarantees greater acoustic comfort in the evenings, and a high efficiency in the time of greater load. **Night Mode for standard versions is mandatory DCPX accessory (standard on all low noise versions) or "J" inverter fan**

CONFIGURATOR

Field		Description
1,2,3		**CPS**
4,5,6,7		**Size** 0704, 1004, 1805
8		**Coils**
	°	Copper-aluminium
	R	Copper-copper
	S	Copper-Tinned copper
	V	Copper-painted alumimium
9		**Fans**
	°	Asynchronous + DCPX
	J	Inverter
10		**Power supply**
	°	400V ~ 3 50Hz with magnet circuit breakers
	S	400V ~ 3 50Hz with soft-start
11,12		**Hydronic kit integrated on chilled water utility side**
	00	Without hydronic kit
	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
	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
13,14		**Hydronic kit integrated on medium temperature water utility side**
	RA	Pump A
	RB	Pump B
	RC	Pump C
	RD	Pump D
	RE	Pump E
	RF	Pump F
	RG	Pump G
	RH	Pump H
	RI	Pump I
	SA	Pump A + stand-by pump
	SB	Pump B + stand-by pump
	SC	Pump C + stand-by pump
	SD	Pump D + stand-by pump
	SE	Pump E + stand-by pump
	SF	Pump F + stand-by pump
	SG	Pump G + stand-by pump
	SH	Pump H + stand-by pump
	SI	Pump I + stand-by pump

COMPATIBILITY BETWEEN DIFFERENT HYDRONIC KITS

These kits include all the main plumbing components necessary, and are available in a variety of configurations with either a single pump or with a backup pump to offer a choice of different total head values.

The following table illustrates the compatibility between different unit sizes and the hydronic kits.
All units must be configured with the medium temperature water side hydronic kit.

PUMPS COLD WATER SIDE	CPS0704	CPS1004	CPS1805
PA-DA	PA-DA		
PB-DB	PB-DB	PB-DB	
PC-DC	PC-DC	PC-DC	
PD-DD	PD-DD	PD-DD	
PE-DE	PE-DE	PE-DE	PE-DE
PF-DF		PF-DF	PF-DF
PG-DG			PG-DG
PH-DH			PH-DH
PI-DI			PI-DI

PUMPS HOT WATER (AVERAGE TEMPERATURE) SIDE	CPS0704	CPS1004	CPS1805
RA-SA	RA-SA		
RB-SB	RB-SB	RB-SB	
RC-SC	RC-SC	RC-SC	
RD-SD	RD-SD	RD-SD	
RE-SE		RE-SE	RE-SE
RF-SF		RF-SF	RF-SF
RG-SG			RG-SG
RH-SH			RH-SH
RI-SI			RI-SI

PERFORMANCE SPECIFICATIONS

		CPS0704	CPS1004	CPS1805
Household system side cooling (1)				
Cooling capacity	Tons	47	74	140
Input power	kW	53.2	86.3	165.7
Cooling total input current	A	97	128	239
EER	W/W	3.08	3.00	2.96
Water flow rate system side	gpm	124	196	371
Pressure drop system side	in/h2O	125	137	197
Medium temperature system heating (2)				
Heating capacity	Btu/hr	600,195	930,832	1,722,790
Input power	kW	55.8	85.9	160.4
Heating total input current	A	100	129	237
COP	W/W	3.15	3.17	3.15
Water flow rate system side	gpm	134	206	382
Pressure drop system side	in/h2O	743	808	1097
High temperature system side heating (DHW) (3)				
Heating capacity (DHW)	Btu/hr	309,481	605,313	859,518
Input power	kW	46.2	81.1	136.5
Heating total input current	A	84	127	198
COP	W/W	1.96	2.19	1.84
Water flow rate domestic hot water side	gpm	35	68	97
Pressure drop domestic hot water side	in/h2O	125	165	161
Simultaneous operation (cooling + medium temperature heating) (4)				
Cooling capacity	Tons	46	73	133
Heating capacity	Btu/hr	711,432	1,130,101	2,054,109
Input power	kW	48.5	78	146.4
Total input current	A	88	129	240
TER	W/W	7.67	7.54	7.30
Water flow rate cold side	gpm	124	196	371
Pressure drop cold side	in/h2O	125	137	197
Water flow rate hot side	gpm	134	206	382
Pressure drop hot side	in/h2O	185	201	273
Simultaneous operation (cooling + high temperature DHW production) (5)				
Cooling capacity	Tons	45	71	132
Heating capacity (DHW)	BTU/hr	309,481	605,313	859,518
Input power	kW	69.2	120.8	211.7
Total input current	A	126	191	333
TER	W/W	3.62	3.54	3.38
Water flow rate cold side	gpm	124	196	371
Pressure drop cold side	in/h2O	125	137	197
Water flow rate domestic hot water side	gpm	35	68	97
Pressure drop domestic hot water side	in/h2O	125	165	161
Simultaneous operation (medium temperature heating + high temperature DHW production) (6)				
Heating capacity	Btu/hr	348,379	444,943	1,043,432
Heating capacity (DHW)	Btu/hr	309,481	605,313	859,518
Input power	kW	74.5	124.6	217.9
Total input current	A	134	191	330
TER	W/W	2.59	2.47	2.56
Water flow rate hot side	gpm	134	206	382
Pressure drop hot side	in/h2O	185	201	273
Water flow rate domestic hot water side	gpm	35	68	97
Pressure drop domestic hot water side	in/h2O	125	165	161
Simultaneous operation (cooling + medium temperature heating + high temperature DHW production) (7)				
Cooling capacity	Tons	46	73	133
Heating capacity	BTU/hr	459,615	644,212	1,374,752
Heating capacity (DHW)	BTU/hr	309,481	605,313	859,518
Total input power	kW	67,10	116,80	203,90
Total input current	A	121	192	334
TER	W/W	5.79	5.35	5.50
Water flow rate cold side	gpm	124	196	371
Pressure drop cold side	in/h2O	125	137	197
Water flow rate hot side	gpm	134	206	381
Pressure drop hot side	in/h2O	185	201	273
Water flow rate domestic hot water side	gpm	35	68	97
Pressure drop domestic hot water side	in/h2O	125	165	161

(1) Data 14511:2018; System side water heat exchanger 54°F/45°F; External air 95°F
(2) Data 14511:2018; System side water heat exchanger 104°F/ 113°F; Outside air 45°F d.b. / 43° w.b.
(3) Data 14511:2018; Heat exchanger - services side (DHW at high temperature) 131°F / 149°F; Outside air 45°F D.B./43°F W.B.
(4) Water exchanger to the total recovery side * / 113°F; Water to the system side heat exchanger * / 45°F;
(5) Data 14511:2018; Heat exchanger water (services side) 54°F / 45°F; outside air 95°F; Heat exchanger water (DHW side) 131°F / 149°F

(6) Data 14511:2018; Heat exchanger water (services side) * °C / 113°F; Outside air 45°F D.B./43°F W.B.; Heat exchanger water (DHW side) 131°F / 149°F
(7) Heat exchanger - services side (cold water) * / 45°F; Heat exchanger - services side (hot water at average temperature) * / 113°F; Heat exchanger - services side (hot water at high temperature) 131°F / 149°F

ENERGY DATA

		CPS0704	CPS1004	CPS1805
Cooling capacity with low leaving water temp (UE n° 2016/2281)				
SEER	BTU/hr	-	-	15
ηsc	%	-	-	180%
UE 813/2013 performance in average ambient conditions (average) - 67 °F - Pdesignh ≤ 400 kW (1)				
Pdesignh	kW	150	241	-
SCOP		2.66	2.76	-
ηsh	%	103%	107%	-
UE 813/2013 performance in average ambient conditions (average) - 31 °F - Pdesignh ≤ 400 kW (2)				
Pdesignh	kW	158	246	-
SCOP		3.26	3.44	-
ηsh	%	128%	135%	-

(1) Efficiencies for average temperature applications (55 °F)
(2) Efficiencies for low temperature applications (95 °F)

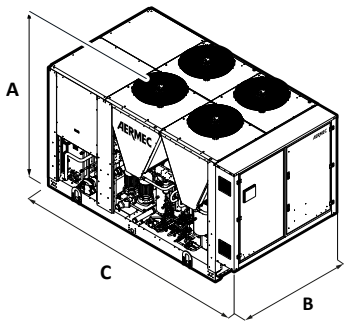
ELECTRIC DATA

		CPS0704	CPS1004	CPS1805
Cooling only mode				
Maximum current (FLA)	A	153	220	420
Peak current (LRA)	A	293	459	746
Medium temperature heating mode operation only				
Maximum current (FLA)	A	153	220	420
Peak current (LRA)	A	293	459	746
High temperature DHW production operating mode only)				
Maximum current (FLA)	A	121	203	320
Peak current (LRA)	A	261	442	645
Simultaneous operation (medium temperature heating + cooling)				
Maximum current (FLA)	A	138	197	381
Peak current (LRA)	A	278	436	707
Simultaneous operation (medium temperature heating + high temperature DHW production)				
Maximum current (FLA)	A	197	308	549
Peak current (LRA)	A	337	547	874
Simultaneous operation (cooling + DHW production operating)				
Maximum current (FLA)	A	189	300	533
Peak current (LRA)	A	329	539	858
Simultaneous operation (cooling + medium temperature heating + high temperature DHW production)				
Maximum current (FLA)	A	181	284	510
Peak current (LRA)	A	321	523	835

GENERAL TECHNICAL DATA

		CPS0704	CPS1004	CPS1805
Compressor - Circuit (C1/C2)				
Type	type		Scroll	
Number	no.	4	4	5
Circuits	no.	2	2	2
Refrigerant	type		R410A	
Refrigerant charge	lbs	99	134	234
Thermostatic expansion valve	type		Mechanics	
Compressor - Circuit (C3/C4)				
Type	type		Scroll	
Number	no.	2	2	2
Circuits	no.	2	2	2
Refrigerant	type		R134a	
Refrigerant charge	lbs	15	33	44
Thermostatic expansion valve	type		Electronic	
Utility side heat exchanger (cooling)				
Type	type		Brazed plate	
Number	no.	1	1	1
Connections (in/out)	Type		Grooved joints	
Sizes (in/out)	Ø	2" 1/2	3"	4"
Utility side heat exchanger (medium temperature heating)				
Type	type		Brazed plate	
Number	no.	2	2	2
Manifold connection (in/out)	Type		Grooved joints	
Manifold diameter (in/out)	Ø	2" 1/2	3"	4"
Utility side heat exchanger (high temperature heating)				
Type	type		Brazed plate	
Number	no.	1	1	1
Connections (in/out)	Type		Gas	
Sizes (in/out)	Ø		2" M	
Fan				
Type	type		Axial	
Fan motor	type		Asynchronous with phase cut	
Number	no.	6	10	4
Air flow rate	CFM	68,669	114,242	51,794

DIMENSIONS



		CPS0704	CPS1004	CPS1805
Dimensions and weights				
A	in	96	96	96
B	in	87	87	87
C	in	156	227	321

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