

CPS

Multifunction unit with multiple temperature level capability

Cooling capacity 164 ÷ 491 kW
Heating capacity 176 ÷ 505 kW



- Multipurpose 6 pipes plug and play system
- Simultaneous and independent production of chilled water, medium temperature hot water and high temperature hot water (also suitable for domestic use)
- Uses heat recovery for simultaneous cooling and heating



DESCRIPTION

The multi-purpose 6-pipe units CPS are designed for residential buildings and accommodation facilities that require the simultaneous availability of heating and cooling for the rooms, along with high-temperature water (up to 73°C on the machine outlet) for heating needs and/or DHW production.

Each single service (cooling, medium-temperature heating, high-temperature hot water) can be supplied independently of the request for the others.

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 73°C, 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 PCO⁵

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 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:** Allows, with continuous fan modulation, to optimize the operation of the unit in any operating point, ensuring

- an increase in the energy efficiency at partial load. **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.

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 aluminium
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

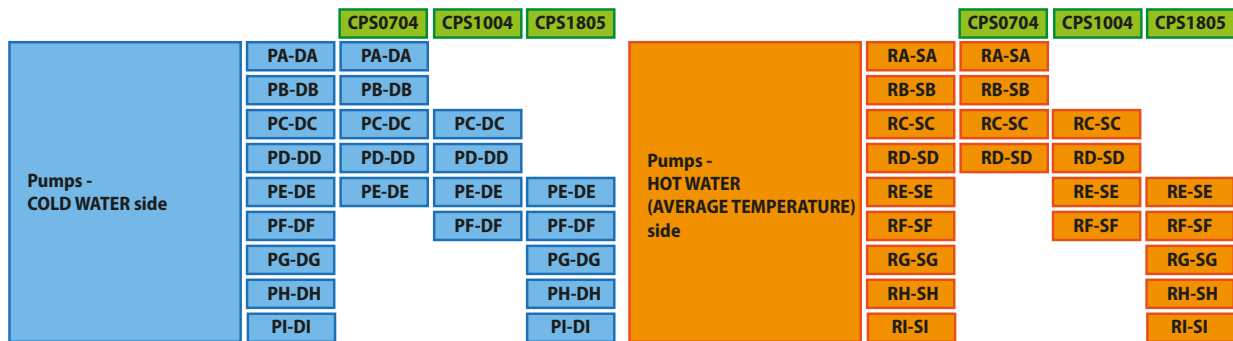
Field	Description
PC	Pump C
PD	Pump D
PE	Pump E
PF	Pump F
PG	Pump G
PH	Pump H
PI	Pump I
13,14	Hydronic kit integrated on medium temperature water utility side
RA	Pump A
RB	Pump B
RC	Pump C
RD	Pump D
RE	Pump E
RF	Pump F
RG	Pump G
RH	Pump H
RI	Pump I
SA	Pump A + stand-by pump
SB	Pump B + stand-by pump
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.



PERFORMANCE SPECIFICATIONS

		CPS0704 ⁰⁰⁰ 00RA	CPS1004 ⁰⁰⁰ 00RC	CPS1805 ⁰⁰⁰ 00RE
Household system side cooling (1)				
Cooling capacity	kW	163,9	259,2	490,5
Input power	kW	53,2	86,3	165,7
Cooling total input current	A	97,0	128,0	239,0
EER	W/W	3,08	3,00	2,96
Water flow rate system side	l/h	28212	44593	84370
Pressure drop system side	kPa	32	34	49
Medium temperature system heating (2)				
Heating capacity	kW	175,2	271,8	503,5
Input power	kW	55,8	86,5	161,7
Heating total input current	A	104,0	136,0	250,0
COP	W/W	3,14	3,14	3,11
Water flow rate system side	l/h	30521	47339	87653
Useful head system side	kPa	99	120	113
High temperature system side heating (DHW) (3)				
Heating capacity (DHW)	kW	90,7	177,4	251,9
Input power	kW	48,4	85,3	144,3
Heating total input current	A	88,0	134,0	211,0
COP	W/W	1,87	2,08	1,75
Water flow rate domestic hot water side	l/h	7897	15442	21924
Pressure drop domestic hot water side	kPa	30	40	39
Simultaneous operation (cooling + medium temperature heating) (4)				
Cooling capacity	kW	163,3	258,3	466,2
Heating capacity	kW	207,8	330,2	600,6
Input power	kW	48,4	78,7	147,7
Total input current	A	92	136	253
TER	W/W	7,66	7,47	7,22
Water flow rate cold side	l/h	28212	45593	84370
Pressure drop cold side	kPa	32	34	49
Water flow rate hot side	l/h	30521	47339	87653
Useful head system side	kPa	99	120	113
Simultaneous operation (cooling + high temperature DHW production) (5)				
Cooling capacity	kW	160,0	250,0	463,5
Heating capacity (DHW)	kW	90,7	177,4	251,9
Input power	kW	70,7	124,1	217,0
Cooling total input current	A	126	191	333
TER	W/W	3,54	3,45	3,30
Water flow rate cold side	l/h	27536	43003	79720
Pressure drop cold side	kPa	30	31	44
Water flow rate domestic hot water side	l/h	7899	15442	21924
Pressure drop domestic hot water side	kPa	30	40	39
Simultaneous operation (medium temperature heating + high temperature DHW production) (6)				
Heating capacity	kW	101,4	129,5	304,2
Heating capacity (DHW)	kW	90,5	177,0	251,3
Input power	kW	73,7	123,9	215,6
Total input current	A	137	196	341
TER	W/W	2,60	2,47	2,58
Water flow rate hot side	l/h	17696	22604	53038
Useful head system side	kPa	158	189	256
Water flow rate domestic hot water side	l/h	7897	15442	21924
Pressure drop domestic hot water side	kPa	30	40	39
Simultaneous operation (cooling + medium temperature heating + high temperature DHW production) (7)				
Cooling capacity	kW	163,3	258,3	466,2
Heating capacity	kW	134,0	187,9	401,4
Heating capacity (DHW)	kW	90,5	177,0	251,3
Total input power	kW	66,7	116,6	204,1
Total input current	A	125	199	347
TER	W/W	5,81	5,35	5,48
Water flow rate cold side	l/h	28212	44593	84370
Pressure drop cold side	kPa	32	34	49
Water flow rate hot side	l/h	30521	47339	87653
Useful head system side	kPa	99	120	113
Water flow rate domestic hot water side	l/h	7897	15442	21924
Pressure drop domestic hot water side	kPa	30	40	39

(1) Data 14511:2018; System side water heat exchanger 12 °C/7 °C; External air 35 °C

(2) Data 14511:2018; System side water heat exchanger 40 °C/45 °C; Outside air 7 °C d.b. / 6 °C w.b.

(3) Data 14511:2018; Heat exchanger - services side (DHW at high temperature) 55 °C / 65 °C; Outside air 7 °C D.B./6 °C W.B.

(4) Water exchanger to the total recovery side * / 45 °C; Water to the system side heat exchanger * / 7 °C;

(5) Data 14511:2018; Heat exchanger water (services side) 12 °C / 7 °C; outside air 35 °C; Heat exchanger water (DHW side) 55 °C / 65 °C

(6) Data 14511:2018; Heat exchanger water (services side) * °C / 45 °C; Outside air 7 °C D.B./6 °C W.B.; Heat exchanger water (DHW side) 55 °C / 65 °C

(7) Heat exchanger - services side (cold water) * / 7 °C; Heat exchanger - services side (hot water at average temperature) * / 45 °C; Heat exchanger - services side (hot water at high temperature) 55 °C / 65 °C

ENERGY DATA

		CPS0704 ⁰⁰⁰ 00RA	CPS1004 ⁰⁰⁰ 00RC	CPS1805 ⁰⁰⁰ 00RE
Cooling capacity with low leaving water temp (UE n° 2016/2281)				
SEER	W/W	-	-	4,56
η_{sc}	%	-	-	180%
UE 813/2013 performance in average ambient conditions (average) - 55 °C - Pdesignh ≤ 400 kW (1)				
Pdesignh	kW	150	241	-
SCOP		2,66	2,76	-
η_{sh}	%	103%	107%	-
UE 813/2013 performance in average ambient conditions (average) - 35 °C - Pdesignh ≤ 400 kW (2)				
Pdesignh	kW	158	246	-
SCOP		3,26	3,44	-
η_{sh}	%	128%	135%	-

(1) Efficiencies for average temperature applications (55 °C)

(2) Efficiencies for low temperature applications (35 °C)

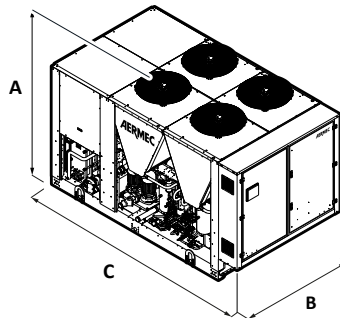
ELECTRIC DATA

		CPS0704 ⁰⁰⁰ 00RA	CPS1004 ⁰⁰⁰ 00RC	CPS1805 ⁰⁰⁰ 00RE
Cooling only mode				
Maximum current (FLA)	A	153,0	220,0	420,0
Peak current (LRA)	A	293,0	459,0	746,0
Medium temperature heating mode operation only				
Maximum current (FLA)	A	153,0	220,0	420,0
Peak current (LRA)	A	293,0	459,0	746,0
High temperature DHW production operating mode only				
Maximum current (FLA)	A	121,0	203,0	320,0
Peak current (LRA)	A	261	442	645
Simultaneous operation (medium temperature heating + cooling)				
Maximum current (FLA)	A	138,0	197,0	381,0
Peak current (LRA)	A	278	436	707
Simultaneous operation (medium temperature heating + high temperature DHW production)				
Maximum current (FLA)	A	197,0	308,0	549,0
Peak current (LRA)	A	337	547	874
Simultaneous operation (cooling + DHW production operating)				
Maximum current (FLA)	A	189,0	300,0	533,0
Peak current (LRA)	A	329	539	858
Simultaneous operation (cooling + medium temperature heating + high temperature DHW production)				
Maximum current (FLA)	A	181,0	284,0	510,0
Peak current (LRA)	A	321	523	835

GENERAL TECHNICAL DATA

		CPS0704 ⁰⁰⁰ 00RA	CPS1004 ⁰⁰⁰ 00RC	CPS1805 ⁰⁰⁰ 00RE
Compressor - Circuit (C1/C2)				
Type	type		Scroll	
Number	no.	4	4	5
Circuits	no.	2	2	2
Refrigerant	type		R410A	
Refrigerant charge	kg	45,0	61,0	106,0
Thermostatic expansion valve	type		Meccanica	
Compressor - Circuit (C3/C4)				
Type	type		Scroll	
Number	no.	2	2	2
Circuits	no.	2	2	2
Refrigerant	type		R134a	
Refrigerant charge	kg	7,0	15,0	20,0
Thermostatic expansion valve	type		Electronica	
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.	4	6	10
Air flow rate	m ³ /h	88000	116500	194100

DIMENSIONS



		CPS0704 ⁰⁰⁰ 00RA	CPS1004 ⁰⁰⁰ 00RC	CPS1805 ⁰⁰⁰ 00RE
Dimensions and weights				
A	mm	2450	2450	2450
B	mm	2200	2200	2200
C	mm	3975	5760	8143

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