HUB RADIATOR PACK C

High efficiency patented integrated hybrid system in heat pump with direct refrigerant / water exchange with support boiler to produce domestic hot water and heating for small and medium users

ENERGY RATING

Technical and construction features

The HUB RADIATOR PACK C hybrid system consists of one unit external motoevaporating unit in heat pump (Booster HR hot only 3.0 or 7.8) and by an internal storage unit for technical water of 62 liters with patented direct refrigerant / water exchange condenser and instantaneous anti-legionella immersion sanitary exchanger, coupled with a modulating backup condensation (20 kW, 24 kW or 32 kW).
The condensing boiler is directly connected to the technical water puffer and both components are housed on the machine which includes as standard:
- the inverter electronic circulation pump
- the manual filling and emptying unit
- the expansion tank
- the safety and automatic vent valves
- the base template.

The methane gas heat generator uses a highly modular premix condensing burner mounted on the latest generation boiler body with powers of 20 kW, 24 kW and 32 kW.
Combustion, with a constant stoichiometric air-gas ratio, allows to eliminate polluting CO2 emissions and to reduce
NOx emissions.
The patented HUB RADIATOR PACK C system always uses the thermodynamic cycle of the heat pump as its primary source.
The high efficiency of the heat pump with the help, when necessary, of the condensing boiler allows for great savings, excellent reliability and operation down to temperatures of - 20 ° C.
The electronic control unit is equipped with a latest generation microprocessor that allows the user to set an automatic management of the hybrid system with the Energy Efficiency function which allows to optimize energy consumption both for the production of DHW and for the winter air conditioning by going to activate the boiler only if strictly necessary.
The HUB RADIATOR patent also makes it possible to significantly reduce winter defrosting operations allowing considerable energy savings during the defrosting phase up to 79% compared to classic heat pumps.
HUB RADIATOR PACK C is also supplied as standard with an external climatic probe and lower support / support that allows easier and faster installation.

Models	Code	€
HUB RADIATOR PACK C 3.0/20 wall unit	**76801900**	**6.350,00**
HUB RADIATOR PACK C 3.0/24 wall unit	**76802000**	**6.550,00**
HUB RADIATOR PACK C 3.0/32 wall unit	**76803900**	**6.600,00**
HUB RADIATOR PACK C 7.8/20 wall unit	**76801010**	**8.390,00**
HUB RADIATOR PACK C 7.8/24 wall unit	**76803914**	**8.590,00**
HUB RADIATOR PACK C 7.8/32 wall unit	**76803910**	**8.640,00**
HUB RADIATOR PACK C 3.0/20 built-in	**76801902**	**6.790,00**
HUB RADIATOR PACK C 3.0/24 built-in	**76802002**	**6.990,00**
HUB RADIATOR PACK C 3.0/32 built-in	**76802902**	**7.040,00**
HUB RADIATOR PACK C 7.8/20 built-in	**76801912**	**8.830,00**
HUB RADIATOR PACK C 7.8/24 built-in	**76802012**	**9.030,00**
HUB RADIATOR PACK C 7.8/32 built-in	**76802912**	**9.080,00**
Unità interna HUB RADIATOR PACK C 3.0/20	**76801914**	**4.350,00**
Unità interna HUB RADIATOR PACK C 3.0/24	**76802014**	**4.500,00**
Unità interna HUB RADIATOR PACK C 3.0/32	**76802914**	**4.600,00**
Unità interna HUB RADIATOR PACK C 7.8/20	**76801915**	**4.690,00**
Unità interna HUB RADIATOR PACK C 7.8/24	**76802015**	**4.840,00**
Unità interna HUB RADIATOR PACK C 7.8/32	**76802915**	**4.940,00**
Indoor Unit Booster HR 3.0 only heating	**76010240**	**2.000,00**
Indoor Unit Booster HR 7.8 only heating	**76010500**	**3.700,00**

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Accessories HUB RADIATOR PACK C			Codice	€
	HUB RADIATOR PACK C recessed template complete with flush-to-wall closing panel in galvanized sheet metal		**76801916**	**440,00**
	Cover box HUB RADIATOR PACK C mandatory for the installation of the indoor unit outside the building made of insulated white painted galvanized steel Height 160 cm - Width 80 cm - Depth 35 cm		**75101022**	**490,00**
	HUB RADIATOR PACK C wall-mounted installation template for preparation of all piping on site		**76801919**	**190,00**
	Command and remote control panel	**mod.** built-in **mod.** on the wall	**75100005** **75100028**	**90,00** **110,00**
	Command and remote control panel condensing boiler (it is not a room thermostat)		**30400034**	**140,00**
	Load control relay for managing the absorbed power	mod. BUS connection mod. Radio frequency	**37081062** **37081063**	**148,00** **336,00**
	Web server home automation control unit		**75101005**	**580,00**
	Mixing valve for radiant systems	mod. fixed mechanical adjustment mod. motorized adjustment	**75101032** **75101033**	**90,00** **530,00**
	Anchoring shelf for external Booster including rubber anti-vibration mounts	**mod. Booster HR 3.0** **mod. Booster HR 7.8**	**37081060** **37081061**	**50,00** **90,00**
	Anchoring bracket for inclined roof for external Booster mod. HR 3.0 - 7.8 including rubber anti-vibration mounts		**37081064**	**130,00**
	Antivibration floor base in vulcanized rubber (height from the ground mm 95) with level and screws for Booster HR 3.0 - 7.8 (pack of 2 pieces)		**75100018**	**94,00**
	Anti-vibration kit for installation on shelves		**75100022**	**18,00**

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Accessori HUB RADIATOR PACK C			Codice	€
	Spring anti-vibration kit in stainless steel complete with bolts, washers and nuts (pack of 2 pieces)	**mod. HR 3.0** **mod. HR 7.8**	**37081065** **37081066**	**52,00** **56,00**
	Condensate anti-freeze heating cable with thermal sensor, factory fitted	**mod. 3 metri 90 W** **mod. 6 metri 120 W**	**37081067** **37081068**	**56,00** **66,00**
	Auxiliary basin for installation under shelf equipped with 90 W heating cable	**mod. HR 3.0** **mod. HR 7.8**	**37081069** **37081070**	**252,00** **272,00**
	Floor support complete with auxiliary basin equipped with 90 W heating cable	**mod. HR 3.0 H fissa** **mod. HR 7.8 H fissa** **mod. HR 7.8 H variabile**	**37081071** **37081073** **37081074**	**308,00** **330,00** **354,00**
	1/2 "DHW mixing valve kit		**75100023**	**146,00**
	Anti-vibration flexible joint kit with connecting flange and straight union	**mod. HR 7.8 (5/8")** **mod. HR 3.0 (3/8")**	**75100014** **75100015**	**120,00** **60,00**
	Anti-vibration flexible joint kit with flare and 90 ° curved union	**mod. HR 7.8 (5/8")** **mod. HR 3.0 (3/8")**	**75100016** **75100017**	**120,00** **60,00**
	Coaxial starting curve Ø 60/100 at 90 ° with smoke extraction		**30403123**	**23,00**
	Vertical coaxial outlet Ø 60/100 with smoke sampling		**30403124**	**25,00**
	Coaxial flue gas exhaust kit Ø 60/100		**30403000**	**50,00**
	Coaxial roof terminal Ø 60/100		**30403014**	**118,00**
	Coaxial extension Ø 60/100 M/F = 1000 mm		**30403002**	**28,00**
	Coaxial 90° bend Ø 60/100 M/F		**30403004**	**30,00**
	Coaxial 45° bend Ø 60/100 M/F		**30403003**	**30,00**
	Splitter kit with strip from Ø 60/100 to Ø 80/80		**30403018**	**33,00**
	Separate duct kits Ø 80/80 with smoke extraction		**30403022**	**22,00**
	Extension Ø 80 M/F = 1000 mm		**30403011**	**8,00**
	Coaxial 90 ° bend Ø 80 M/F		**30403013**	**5,00**
	Coaxial 45 ° bend Ø 80 M/F		**30403012**	**5,00**

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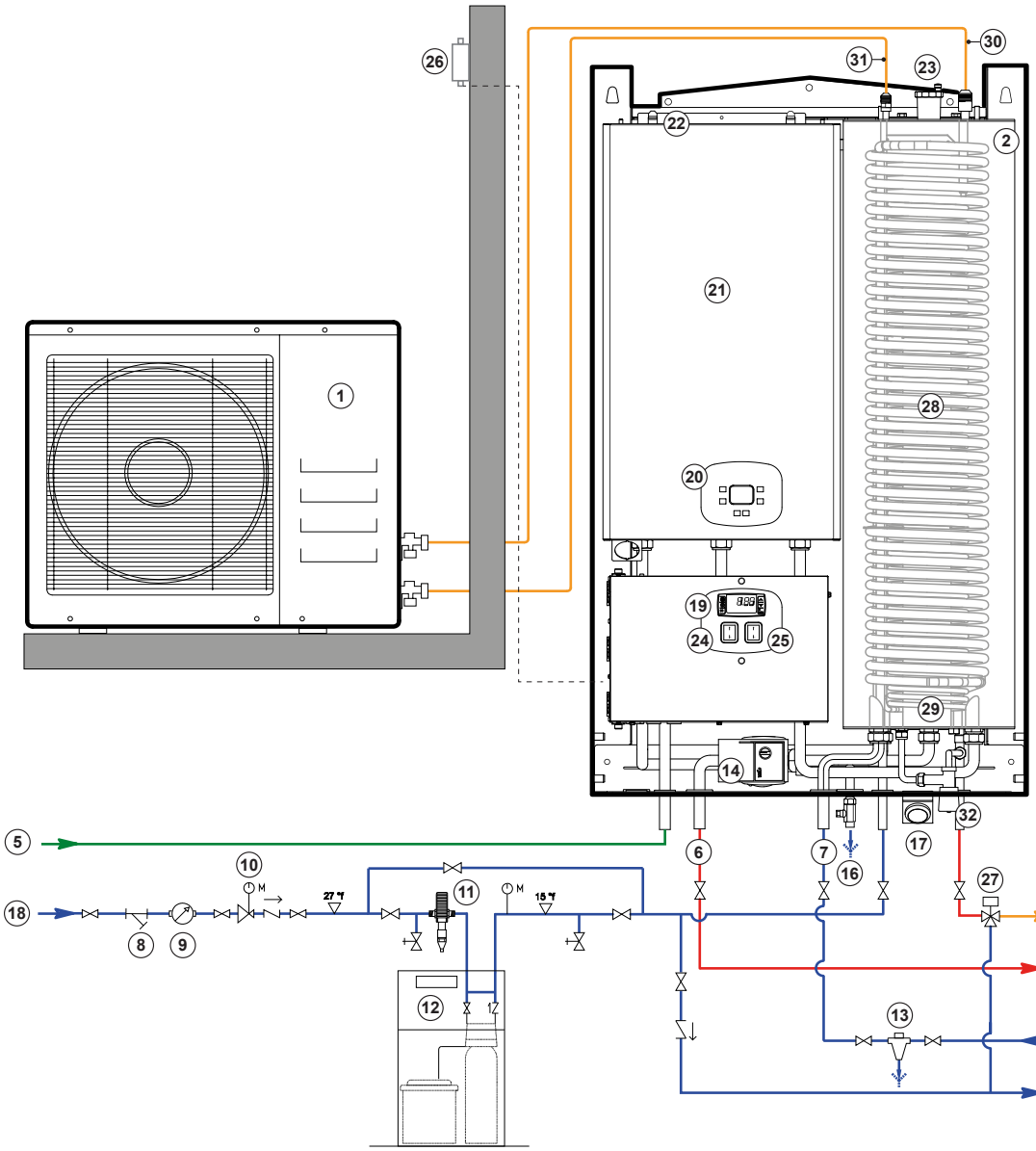
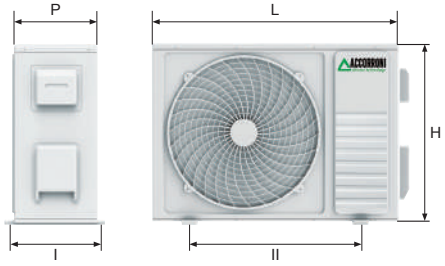
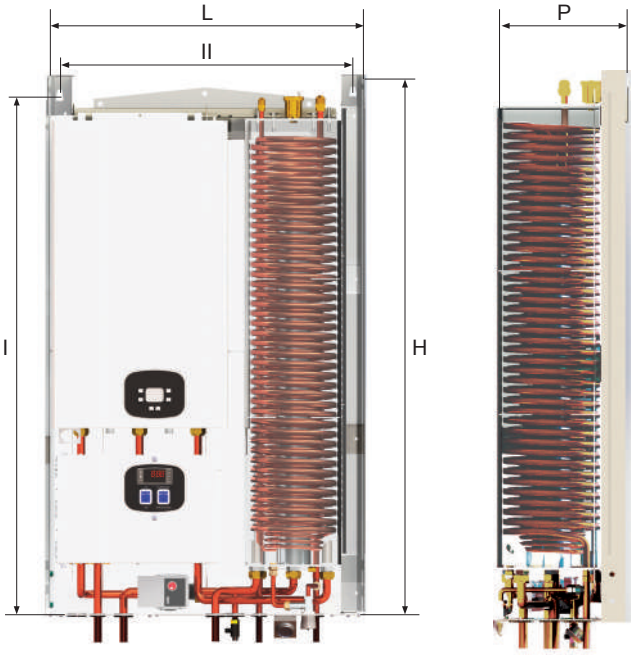
Application example HUB RADIATOR PACK C 3.0/20



1 HR 3.0 booster only hot
2 Technical storage unit 62 liters
3 Domestic hot water delivery
4 Domestic cold water delivery
5 Gas inlet G20 - G25 - G31
6 System technical water delivery
7 System technical water return
8 "Y" filter
9 Aqueduct meter
10 Pressure reducer
11 Sand trap filter
12 Softener
13 Magnetic dirt separator
14 Inverter electronic circulator
15 System manifold
16 System emptying cock
17 Pressure gauge
18 Water mains inlet
19 Digital electronic control unit
20 Boiler digital electronic control unit 21
20 kW condensing boiler 22 Coaxial fume exhaust
23 Jolly air vent valve
24 Boiler ON-OFF switch
25 Boiler emergency switch
26 External temperature probe
27 DHW mixing valve
28 DHW exchanger
29 Booster condenser exchanger 30 1/4 "R410A refrigeration line (liquid) 31 3/8" R410A refrigeration line (gas) 32 System make-up cock

Dimensions of outdoor unit and indoor unit HUB RADIATOR PACK C on wall





Model	L	H	P	I	II	weight
	mm	mm	mm	mm	mm	kg
O.U. Booster HR 3.0	700	552	256	275	435	33
O.U. Booster HR 7.8	830	585	300	330	515	43
O.U..Booster HR 9.0 INV	925	785	380	358	540	62
I.U. HR PACK C 20	720	1210	300	1170	656	110
I.U. HR PACK C 24	720	1210	300	1170	656	110
I.U. HR PACK C 32	720	1210	300	1170	656	110

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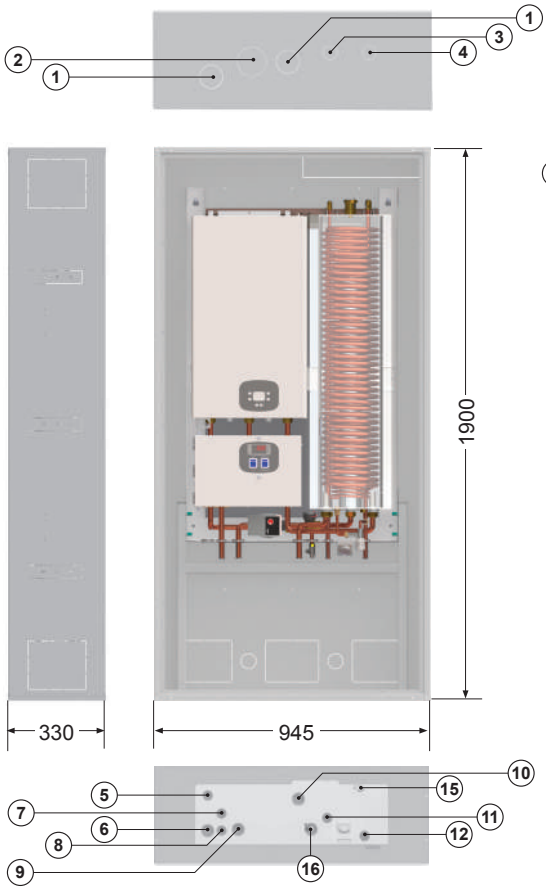
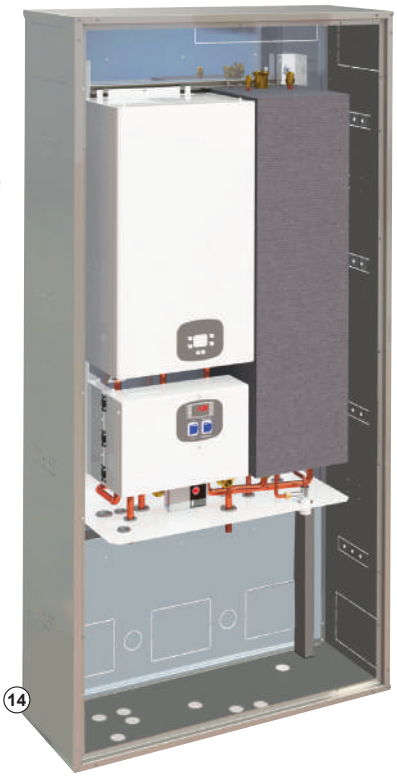
Dimensions of outdoor unit and indoor HUB RADIATOR PACK C built-in

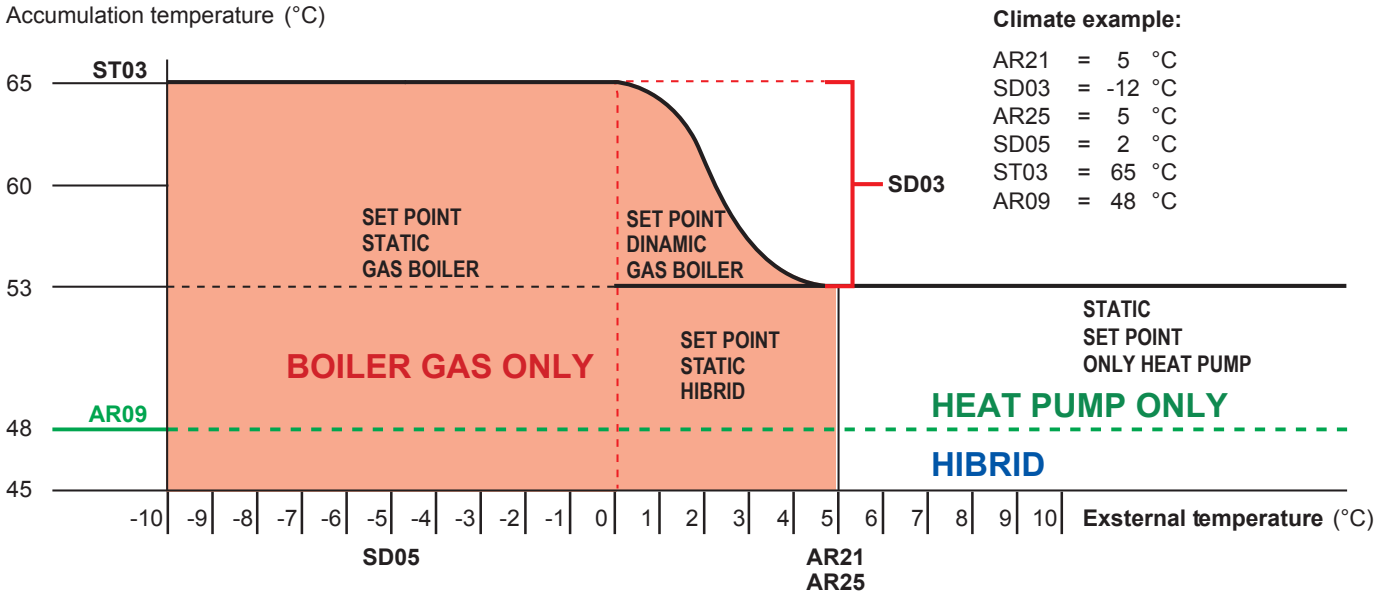




1 Combustion air inlet for split boiler exhaust Ø 80 mm
2 Coaxial boiler outlet Ø 60/100 mm
3 External Booster liquid line connection
4 External Booster gas line connection
5 Power supply line input
6 Boiler condensate drain
7 Boiler methane gas line inlet
8 External probe electrical cable entry
9 System delivery
10 System return
11 Domestic hot water delivery 12 Water mains inlet
13 Outside air temperature probe
14 Template for recessed installation
15 System filling cock
16 System drain cock

Values expressed in mm

Example of operation with external climatic probe HUB RADIATOR PACK C



The factory made hybrid system HUB RADIATOR PACK C is equipped as standard with an external temperature probe which, thanks to the microprocessor present in the indoor unit, allows you to set a fully automatic operation aimed at ensuring maximum energy efficiency based on the actual external climatic conditions. Specifically, it will be possible to establish an external temperature value (AR21) above which the use of only the renewable energy of the HP Booster is preferred both for the production of DHW and for the production of heating. Above this temperature, however, the "integration boiler" mode will remain active upon request from the storage probe to ensure the system never drops below a preset limit temperature which may vary according to the type of system terminals present.
In the external temperature range that goes from the value of the parameter (AR21) to (AR25) we will have a hybrid combined operation with the 2 generators operating simultaneously.
Below the "critical" external temperature (AR25), a "boiler only" operation will be activated which will also activate a dynamic technical water set-point so as to obtain a system delivery temperature that increases proportionally to the decrease in the temperature of the outside air.

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Indoor unit technical data table HUB RADIATOR PACK C

DESCRIPTION	U.M.	20	24	32
Appliance category			II2H3P	
Minimum heat output boiler in natural gas heating G20	kW	2,8	2,8	3,4
Maximum heat output boiler in natural gas heating G20	kW	20,0	24,0	32,0
Minimum boiler heat output in LPG gas heating	kW	2,8	2,8	3,4
Maximum boiler heat output in LPG gas heating	kW	20,0	24,0	32,0
Minimum boiler heat output in heating (80-60 ° C) methane gas G20	kW	2,5	2,5	3,3
Maximum boiler heat output in heating (80-60 ° C) natural gas G20	kW	19,2	23,0	30,8
Minimum boiler heat output in heating (80-60 ° C) LPG gas	kW	2,5	2,5	3,3
Maximum boiler heat output in heating (80-60 ° C) LPG gas	kW	19,2	23,0	30,8
Minimum boiler heat output in heating (50-30 ° C) methane gas G20	kW	2,9	2,9	3,5
Maximum boiler heat output in heating (50-30 ° C) natural gas G20	kW	20,7	24,9	33,5
Minimum boiler heat output in heating (50-30 ° C) LPG gas	kW	2,9	2,9	3,5
Maximum boiler heat output in heating (50-30 ° C) LPG gas	kW	20,7	24,9	33,5
Boiler supply pressure fed with natural gas G20	mbar		20	
LPG gas fired boiler supply pressure	mbar		30/37	
Diaphragm diameter of the boiler fed with natural gas G20	mm	5,6	5,6	6,3
LPG gas fired boiler diaphragm diameter	mm	5,6	5,6	6,3
Minimum CO2 emission from natural gas boiler G20	%	9,3	9,3	8,4
Maximum CO2 emission from natural gas boiler G20	%	9,8	9,8	10,6
Minimum CO2 emissions from LPG gas fired boiler	%	10,4	10,4	10,5
Maximum CO2 emission from LPG gas fired boiler	%	10,7	10,7	10,6
Minimum pressure of the heating circuit	bar		0,5	
Maximum pressure of the heating circuit	bar		3	
Useful boiler thermal efficiency at maximum power (60/80°C)	%	95,8	95,9	96,3
Useful boiler thermal efficiency at maximum power (30/50°C)	%	103,4	103,7	104,5
Useful boiler thermal efficiency at minimum power (60/80°C)	%	90,0	90,0	95,7
Useful boiler thermal efficiency at minimum power (30/50°C)	%	102,1	102,1	103,5
Useful boiler thermal efficiency at 30% of the load	%		107,1	
NOx emission class		6	6	5
NOx emission	mg/kWh	23	23	55
Smoke temperature	°C	70,0	70,0	74,5
Max operating temperature in heating	°C		85,0	
Methane gas consumption at maximum heating flow rate (1)	m^3/h	2,08	2,54	3,37
LPG consumption at maximum flow rate in heating(1)	m^3/h	0,64	0,75	0,97
Seasonal energy efficiency of the space heating boiler	%		92,0	
Useful boiler efficiency at nominal heat output at high temperature regime (2)	%	86,3	86,4	86,7
Useful boiler efficiency at 30% of nominal heat output at low temperature regime (3)	%		96,4	
Heat loss in boiler stand-by	kW	0,069	0,069	0,071
Annual boiler energy consumption	GJ	38,7	42,2	62,7
Seasonal boiler energy efficiency class			A	
Technical water inertial storage volume	l		62	
Expansion vessel volume	l		7	
System flow / return connections			3/4”	
Hot water and cold sanitary water connections			1/2”	
G20 / LPG methane gas inlet connection			3/4”	
Diameter of the boiler condensate drain hose	mm		22	
Coaxial smoke evacuation pipe diameter	mm		60/100	
Diameter of double ropes evacuation ducts	mm		80	
Maximum system circulator flow rate	m^3/h		3,3	
Maximum system circulator head	m		6,2	
Maximum absorbed electrical power	W	118	118	147
Power supply			230V/1/50Hz	

(1) Value referred to the external temperature of 15 °C and 1013 mbar
(2) High temperature mode with 60 °C return and 80 °C delivery
(3) Low temperature regime 30 °C (return temperature at the boiler inlet)

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Technical data table for domestic hot water withdrawal HUB RADIATOR PACK C

DESCRIPTION	U.M.	3.0/20	3.0/24	3.0/32	7.8/20	7.8/24	7.8/32
DHW production with ΔT 25 °C	l/min	15,0	15,5	20,4	16,0	16,6	21,8
DHW production with ΔT 30 °C	l/min	12,0	12,6	15,1	13,3	13,8	16,4
DHW production with ΔT 35 °C	l/min	11,0	11,3	14,2	11,4	12,0	15,8
DHW production with ΔT 40 °C	l/min	9,6	9,9	12,6	10,0	10,8	13,8
DHW production with ΔT 45 °C	l/min	8,6	8,8	11,2	8,9	9,5	12,1

Booster outdoor unit technical data table HUB RADIATOR PACK C

DESCRIPTION	U.M.	HR 3.0	HR 7.8
Thermal power(1)	kW	3,11	8,12
Absorbed power(1)	kW	0,74	1,96
C.O.P. (1)	W/W	4,20	4,14
Thermal power(2)	kW	2,97	7,75
Absorbed power (2)	kW	0,94	2,52
C.O.P. (2)	W/W	3,16	3,07
Thermal power(3)	kW	2,58	6,73
Absorbed power(3)	kW	0,74	2,00
C.O.P. (3)	W/W	3,48	3,37
Thermal power(4)	kW	2,47	6,44
Absorbed power (4)	kW	0,94	2,54
C.O.P. (4)	W/W	2,67	2,53
Thermal power(5)	kW	2,11	5,52
Absorbed power(5)	kW	0,75	2,00
C.O.P. (5)	W/W	2,81	2,76
Thermal power(6)	kW	1,99	5,20
Absorbed power (6)	kW	0,94	2,53
C.O.P. (6)	W/W	2,11	2,05
S.C.O.P. (7)	W/W	3,78	3,71
Seasonal heating efficiency (ηs)	%	153,1	150,3
Energy efficiency (8)		A / A++	
Defrost method		Reverse cycle with immersion condenser	
Type of refrigerant		R410A	
Technical water temperature min / max	°C	+ 30 / + 58	
Refrigerant quantity (pre-inserted)	kg	1,1	1,5
Min distance between outdoor and indoor unit	m	3	
Max distance between outdoor and indoor unit without charging	m	5	
Max distance between outdoor and indoor unit with recharge	m	15	
Max difference in height between outdoor and indoor unit	m	5	
Refrigerant gas line connection		3/8”	5/8”
Coolant line connection		1/4”	1/4”
Sound power (9)	dB(A)	65,1	68,4
Sound pressure at one meter (10)	dB(A)	51,2	54,7
External temperature operating limits	°C	-15 / +45	
Power supply		230V/1/50Hz	

(1) Heating: external air temperature 7 ° C d.b. - 6 ° C b.u .; inlet / outlet water temperature 30/35 ° C
(2) Heating: external air temperature 7 ° C d.b. - 6 ° C b.u .; inlet / outlet water temperature 40/45 ° C
(3) Heating: external air temperature 0 ° C d.b .; inlet / outlet water temperature 30/35 ° C
(4) Heating: outside air temperature 0 ° C d.b .; inlet / outlet water temperature 40/45 ° C
(5) Heating: outside air temperature -7 ° C d.b .; inlet / outlet water temperature 30/35 ° C
(6) Heating: external air temperature -7 ° C d.b .; inlet / outlet water temperature 40/45 ° C
(7) Heating: average climatic conditions; inlet / outlet water temperature 30/35 ° C
(8) Water 35 ° C / 55 ° C
(9) Measurements carried out according to UNI EN 14511 in heating mode and boundary conditions (1)
(10) Value calculated according to ISO 3744: 2010