

HUB RADIATOR AP

Patented high efficiency heat pump system with direct refrigerant / water exchange to produce heating, air conditioning and domestic hot water for small and medium users



ENERGY RATING



PATENTED SYSTEM



RENEWABLE ENERGY



ENERGY SAVING



COMPRESSOR INVERTER



COMPACT DIMENSIONS



ECOLOGICAL GAS



PHOTOVOLTAIC COMBINATION



DHW WITHOUT LEGIONELLA



HEATING UP TO 58 °C



CONDITIONING UP TO 4 °C

Technical and construction features

HUB RADIATOR AP is a patented high efficiency system with direct refrigerant / water exchange to produce domestic hot water, heating and / or air conditioning.

The system consists of 2 main elements:

- 1) Accumulator with 160 or 200 liters of closed vessel technical water with copper condenser exchangers on board and any finned copper sanitary exchanger.
- 2) External HP Booster unit complete with special electronic controller which, in the defrosting phase, uses the heat stored in the buffer tank to produce economical, quick and safe defrost in the winter months.

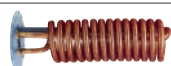
As an option it is possible to add:

- Inverter electronic circulator for distribution on system terminals such as radiators.
- ACS finned copper exchanger immersed directly inside the storage tank for the production of domestic hot water in a hygienically controlled way without the problem of legionella (to be chosen from the accessories listed below).

Thanks to the great versatility and modularity of the HUB RADIATOR AP systems, it is possible to configure a large variety of plant solutions and multiple thermal power plants using only the renewable energy of the heat pump, such as the hot, cold and DHW version with double storage and double Booster. This product represents the best solution for total living comfort both in summer and in winter where in the coldest periods of the year the thermal power of the machine doubles as the two inertial storage radiators are put into communication through a system of solenoid valves, generating thus a single accumulation of 320, 360 or 400 liters to be used as the thermal flywheel of the system.

Model	Code	€
Accumulator AP 160	37306052	1.480,00
Accumulator AP 200	37306053	1.580,00
Booster HR 3.0 only hot	76010240	2.000,00
Booster HR 7.8 only hot	76010500	3.700,00
Booster HR 9.0 only hot INVERTER	76030500	6.360,00
Booster HR 3.0 hot/cold	76020240	2.430,00
Booster HR 7.8 hot/cold	76020500	4.130,00
Booster HR 9.0 hot/cold INVERTER	76040500	6.560,00

Accessories HUB RADIATOR AP






















DHW heat exchanger in finned copper, max working pressure 12 bar, max working temperature 90 ° C

mod. 3,15 m² 37310010 750,00

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Accessories HUB RADIATOR AP			Codice	€
	Solar thermal or biomass exchanger	mod. 0,75 m ² mod. 1,50 m ²	75100002 75101002	374,00 644,00
	Additional capacitor for HR Booster	mod. only hot mod. hot Cold	26505565 26505567	300,00 400,00
	Motorized valve with 1 "connections and spring return	mod. ON-OFF 2 ways mod. 3-way diverter	16205309 16205308	138,00 158,00
	System pump kit which includes: Inverter electronic circulation pump complete with shut-off valves, air vent jolly valve, safety valve, threaded plugs and probe wells		75100011	380,00
	Hot / cold inverter system pump kit which includes: electronic circulation pump complete with valves shut-off valve, air vent jolly valve, safety valve, threaded caps and probe holders		75100009	674,00
	Command and remote control panel	mod.buit-in mod. wall	75100005 75100028	90,00 110,00
	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
	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 meters 90 W mod. 6 meters 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 fixed mod. HR 7.8 H fixed mod. HR 7.8 H variable	37081071 37081073 37081074	308,00 330,00 354,00
	1 "DHW mixing valve kit		75100027	150,00
	230 V single-phase integrative electrical resistance degree of protection IP 65	mod. 1500 W mod. 2000 W mod. 3000 W	75050102 75050103 75060300	150,00 160,00 170,00

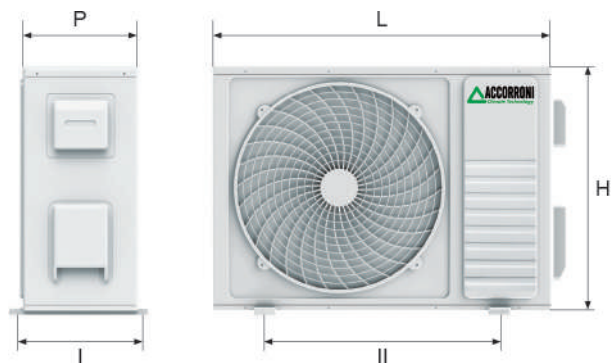
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Accessories HUB RADIATOR AP

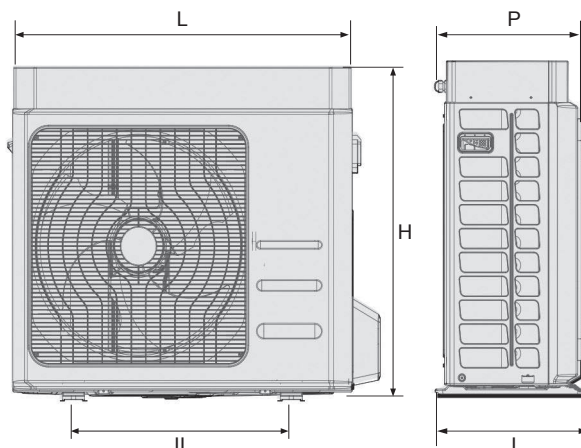
		Codice	€
	Electronic management kit and additional heat generator connection sleeves	75100024	194,00
	Anti-vibration flexible joint kit with connecting flange and straight union	mod. HR 7.8 (5/8") 75100014	120,00
		mod. HR 3.0 (3/8") 75100015	60,00
	Antivibration flexible joint kit with flare and 90° curved union	mod. HR 7.8 (5/8") 75100016	120,00
		mod. HR 3.0 (3/8") 75100017	60,00
	Open shelf for n. 2 Booster outdoor units mod. HR 7.8 - 9.0 complete with anti-vibration mounts (fig. 1)	75060406	240,00
	RACK 2 wardrobe for n. 2 Booster outdoor units mod. HR 3.0 - 7.8 - 9.0 (fig. 2)	75060306	890,00
	RACK 3 wardrobe for n. 3 external units Booster mod. HR 3.0 - 7.8 - 9.0 Height 210 cm Width 96 cm Depth 54 cm (fig. 3)	75060206	980,00

Dimensions Booster esterno HR 3.0 - 7.8



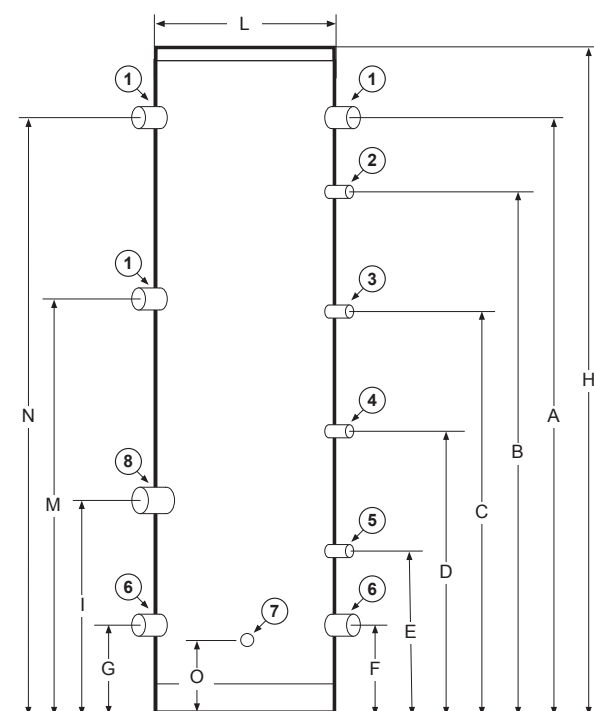
Outdoor Unit Models	L	H	P	I	II	Weight
	mm	mm	mm	mm	mm	kg
Booster HR 3.0	700	552	256	275	435	33
Booster HR 7.8	830	585	300	330	515	43

Dimensions Booster esterno HR 9.0 INVERTER



Outdoor Unit Models	L	H	P	I	II	Weight
	mm	mm	mm	mm	mm	kg
Booster HR 9.0 inverter	925	785	380	358	540	62

Dimensions and hydraulic connections of technical accumulations HUB RADIATOR AP



	U.M.	HR AP 160	HR AP 200
A	mm	1385	1640
B	mm	1155	1360
C	mm	925	1080
D	mm	700	800
E	mm	470	525
F	mm	240	240
G	mm	240	240
H	mm	1700	1960
I	mm	620	705
L	mm	450	450
M	mm	1005	1175
N	mm	1385	1640
O	mm	190	190

DESCRIPTION	Hydraulic connections
1 System delivery / return	1"
2 Thermometer / pressure gauge	1/2"
3 Booster probe	1/2"
4 Booster probe	1/2"
5 Filling group	1/2"
6 System delivery / return	1"
7 System drain cock	1/2"
8 Electric resistance input	1"1/4

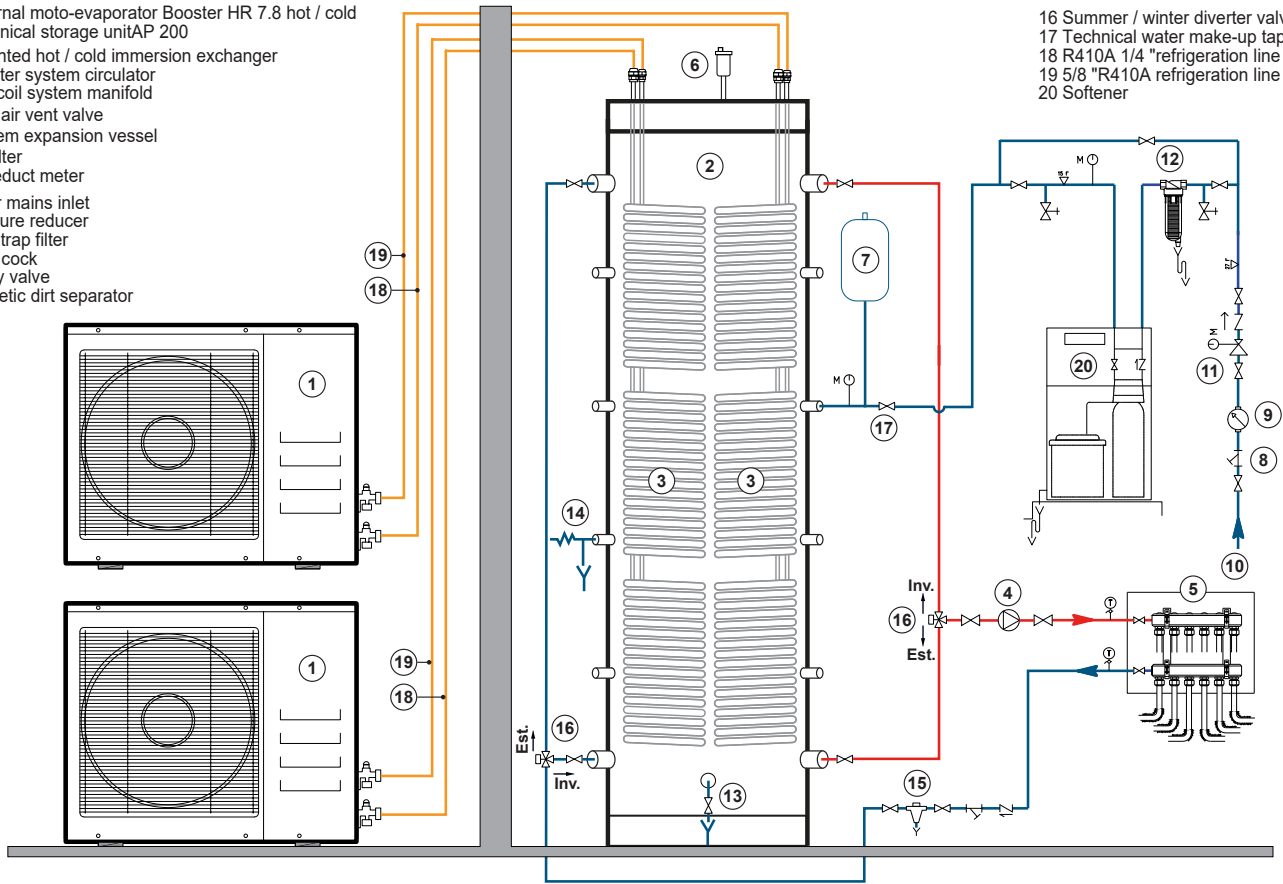
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Application example AP 200 with n. 2 Booster HR 7.8 hot / cold to power a fan coil system

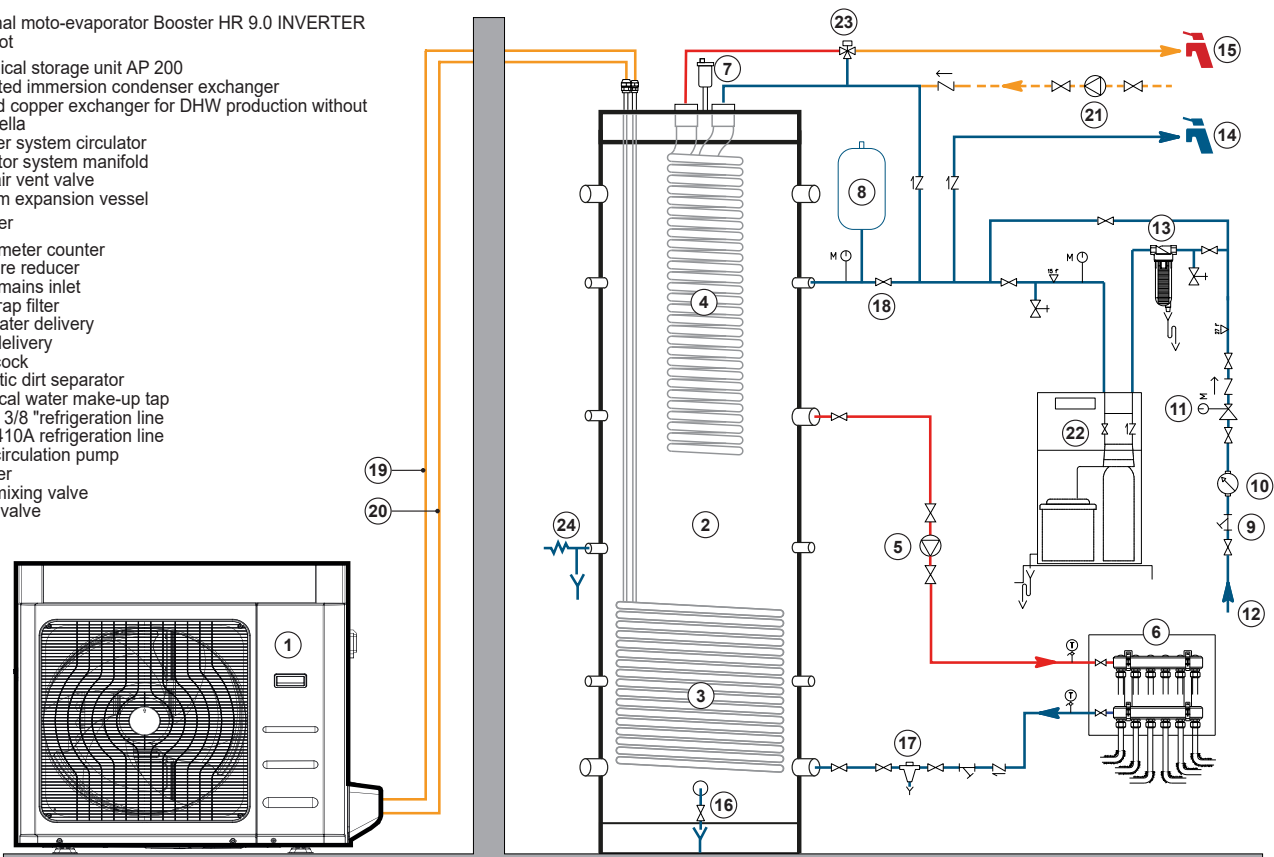
- 1 External moto-evaporator Booster HR 7.8 hot / cold
- 2 Technical storage unit AP 200
- 3 Patented hot / cold immersion exchanger
- 4 Inverter system circulator
- 5 Fan coil system manifold
- 6 Jolly air vent valve
- 7 System expansion vessel
- 8 "Y" filter
- 9 Aqueduct meter
- 10 Water mains inlet
- 11 Pressure reducer
- 12 Sand trap filter
- 13 Drain cock
- 14 Safety valve
- 15 Magnetic dirt separator

- 16 Summer / winter diverter valve
- 17 Technical water make-up tap
- 18 R410A 1/4" refrigeration line
- 19 5/8" R410A refrigeration line
- 20 Softener



Application example AP 200 with Booster HR 9.0 INVERTER heating only for the production of heating and DHW

- 1 External moto-evaporator Booster HR 9.0 INVERTER only hot
- 2 Technical storage unit AP 200
- 3 Patented immersion condenser exchanger
- 4 Finned copper exchanger for DHW production without legionella
- 5 Inverter system circulator
- 6 Radiator system manifold
- 7 Jolly air vent valve
- 8 System expansion vessel
- 9 "Y" filter
- 10 Water meter counter
- 11 Pressure reducer
- 12 Water mains inlet
- 13 Sand trap filter
- 14 Cold water delivery
- 15 DHW delivery
- 16 Drain cock
- 17 Magnetic dirt separator
- 18 Technical water make-up tap
- 19 R410A 3/8" refrigeration line
- 20 5/8" R410A refrigeration line
- 21 DHW circulation pump
- 22 Softener
- 23 DHW mixing valve
- 24 Safety valve



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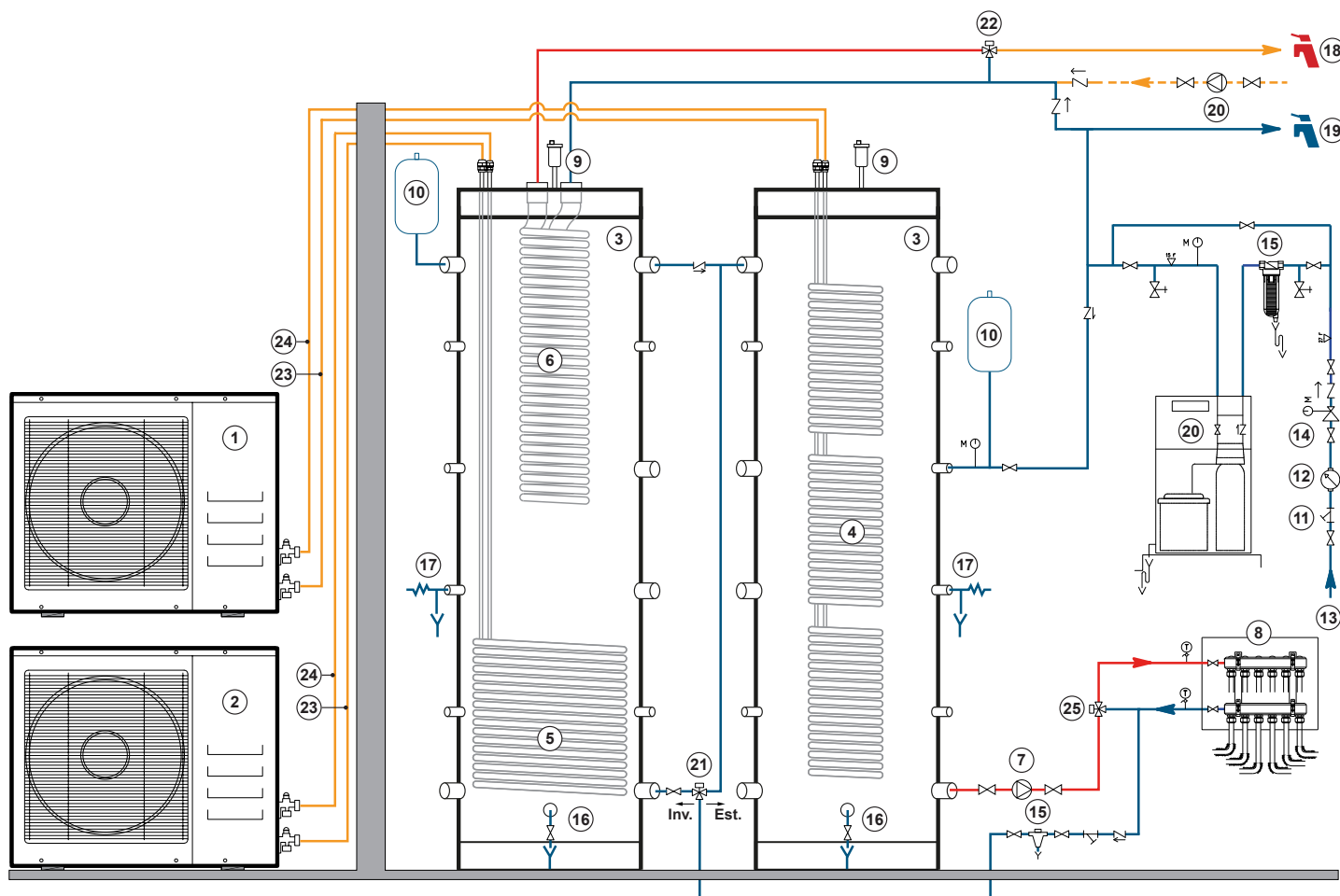
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Application example AP 160 + 160 with n. 2 Booster HR 7.8 for summer and winter air conditioning and DHW production

- 1 External moto-evaporator Booster HR 7.8 hot / cold
- 2 External moto-evaporator Booster HR 7.8 only hot
- 3 Technical storage unit AP 160
- 4 Patented hot / cold immersion exchanger
- 5 Patented hot-only immersion exchanger
- 6 DHW heat exchanger in finned copper
- 7 Inverter system circulator
- 8 Fan coil system manifold
- 9 Jolly air vent valve

- 10 System expansion vessel
- 11 "Y" filter
- 12 Water meter counter
- 13 Water mains inlet
- 14 Pressure reducer
- 15 Sand trap filter
- 16 Drain cock
- 17 Safety valve
- 18 Domestic hot water delivery

- 19 Domestic cold water delivery
- 20 Domestic water recirculation pump
- 21 Summer / winter diverter valve
- 22 DHW mixing valve
- 23 R410A 1/4" refrigeration line
- 24 5/8" R410A refrigeration line
- 25 DHW priority diverter valve



DHW withdrawal table AP 160 - 200

Internal unit AP	U.M.	AP 160	AP 160	AP 160	AP 160	AP 200	AP 200	AP 200	AP 200
Booster outdoor unit HR		3.0	7.8	3.0 + 7.8	7.8 + 7.8	3.0	7.8	3.0 + 7.8	7.8 + 7.8
Single withdrawal water quantity at 35° C (1)	l	95	100	112	154	118	124	132	198
Single withdrawal water quantity at 40° C (1)	l	87	92	102	140	108	113	120	180
Single withdrawal water quantity at 45° C (1)	l	76	80	90	122	95	99	106	158
Recovery time from 35° C to 55° C (2)	h	1,17	0,62	0,56	0,45	1,46	0,77	0,70	0,56
Recovery time from 40° C to 55° C (2)	h	0,89	0,34	0,28	0,17	1,11	0,42	0,35	0,21
Recovery time from 45° C to 55° C (2)	h	0,62	0,24	0,20	0,12	0,77	0,30	0,25	0,15
Initial start up 5° C (3)	h	2,97	1,15	1,02	0,58	3,71	1,43	1,27	0,73
Initial start up 10° C (4)	h	2,69	1,03	0,93	0,52	3,36	1,28	1,16	0,65
Initial start up 15° C (5)	h	2,41	0,91	0,85	0,46	3,02	1,13	1,06	0,58

(1) External air temperature 7° C d.b. - 6° C b.u. ; technical water temperature at the beginning of drawing 55° C ; water inlet temperature 10° C

(2) External air temperature 7° C d.b. - 6° C b.u.

(3) External air temperature 7° C d.b. - 6° C b.u. ; technical water temperature at the start of ignition 5° C - technical water temperature at the end of ignition 55° C

(4) External air temperature 7° C d.b. - 6° C b.u. ; technical water temperature at the start of ignition 10° C - technical water temperature at the end of ignition 55° C

(5) External air temperature 7° C d.b. - 6° C b.u. ; technical water temperature at the start of ignition 15° C - technical water temperature at the end of ignition 55° C

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Technical data table Booster HUB RADIATOR AP

DESCRIPTION	U.M.	HR 3.0 only hot	HR 7.8 only hot	HR 3.0 Hot / Cold	HR 7.8 Hot / Cold	HR 9.0 inverter only hot	HR 9.0 inverter Hot / Cold
Thermal power (1)	kW	3,11	8,12	3,11	8,12	3,54/8,01/8,81*	3,54/8,01/8,81*
Absorbed power (1)	kW	0,74	1,96	0,74	1,96	1,89	1,89
C.O.P. (1)	W/W	4,20	4,14	4,20	4,14	4,24	4,24
Thermal power (2)	kW	2,97	7,75	2,97	7,75	2,85/7,92/8,71*	2,85/7,92/8,71*
Absorbed power (2)	kW	0,94	2,52	0,94	2,52	2,39	2,39
C.O.P. (2)	W/W	3,16	3,07	3,16	3,07	3,31	3,31
Thermal power (3)	kW	2,58	6,73	2,58	6,73	2,54/7,04/7,74*	2,54/7,04/7,74*
Absorbed power (3)	kW	0,74	2,00	0,74	2,00	2,15	2,15
C.O.P. (3)	W/W	3,48	3,37	3,48	3,37	3,52	3,52
Thermal power (4)	kW	2,47	6,44	2,47	6,44	2,46/6,82/7,50*	2,46/6,82/7,50*
Absorbed power (4)	kW	0,94	2,54	0,94	2,54	2,74	2,74
C.O.P. (4)	W/W	2,67	2,53	2,67	2,53	2,68	2,68
Thermal power (5)	kW	2,11	5,52	2,11	5,52	2,31/6,41/7,05*	2,31/6,41/7,05*
Absorbed power (5)	kW	0,75	2,00	0,75	2,00	2,31	2,31
C.O.P. (5)	W/W	2,81	2,76	2,81	2,76	3,04	3,04
Thermal power (6)	kW	1,99	5,20	1,99	5,20	2,25/6,25/6,88*	2,25/6,25/6,88*
Absorbed power (6)	kW	0,94	2,53	0,94	2,53	2,78	2,78
C.O.P. (6)	W/W	2,11	2,05	2,11	2,05	3,39	3,39
S.C.O.P. (7)	W/W	3,78	3,71	3,78	3,71	3,94	3,94
Seasonal heating efficiency (η _s)	%	153,1	150,3	153,1	150,3	159,62	159,62
Refrigeration power (8)	kW	-	-	2,94	7,24	-	4,91/7,72/8,49*
Absorbed power (8)	kW	-	-	0,72	1,89	-	1,76
E.E.R. (8)	W/W	-	-	4,08	3,82	-	4,38
Refrigeration power (9)	kW	-	-	2,63	5,84	-	3,80/6,08/6,69*
Absorbed power (9)	kW	-	-	0,89	2,20	-	1,99
E.E.R. (9)	W/W	-	-	2,95	2,65	-	3,05
S.E.E.R. (9)	W/W	-	-	3,67	3,32	-	4,25
Energy efficiency class (10)		A / A++				A++ / A++	
Compressor type		Rotation ON-OFF				Twin Rotary DC INVERTER	
Compressors		1					
Refrigerant circuits		1					
Defrost method		Reverse cycle with immersion condenser					
Type of refrigerant		R410A					
Technical water temperature min / max	°C	+ 30 / + 58		+ 4 / + 58		+ 30 / + 58	+ 4 / + 58
Refrigerant quantity (pre-inserted)	Kg	1,1	1,5	1,1	1,5	2,2	2,2
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"	3/8"	5/8"	5/8"	5/8"
Coolant line connection		1/4"	1/4"	1/4"	1/4"	3/8"	3/8"
Sound power (11)	dB(A)	65,1	68,4	65,1	68,4	64,0	64,0
Sound pressure at one meter (12)	dB(A)	51,2	54,7	51,2	54,7	49,8	49,8
Outdoor temperature operating limits	°C	-15 / +45				-20 / +46	
Power supply		230V/1/50Hz					
Max absorbed power	kW	0,94	2,53	0,94	2,53	4,70	4,70
Max absorbed current	A	4,30	11,57	4,30	11,57	20,40	20,40
Weight	Kg	33	55	33	55	62	62

(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) Cooling: external air temperature 35 °C db; inlet / outlet water temperature 23/18 °C

(9) Cooling: external air temperature 35 °C db; inlet / outlet water temperature 12/7 °C

(10) Water 35 °C / 55 °C

(11) Measurements carried out according to UNI EN 14511 in heating mode and boundary conditions (1)

(12) Value calculated according to ISO 3744: 2010 (*) By activating the maximum HZ function