

GRANDIS

Heat Pump Air/water

Technical data – full data

GRANDIS - BASIC (Stainless steel)

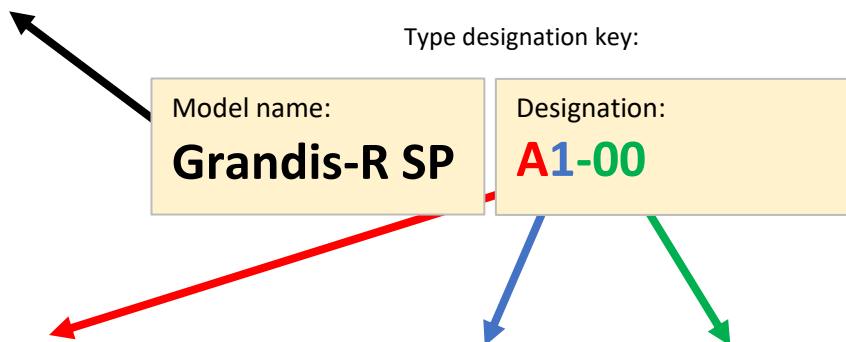
This manual covers the basic material design of S1 stainless steel.

Further material versions are described in the manual No. AC-A008-CZ-R.

The abbreviation SP in the model code indicates a single-phase design.

SUBTYPE	MODEL	Prated KW	Material design of pump covers				
			Stainless steel	Lacquered version			
				AL (ALUMINUM)		FeZn+LAC	
Blinds 2/3 of the width of the Heat Pump	Blinds 2/3 of the width of the Heat Pump	Blinds through the whole Heat Pump	Blinds 2/3 of the width of the Heat Pump	Blinds through the whole Heat Pump			
GRANDIS-N	N	4	S1	A1	A2	Z1 (Z3)	Z2 (Z4)
	N SP	4	S1	A1	A2	Z1 (Z3)	Z2 (Z4)
	PN	6	S1	A1	A2	Z1 (Z3)	Z2 (Z4)
	PN SP	6	S1	A1	A2	Z1 (Z3)	Z2 (Z4)
GRANDIS-R	R	10	S1	---	---	Z1 (Z3)	Z2 (Z4)
	R SP	10	S1	---	---	Z1 (Z3)	Z2 (Z4)
	PR	12	S1	---	---	Z1 (Z3)	Z2 (Z4)
	PR SP	12	S1	---	---	Z1 (Z3)	Z2 (Z4)

Type designation key:



Material:	Blinds:	Colour code:
S - Stainless steel	1 - 2/3 of the TC width	00 - Stainless steel
A - AL (Aluminum)	2 - Over the whole heating coil - polycarbonate	01 - According to internal regulation
Z - FeZN + Varnish	3 - 2/3 of the width of the CT - metal + lacquer	02 - According to internal regulation
	4 - Over the whole TC - metal + lacquer	03 - ...

Technical parameters Acond Grandis

Compact monobloc air-to-water heat pump equipped with a continuously variable double rotary compressor that uses environmentally friendly natural refrigerant. The heat pump consists of an outdoor unit and an indoor unit (switch cabinet or hydromodule).

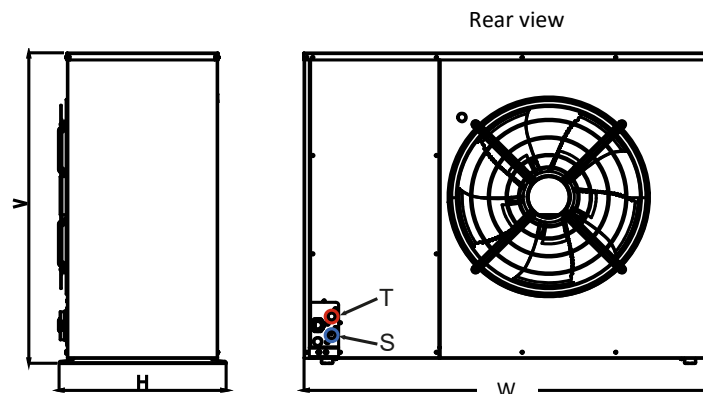
A room unit located in the reference room is also included.

Subtype	GRANDIS-N		GRANDIS-R	
	N (PN)	N SP (PN SP)	R (PR)	R SP (PR SP)
Supply voltage code; protection	3~N/PE/400V/ 50Hz; B16A	1~N/PE/230V/ 50Hz; B32A	3~N/PE/400V/ 50Hz; B20A	1~N/PE/230V/ 50Hz; B50A
Compressor type	Double rotary		Double rotary	
Maximum outdoor unit current [A]	13		9	26
Start-up current [A]	5		5	
Steady state current [A]	3,97		2,71	
Degree of coverage	Outdoor unit IP24			
	Indoor unit IP20			
Refrigerant	R290			
Refrigerant weight [kg]	0,65		1,32	
Air temperature limits [°C]*	-25 to 38		-25 to 38	
Water temperature limits [°C]**	20 to 75		20 to 75	
Water flow [m ³ /h]	0,7 to 1,5		1,5 to 3,4	

*Verified by the tester at partial load of the heat pump.

**Tested, water temperature of 75°C can be achieved with partial load of the heat pump.

Dimensions of the heat pump



SUBTYPE	GRANDIS-N	GRANDIS-R
V [mm]	759	1089
W [mm]	1128	1427
H [mm]	542	581
Weight [kg]	110	185
T - hot water [mm]	G1" DIN ISO 228	G1" DIN ISO 228
S - cold water [mm]	G1" DIN ISO 228	G1" DIN ISO 228
Preparation for electrical connection	Guard 32mm	Guard 32mm

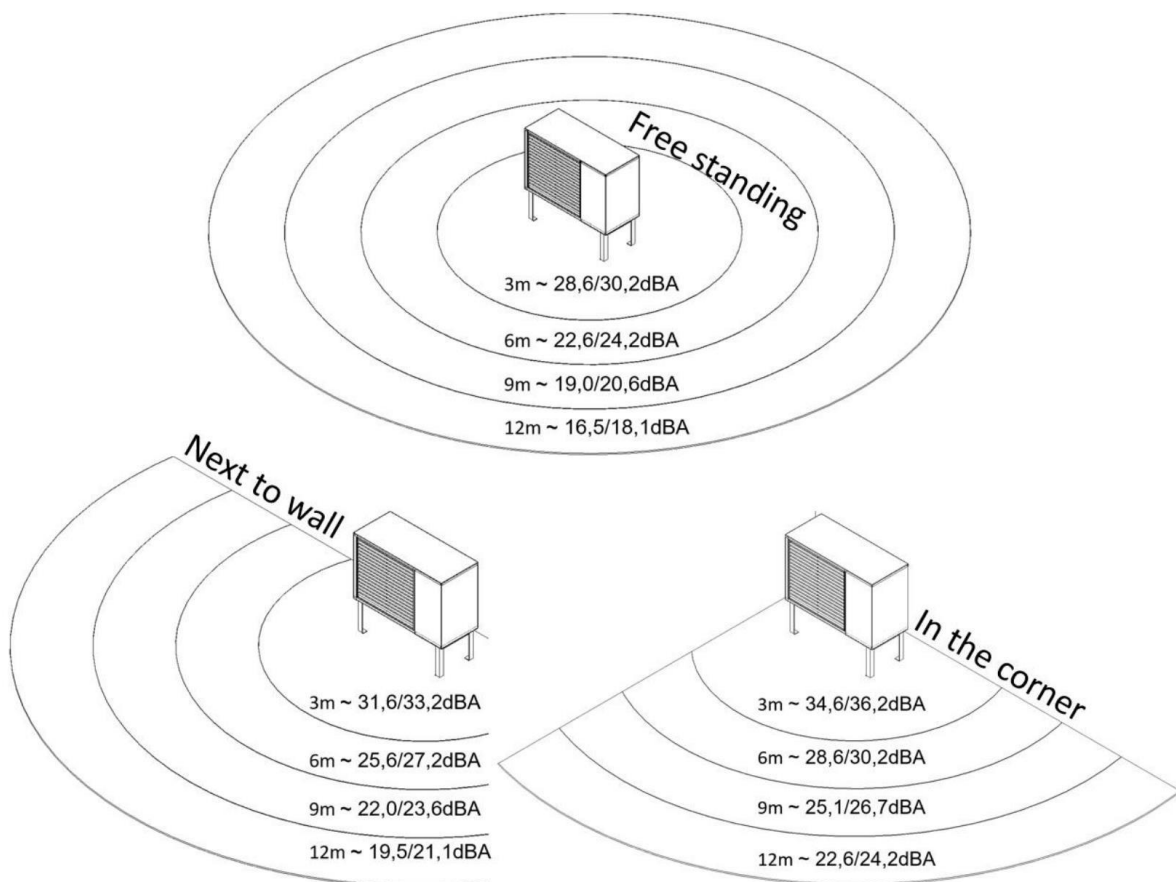
Acoustic parameters

Acond Grandis heat pumps are installed outdoors or in mechanical rooms complying with ČSN 378-3. Many factors affect sound pressure levels, such as whether the heat pump is placed next to a wall or in a corner, the structure of the wall, or at what altitude the heat pump is located. Therefore, the sound pressure values given are only indicative.

The sound power level was measured at partial power at condition A7/W55 according to EN 12 102.

SUBTYPE	GRANDIS-N	GRANDIS-R
Acoustic pressure 3m [dB(A)]	28,6	30,2
Acoustic pressure 6m [dB(A)]	22,6	24,2
Acoustic performance L_{WA} [dB(A)]	46,1	47,7

The sound pressure values are written as GRANDIS-N /GRANDIS-R.



Performance parameters

SUBTYPE	GRANDIS-N		GRANDIS-R	
Model	N	PN	R	PR
Maximum heat loss of the building at -15°C - underfloor heating [kW]*	7		15,5	
Maximum heat loss of the building at -15°C - radiators [kW]*	7		15	
Performance parameters at nominal conditions according to EN 14 511				
Maximum heat output A7/W35 [kW]	3,05	4,1	6,98	7,8
Maximum heat output A7/W55 [kW]	3,3	4,2	6,94	8,1
COP A7/W35 EN 14 511 [1]	5,54	5,41	5,52	5,51
COP A7/W55 EN 14 511 [1]	3,26	3,18	3,38	3,22
Regulated performance parameters with equithermal control, reference water temperature 35°C according to EN 14 825				
Heating output at A12/W27 [kW]	1,81	1,81	4,63	4,64
COP at A12/W27 [1]	9,14	9,14	9	9
Heating output at A7/W27 [kW]	1,52	2,08	4,03	4,08
COP at A7/W27 [1]	6,91	7,3	7,26	7,31
Heating capacity at A2/W30 [kW]	2,26	3,23	5,58	6,2
COP at A2/W30 [1]	5,25	4,7	5,42	4,43
Heating capacity at A-7/W34 [kW]	3,72	5,31	8,97	10,43
COP at A-7/W34 [1]	3,51	2,9	3,57	3,11
Regulated performance parameters with equithermal control, reference water temperature 55°C according to EN 14 825				
Heating output at A12/W35 [kW]	1,75	1,75	4,46	4,46
COP at A12/W35 [1]	7,16	7,16	6,81	6,81
Heating output at A7/W36 [kW]	1,45	1,97	3,82	4,17
COP at A7/W36 [1]	5,29	5,29	5,39	5,57
Heating output x COP at A2/W42 [kW]	2,15	3,07	5,37	6,52
COP at A2/W42 [1]	3,98	3,3	4,1	3,81
Heating capacity at A-7/W52 [kW]	3,54	5,04	8,8	10,73
COP at A-7/W52 [1]	2,45	1,9	2,67	2,55
Parameters for average climate, equithermal control				
P _{design} W35 [kW]	4,2	6	10,2	11,79
SCOP W35 [1]	5,38	4,99	5,58	4,99
P _{design} W55 [kW]	4	5,7	9,97	12,13
SCOP W55 [1]	4,05	3,5	4,21	4,03

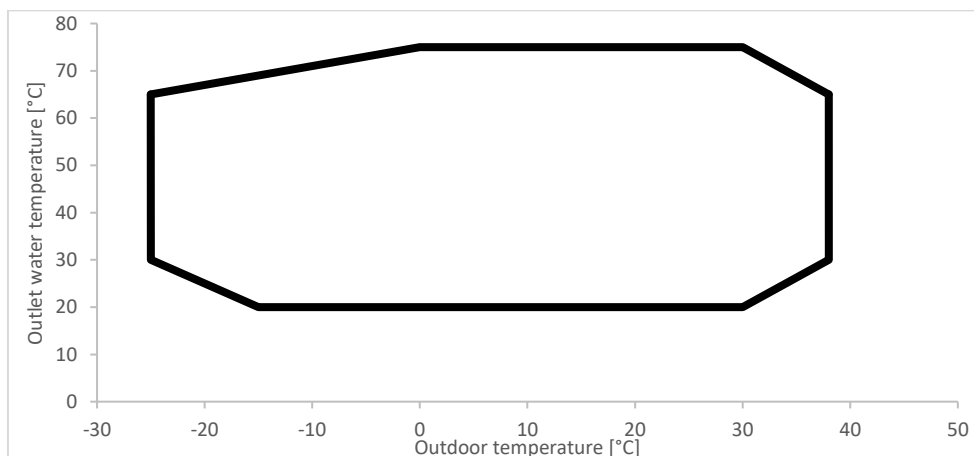
* DHW heating, pool heating if fitted, must be included in the building losses (at -15°C); applies to standardised installation of Acond pumps with auxiliary heating rods/rods

Energy parameters

SUBTYPE		GRANDIS-N		GRANDIS-R	
Model		N	PN	R	PR
Average climate	Reference water temperature 35°C				
	Heating energy class	A+++	A+++	A+++	A+++
	Seasonal heating energy efficiency [%]	212	196,6	220	192,6
	Annual energy consumption for heating [kWh]	1613	2479	3770	4979
	Reference water temperature 55°C				
	Heating energy class	A+++	A++	A+++	A+++
	Seasonal heating energy efficiency [%]	159	136,8	165	158,2
	Annual energy consumption for heating [kWh]	2040	3363	4896	6215
Warmer climate	Reference water temperature 35°C				
	Heating energy class	A+++	A+++	A+++	A+++
	Seasonal heating energy efficiency [%]	275	274,7	284	281,7
	Annual energy consumption for heating [kWh]	768	1155	1861	2252
	Reference water temperature 55°C				
	Heating energy class	A+++	A+++	A+++	A+++
	Seasonal heating energy efficiency [%]	198	188,6	204	194,4
	Annual energy consumption for heating [kWh]	1063	1604	2586	3249
Cooler climate	Reference water temperature 35°C				
	Heating energy class	A++	A++	A+++	A++
	Seasonal heating energy efficiency [%]	173	152,7	178	153,9
	Annual energy consumption for heating [kWh]	3360	5097	8179	11305
	Reference water temperature 55°C				
	Heating energy class	A++	A++	A++	A+++
	Seasonal heating energy efficiency [%]	140	115,6	143	128
	Annual energy consumption for heating [kWh]	4139	6679	10157	13542

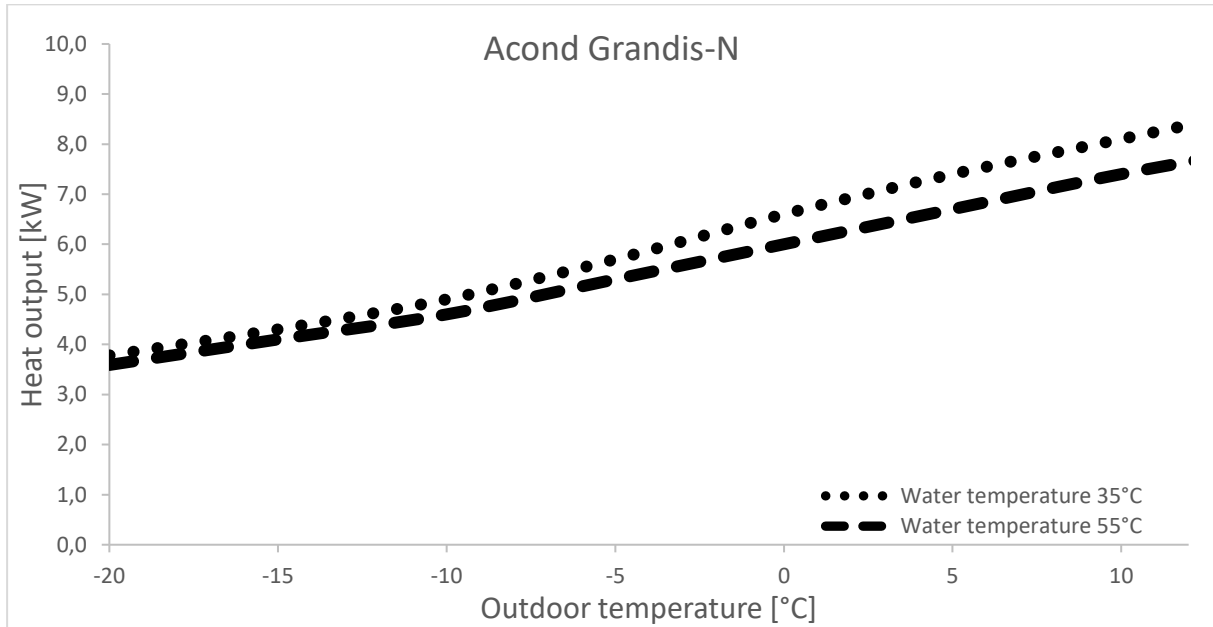
Work area

The working area is verified by a test laboratory, it meets the requirements of EN 14511-4. Output temperatures are achievable under certain part load conditions.

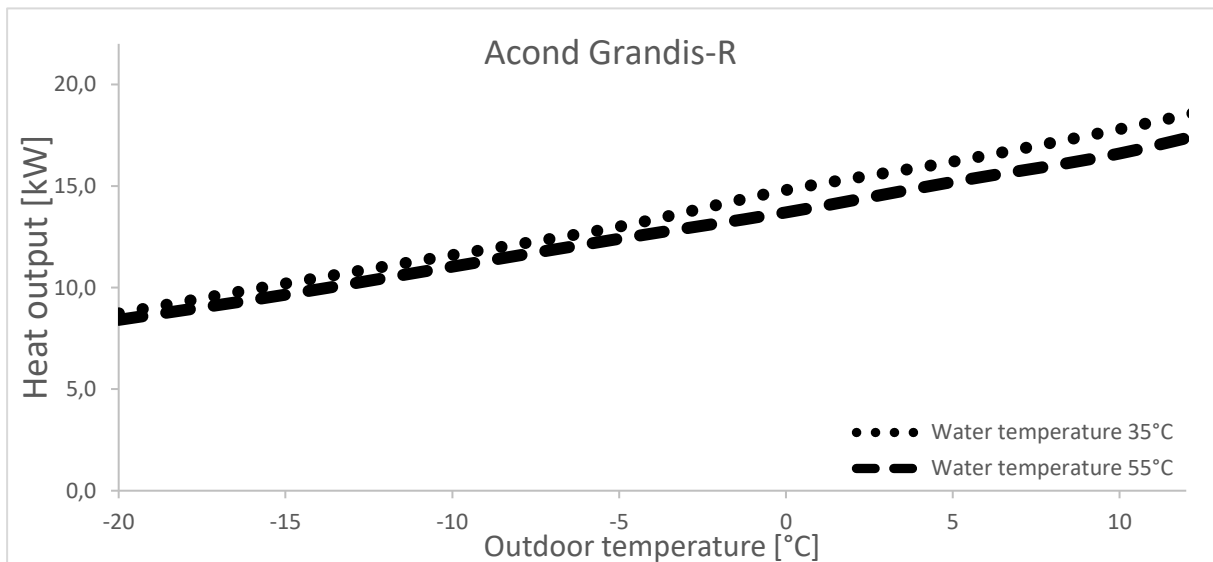


Maximum heating capacity depending on the outside temperature and heating water temperature.

The following values are measured during continuous operation.



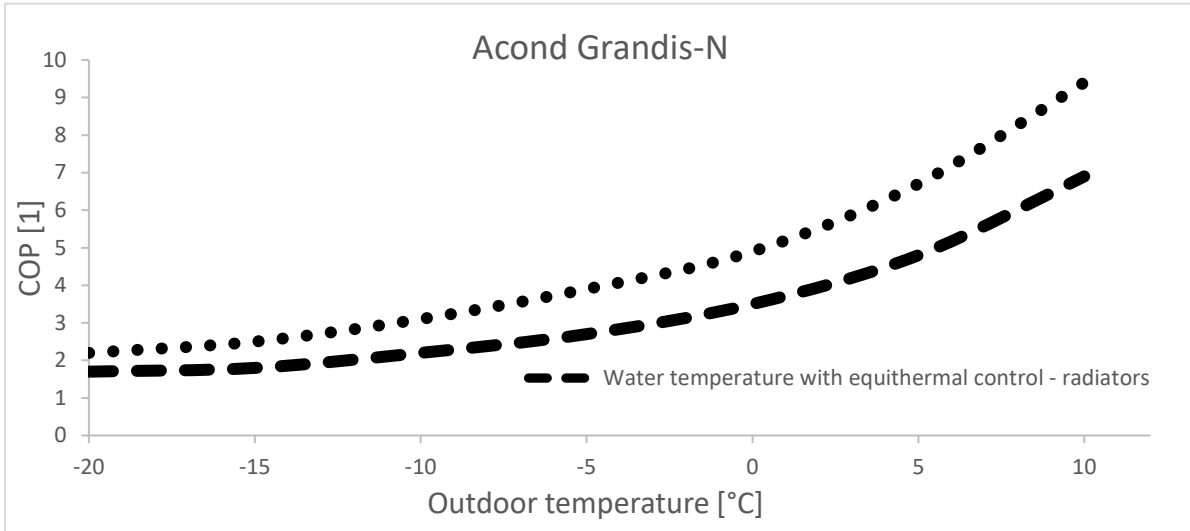
Acond Grandis-N								
Outdoor temperature [°C]	-20	-15	-10	-5	0	5	10	15
Maximum heating output at 35 °C [kW]	3,8	4,3	4,9	5,7	6,6	7,4	8,1	8,8
Maximum heating output at 55 °C [kW]	3,6	4,1	4,6	5,3	6	6,7	7,4	8



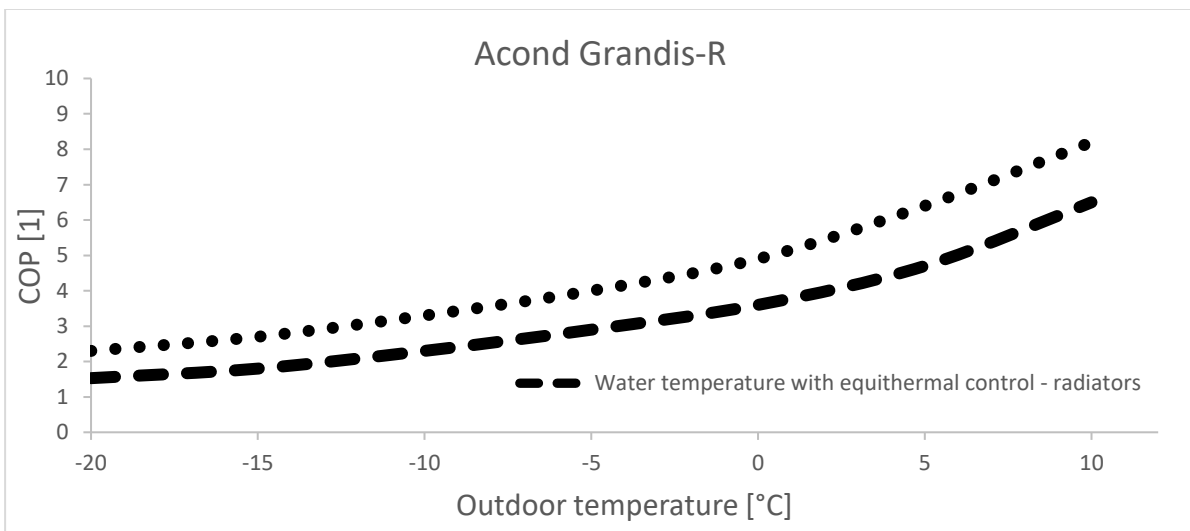
Acond Grandis-R								
Outdoor temperature [°C]	-20	-15	-10	-5	0	5	10	15
Maximum heating output at 35 °C [kW]	8,7	10,2	11,6	13	14,8	16,2	17,8	19,6
Maximum heating output at 55 °C [kW]	8,4	9,7	11	12,4	13,7	15,2	16,6	18,6

Maximum heating factor depending on outdoor temperature and heating water temperature.

The following values are measured at continuous operation and water temperature regulated by the equithermal curve.



Outdoor temperature [°C]	-20	-15	-10	-5	0	5	10
Water temperature with equithermal regulation – undfloor heating [°C]	38	37	35	33	31	28	25
Maximum COP [kW / kW]	2,2	2,5	3,1	3,9	4,9	6,7	9,4
Outdoor temperature [°C]	-20	-15	-10	-5	0	5	10
Water temperature with equithermal regulation – undfloor heating [°C]	65	60	55	50	44	38	32
Maximum COP [kW / kW]	1,7	1,8	2,2	2,7	3,5	4,8	6,9



Outdoor temperature [°C]	-20	-15	-10	-5	0	5	10
Water temperature with equithermal regulation – undfloor heating [°C]	38	37	35	33	31	28	25
Maximum COP [kW / kW]	2,3	2,7	3,3	4	4,9	6,4	8,2
Outdoor temperature [°C]	-20	-15	-10	-5	0	5	10
Water temperature with equithermal regulation – undfloor heating [°C]	65	60	55	50	44	38	32
Maximum COP [kW / kW]	1,5	1,8	2,3	2,9	3,6	4,7	6,5

Subtype(s):				Grandis-N, Grandis-N SP			
Heat pump air/water: (yes/no)				Yes			
Heat pump solution - water: (yes/no)				No			
Heat pump water - water: (yes/no)				No			
Low temperature heat pump: (yes/no)				No			
Heater option: (yes/no)				No			
Equipped with a supplementary heater: (yes/no)				No			
Application: (low temperature/medium temperature)				mid-temperature			
Climatic conditions: (cooler/average/warmer)				average			
Item	Label	Value	Unit	Item	Label	Value	Unit
Rated heat output (¹)	Prated	4	kW	Seasonal energy efficiency of heating	η_s	159	%
Declared heating output for partial load at indoor temperature 20°C and outdoor temperature Tj				Declared heat factor or coefficient of primary energy ratio for partial load at indoor temperature 20°C and outdoor temperature Tj			
Tj = -7°C	Pdh	3,5	kW	Tj = -7°C	COPd	2,5	-
Tj = +2°C	Pdh	2,2	kW	Tj = +2°C	COPd	4	-
Tj = +7°C	Pdh	1,5	kW	Tj = +7°C	COPd	5,3	-
Tj = +12°C	Pdh	1,8	kW	Tj = +12°C	COPd	7,2	-
Tj = bivalent temperature	Pdh	4	kW	Tj = bivalent temperature	COPd	2,2	-
Tj = operation limit temperature	Pdh	4	kW	Tj = operation limit temperature	COPd	2,2	-
For air-to-water heat pumps: Tj = -15°C (if TOL <-20°C)	Pdh	-	kW	For air-to-water heat pumps: Tj = -15°C (if TOL <-20°C)	COPd	-	-
Bivalent temperature	T _{biv}	-10	°C	For air-to-water heat pumps: limit operating temperature	TOL	-10	°C
Cycling interval capacity for heating	P _{cyh}	-	kW	Cycling interval capacity for heating	COP _{cyh}	-	-
Energy loss coefficient (²)	Cdh	0,9	-	Domestic hot water operating limit temperature	WTOL	75	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P _{OFF}	0,015	kW	Rated heat output (¹)	P _{sup}	0	kW
Thermostat off mode	P _{TO}	0,014	kW	Type of energy input	Electric		
Standby mode	P _{SB}	0,015	kW				
Compressor cabinet heating mode	P _{CK}	0	kW				
Additional items							
Performance regulation	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	1600	m³/h
Sound power level, Indoors/outdoors	L _{WA}	-/46.1	dB	For water/brine-to-water heat pumps: nominal brine or water flow rate	-	-	m³/h
Emissions of nitrogen oxides	NO _x	-	mg/kWh				
For heat pump combination heater:							
Declared load profile	-			Water heating energy efficiency	η_{wh}		%
Electricity consumption	Q _{elec}	-	kWh	Daily fuel consumption	Q _{fuel}		kWh
Contact information	Acond a.s., Štěrboholská 1434/102a, 102 00 Prague 10 - Hostivař, Czech Republic						

Subtype(s):				Grandis-R, Grandis-R SP			
Heat pump air/water: (yes/no)				Yes			
Heat pump solution - water: (yes/no)				No			
Heat pump water - water: (yes/no)				No			
Low temperature heat pump: (yes/no)				No			
Heater option: (yes/no)				No			
Equipped with a supplementary heater: (yes/no)				No			
Application: (low temperature/medium temperature)				mid-temperature			
Climatic conditions: (cooler/average/warmer)				average			
Item	Label	Value	Unit	Item	Label	Value	Unit
Rated heat output (1)	Prated	10	kW	Seasonal heating energy efficiency	η_s	165	%
Declared heating output for partial load at indoor temperature 20°C and outdoor temperature Tj				Declared heating factor or primary energy coefficient for part load at an indoor temperature of 20°C and an outdoor temperature Tj			
Tj = -7°C	Pdh	8,8	kW	Tj = -7°C	COPd	2,7	-
Tj = +2°C	Pdh	5,4	kW	Tj = +2°C	COPd	4,1	-
Tj = +7°C	Pdh	3,8	kW	Tj = +7°C	COPd	5,4	-
Tj = +12°C	Pdh	4,5	kW	Tj = +12°C	COPd	6,8	-
Tj = bivalent temperature	Pdh	10	kW	Tj = bivalent temperature	COPd	2,3	-
Tj = operation limit temperature	Pdh	10	kW	Tj = operation limit temperature	COPd	2,3	-
For air-to-water heat pumps: Tj = -15°C (if TOL < -20°C)	Pdh	-	kW	For air-to-water heat pumps: Tj = -15°C (if TOL < -20°C)	COPd	-	-
Bivalent temperature	T _{biv}	-10	°C	For air-to-water heat pumps: limit operating temperature	TOL	-10	°C
Cycling interval capacity for heating	P _{cyh}	-	kW	Cycling interval capacity for heating	COP _{cyh}	-	-
Energy loss coefficient (2)	Cdh	0,9	-	Domestic hot water operating limit temperature	WTOL	75	°C
Power consumption in modes other than active mode				Additional heater			
Off mode	P _{OFF}	0,015	kW	Rated heat output (1)	P _{sup}	0	kW
Thermostat off mode	P _{TO}	0,014	kW	Type of energy input	Electric		
Standby mode	P _{SB}	0,015	kW				
Compressor cabinet heating mode	P _{CK}	0	kW				
Additional items							
Power regulation	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	3400	m ³ /h
Sound power level, Indoors/outdoors	L _{WA}	-/47,7	dB	For water/brine-to-water heat pumps: nominal brine or water flow rate	-	-	m ³ /h
Emissions of nitrogen oxides	NO _x	-	mg/kWh				
For heat pump combination heater:							
Declared load profile	-			Water heating energy efficiency	η_{wh}		%
Electricity consumption	Q _{elec}	-	kWh	Daily fuel consumption	Q _{fuel}		kWh
Contact information	Acond a.s., Štěrboholská 1434/102a, 102 00 Prague 10 - Hostivař, Czech Republic						

Subtype(s):				Grandis-PN, Grandis-PN SP			
Heat pump air/water: (yes/no)				Yes			
Heat pump solution - water: (yes/no)				No			
Heat pump water - water: (yes/no)				No			
Low temperature heat pump: (yes/no)				No			
Heater option: (yes/no)				No			
Equipped with a supplementary heater: (yes/no)				No			
Application: (low temperature/medium temperature)				mid-temperature			
Climatic conditions: (cooler/average/warmer)				average			
Item	Label	Value	Unit	Item	Label	Value	Unit
Rated thermal output ⁽¹⁾	Prated	6	kW	Seasonal heating energy efficiency	η_s	137	%
Declared heating output for partial load at indoor temperature 20°C and outdoor temperature Tj				Declared heating factor or primary energy coefficient for part load at an indoor temperature of 20°C and an outdoor temperature Tj			
Tj = -7°C	Pdh	5,04	kW	Tj = -7°C	COPd	1,9	-
Tj = +2°C	Pdh	3,07	kW	Tj = +2°C	COPd	3,3	-
Tj = +7°C	Pdh	1,97	kW	Tj = +7°C	COPd	5,29	-
Tj = +12°C	Pdh	1,75	kW	Tj = +12°C	COPd	7,16	-
Tj = bivalent temperature	Pdh	6	kW	Tj = bivalent temperature	COPd	2,2	-
Tj = operation limit temperature	Pdh	6	kW	Tj = operation limit temperature	COPd	2,2	-
For air-to-water heat pumps: Tj = -15°C (if TOL <-20°C)	Pdh	-	kW	For air-to-water heat pumps: Tj = -15°C (if TOL <-20°C)	COPd	-	-
Bivalent temperature	T _{biv}	-7	°C	For air-to-water heat pumps: limit operating temperature	TOL	-10	°C
Cycling interval capacity for heating	P _{cych}	-	kW	Cycling interval capacity for heating	COP _{cyc}	-	-
Energy loss coefficient ⁽²⁾	Cdh	0,9	-	Domestic hot water operating limit temperature	WTOL	75	°C
Power consumption in modes other than active mode				Additional heater			
Off mode	P _{OFF}	0,015	kW	Rated heat output ⁽¹⁾	P _{sup}	1,3	kW
Thermostat off mode	P _{TO}	0,014	kW	Type of energy input	Electric		
Standby mode	P _{SB}	0,015	kW				
Compressor cabinet heating mode	P _{CK}	0	kW				
Additional items							
Power regulation	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	1600	m ³ /h
Sound power level, Indoors/outdoors	L _{WA}	-/46.1	dB	For water/brine-to-water heat pumps: nominal brine or water flow rate	-	-	m ³ /h
Emissions of nitrogen oxides	NO _x	-	mg/kWh				
For heat pump combination heater:							
Declared load profile	-			Water heating energy efficiency	η_{wh}		%
Electricity consumption	Q _{elec}	-	kWh	Daily fuel consumption	Q _{fuel}		kWh
Contact information	Acond a.s., Štěrboholská 1434/102a, 102 00 Prague 10 - Hostivař, Czech Republic						

Subtype(s):				Grandis-PR, Grandis-PR SP			
Heat pump air/water: (yes/no)				Yes			
Heat pump solution - water: (yes/no)				No			
Heat pump water - water: (yes/no)				No			
Low temperature heat pump: (yes/no)				No			
Heater option: (yes/no)				No			
Equipped with a supplementary heater: (yes/no)				No			
Application: (low temperature/medium temperature)				mid-temperature			
Climatic conditions: (cooler/average/warmer)				average			
Item	Label	Value	Unit	Item	Label	Value	Unit
Rated thermal output ⁽¹⁾	Prated	12	kW	Seasonal heating energy efficiency	η_s	158,2	%
Declared heating output for partial load at indoor temperature 20°C and outdoor temperature T _j				Declared heating factor or primary energy coefficient for part load at an indoor temperature of 20°C and an outdoor temperature T _j			
T _j = -7°C	P _{dH}	10,73	kW	T _j = -7°C	COP _d	2,55	-
T _j = +2°C	P _{dH}	6,52	kW	T _j = +2°C	COP _d	3,81	-
T _j = +7°C	P _{dH}	4,17	kW	T _j = +7°C	COP _d	5,57	-
T _j = +12°C	P _{dH}	4,46	kW	T _j = +12°C	COP _d	6,81	-
T _j = bivalent temperature	P _{dH}	12	kW	T _j = bivalent temperature	COP _d	2,3	-
T _j = operation limit temperature	P _{dH}	12	kW	T _j = operation limit temperature	COP _d	2,3	-
For air-to-water heat pumps: T _j = -15°C (if TOL < -20°C)	P _{dH}	-	kW	For air-to-water heat pumps: T _j = -15°C (if TOL < -20°C)	COP _d	-	-
Bivalent temperature	T _{biv}	-7	°C	For air-to-water heat pumps: limit operating temperature	TOL	-10	°C
Cycling interval capacity for heating	P _{cycH}	-	kW	Cycling interval capacity for heating	COP _{cyc}	-	-
Energy loss coefficient ⁽²⁾	C _{dH}	0,9	-	Domestic hot water operating limit temperature	WTOL	75	°C
Power consumption in modes other than active mode				Additional heater			
Off mode	P _{OFF}	0,015	kW	Rated heat output ⁽¹⁾	P _{sup}	1,2	kW
Thermostat off mode	P _{TO}	0,014	kW				
Standby mode	P _{SB}	0,015	kW				
Compressor cabinet heating mode	P _{CK}	0	kW				
				Type of energy input			
				Electric			
Additional items							
Power regulation	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	3400	m ³ /h
Sound power level, Indoors/outdoors	L _{WA}	-47,7	dB	For water/brine-to-water heat pumps: nominal brine or water flow rate	-	-	m ³ /h
Emissions of nitrogen oxides	NO _X	-	mg/kWh				
For heat pump combination heater:							
Declared load profile	-			Water heating energy efficiency	η_{wh}		%
Electricity consumption	Q _{elec}	-	kWh	Daily fuel consumption	Q _{fuel}		kWh
Contact information	Acond a.s., Štěrbóholská 1434/102a, 102 00 Prague 10 - Hostivař, Czech Republic						

(1) For heat pump space heaters and heat pump combination heaters, the rated thermal output Prated is equal to the design heating load Pdesignh and the rated thermal output of the supplementary heater Psup is equal to the supplementary heating output sup(Tj).

(2) If the energy loss coefficient Cdh is not determined by measurement, it has a default value of 0.9.