TECHNICAL DATA SHEETS

Heat pumps

NetZero*



GEOSMART NETZERO

NetZero heat pumps

Technology for a sustainable world

GeoSmart is committed to innovation in order to achieve a sustainable future based on the use of renewable energy. This commitment has led GeoSmart to become a technological leader in the field of Inverter heat pumps, being the only manufacturer whose product range presents such modulating technology in all its models.



NetZero⁺ heat pumps allow to cover in an integrated way all the thermal needs of current buildings, as well domestic as industrial. GeoSmart offers three types of solutions depending on the energy source used by the equipment: NetZero⁺ water-to-water ground source heat pumps, NetZero⁺ & AU water-to-water air source heat pumps. All the models in these two ranges make use of Inverter technology to obtain the best performances and thus guarantee comfort and efficiency together with a commitment to make the best use of renewable resources.

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NetZero*

Heat pumps Range





GEOSMART
NETZERO

NetZero*

Inverter heat pumps, the most efficient technology

The NetZero+ range is the GeoSmart range of ground source heat pumps. These heat pumps, both basic and compact, are compatible with any of the type of ground source collection system, even with hybrid air source-ground source collection systems and fully air source collection systems. Likewise, they are also capable of offering all the services required in a HVAC system in an integrated way: DHW, Heating, Pool, Passive Cooling (or Free Cooling) and Active Cooling.



All NetZero⁺ heat pumps make use of Inverter technology, which allows them to modulate their power in order to adapt to the thermal demands of the installation with the highest efficiency. This translates into a very considerable reduction in electrical consumption and great savings. Thanks to the technology and control strategies developed by GeoSmart, the installation of NetZero⁺ heat pumps also becomes much simpler, more compact and cheaper than those of other heat pumps on the market, since it allows to dispense with certain components that would be necessary in traditional heat pump installations.

NetZero* Basic / Compact

Residential range

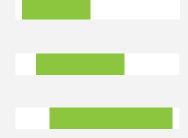


Power ranges

NetZero+ 1-9 kW 3,412.1 - 30,709.3 Btu

NetZero+ 3-12 kW 10,236.4 - 40,945.7 Btu

NetZero+ 5-22 kW 17,060.7 - 75,067.1 Btu



Cascade





Services









Models

NetZero+ BW/CW HB NetZero+ BW/CW PB NetZero+ BW/CW RB NetZero+ BW/CW BB

DHW Heating Pool

DHW Heating

DHW Heating Pool Free / Passive Cooling Active Cooling DHW Heating

Free / Passive Cooling Active Cooling



Inverter technology

3 Different power ranges:

[kW] 1-9 / 3-12 / 5-22

[Btu] 3,412.1-30,709.3 / 10,236.4-40,945.7 / 17,060.7-75,067.1

Domestic Hot Water production

Heating and pool production

Integrated active cooling production

Integrated free / passive cooling production

Integrated internet connection

Integrated photovoltaic hybridization

HTR technology for DHW production up to 70°C / 158°F and simultaneous production of several services

Integrated cascade management up to 3 units

Collection system



Ground



Open loop



Air



Hybrid



NetZero* BW/CW 1-9

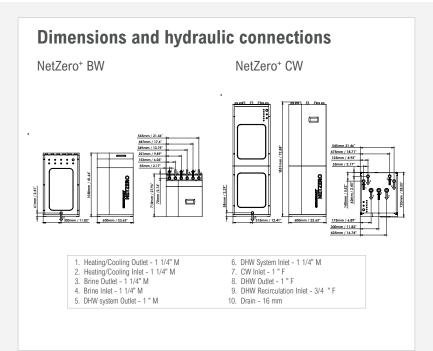
- Modulating thermal power control within a wide range (12.5 100%) and modulating flow rate control of both brine and production circuits (20.0 - 100%).
- Inverter technology and scroll compressor.
- Compact design including brine and production circulation pumps, brine and production expansion vessels, safety valves and DHW three-way valve.
- High Temperature Recovery system (HTR) for DHW production up to 158 °F without electrical support and simultaneous production of DHW and heating/cooling.
- Integrated management of up to 4 different emission temperatures, 2 buffer tanks (heating and cooling), 1 DHW tank, 1 pool and hourly control of DHW recirculation.
- Integrated management of air source collection modulating units, in case of air

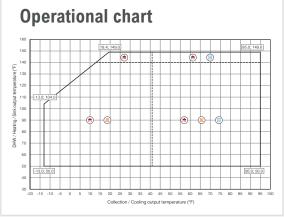
- source or hybrid configurations.
- Integrated management of external On/Off or modulating auxiliary systems, such as electrical heaters, On/Off boilers or modulating boilers.
- Integrated management of cascade systems up to 3 units.
- Integrated management of simultaneous cooling/heating systems according to scheme.
- Integrated photovoltaic hybridization.
- Integrated energy meters to measure the electrical consumption, the heating/ cooling thermal power, the COP and the monthly and annual SPF.
- Integrated internet connection.

	Place of installation			Indoors		
APPLICATION	Type of brine system ¹		Indoors Ground source / Air source / Open loop / Hybrid source			
	Underwriter Laboratories (L	11.\	Groun	u source / Aii source / Open io ✓	op / Hybrid source	
CERTIFICATIONS				✓		
CERTIFICATIONS	Air-Conditioning, Heating and Refrigeration Institute (AHRI) Energy Star					
NetZero+BW/CW 1-9 SYSTEM ²	TYPE OF PRODUCTION	SPECIFICATION	UNITS	FULL LOAD	PART LOAD	
Hetzero Buren i 3 3131Em		Cooling capacity	Btuh	22,274	14,919	
	COOLING	EER Rating	Btuh / W	13.09	14.83	
	COOLING	Fluid flow rate	gpm	6.10	4.00	
WATER-LOOP (WLHP)		Heating capacity	Btuh	53,473	22,184	
	HEATING	COP	W/W	4.32	5.46	
		Fluid flow rate	gpm	11.70	7.60	
GROUND-WATER (GWHP)		Cooling capacity	Btuh	23,901	15,879	
	COOLING	EER Rating	Btuh / W	18.60	22.43	
	33323	Fluid flow rate	gpm	6.10	4.00	
		Heating capacity	Btuh	46,261	19,431	
	HEATING	COP	W/W	3.35	4.14	
		Fluid flow rate	gpm	9.50	6.30	
		Cooling capacity	Btuh	21,781	15,221	
	COOLING	EER Rating	Btuh / W	13.65	18.81	
		Fluid flow rate	gpm	5.90	3.90	
GROUND-LOOP (GLHP)		Heating capacity	Btuh	36,024	16,947	
	HEATING	COP	W/W	2.83	3.87	
		Fluid flow rate	gpm	6.80	5.40	
NetZero+BW/CW 1-9 GENERAL	SPECIFICATIONS		UNITS			
	Modulation range of the co	mpressor	%	12.5 to	100.0	
PERFORMANCE	Max. DHW temperature without / with support 5		°F	145.4 /	158.0	
	Noise power emission level ⁶		dB	33 to 44		
	Distribution / Set heating outlet temperature range		°F	50.0 to 140.0 / 68.0 to 140.0		
	Distribution / Set cooling outlet temperature range		°F	41.0 to 95.0 / 44.6 to 77.0		
	Brine inlet temperature range in heating applications		°F	-13.0 to 95.0		
OPERATION	Brine inlet temperature range in cooling applications		°F	50.0 to 140.0		
IMITS	Minimum / Maximum refrigerant circuit pressure		psi	35.53 / 652.28		
	Production / Pre-load circuit pressure		psi	7.25 to 43.51 / 21.756		
	Brine / Pre-load circuit pressure		psi	7.25 to 43.51 / 10.15		
	Volume / Max. DHW storage tank pressure (NetZero+ C)		galon / psi	43.59 / 116.03		
WORKING FLUIDS	R410A Refrigerant load		lb & oz	2 lb & 3.20 oz		
WORKING LEGIDS	Compressor oil type / load		- / lb & oz	POE / 1 lb & 10.08 oz		
	1/N/PE 230 V / 50-60 Hz ⁸		-	✓		
CONTROL	Maximum recommended ex		-	C16		
ELECTRICAL DATA	Transformer primary circuit		А	0.5		
	Transformer secondary circuit fuse		А	2.5		
	1/N/PE 230 V / 50-60 Hz ⁸		-	✓		
	Maximum recommended external protection ⁹		-	C25A		
ELECTRICAL DATA:	Maximum consumption ¹⁰ , B32W95		kW / A	2.7 / 11.8		
SINGLE-PHASE	Maximum consumption ¹⁰ , E		kW / A	3.8 / 16.5		
	Minimum / Maximum starti	ng current '	A	2.8 / 5.8		
	Correction of cosine Ø			0.96		
	Height x width x depth BW	l CW	inch	41.65 x 23.62 x 27.95	72.87 x 23.62 x 28.3	
DIMENSIONS/WEIGHT		'	mm	1,058 x 600 x 710	1,851 x 600 x 720	
	Empty weight (without assembly) BW CW		lb & oz	423 lb & 4.64 oz	557 lb & 12.32 oz	

- Air source/Hybrid source by replacing/combining the ground 3. source circuit by/with one or more NetZero+ AU. Consult the NetZero+ AU manual for more detailed information.
- Rated as follows in accordance with the latest edition of ANSI / AHRI / ASHRAE / ISO 13256-2 Water-source heat 5. pumps. Testing and rating for performance. Rated accuracy by AHRI-sponsored, independent, third party testing.
- Considering brine and production flow rates in compliance with FN 14511
- Considering a heat slope from 68°F to 122°F in absence 7. of consumption.
 - Considering support provided by the emergency electrical 8. heater or the HTR system. Maximum DHW temperature with the HTR system can be limited by the compressor 9.
- discharge temperature.
- In compliance with EN 12102.
- Starting current depends on the working conditions of the hydraulic circuits.
- The admissible voltage range for proper operation of the heat pump is $\pm 10\%$
 - Maximum consumption can vary significantly according to
- working conditions, or if the compressor's operation range is restricted. Consult the technical service manual for more detailed information.
- 10. In compliance with EN 14511, this includes the consumption of the circulation pumps and the compressor









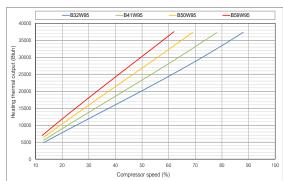


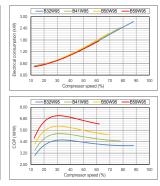


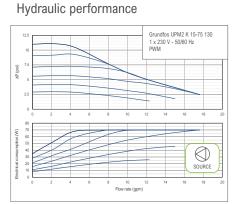


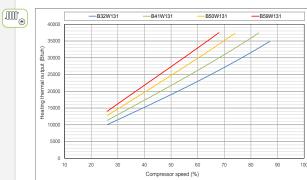
Performance curves

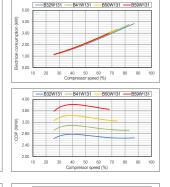
Thermal performance¹

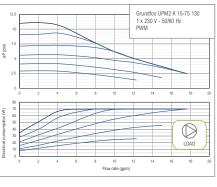


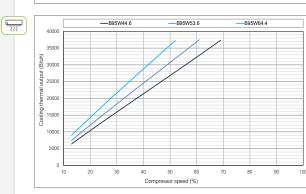


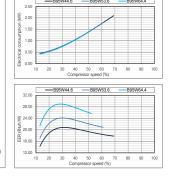


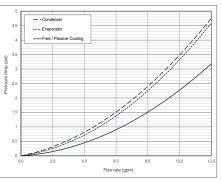












The COP and EER parameters shown in these curves take into account the full electrical power consumptions. Compressor, circulator pumps, controller, inverter and valves

NetZero* BW/CW 3-12

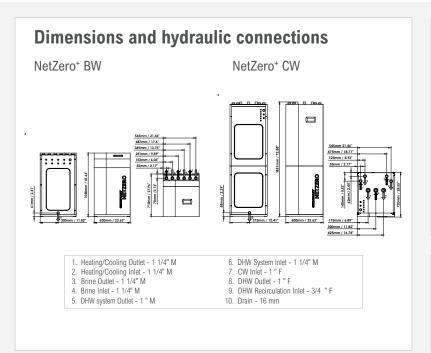
- Modulating thermal power control within a wide range (12.5 100%) and modulating flow rate control of both brine and production circuits (20.0 - 100%).
- Inverter technology and scroll compressor.
- Compact design including brine and production circulation pumps, brine and production expansion vessels, safety valves and DHW three-way valve.
- High Temperature Recovery system (HTR) for DHW production up to 158 °F without electrical support and simultaneous production of DHW and heating/cooling.
- Integrated management of up to 4 different emission temperatures, 2 buffer tanks (heating and cooling), 1 DHW tank, 1 pool and hourly control of DHW recirculation.
- Integrated management of air source collection modulating units, in case of air

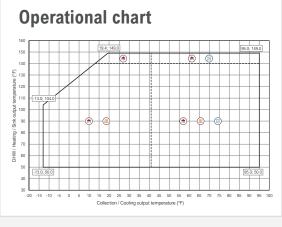
- source or hybrid configurations.
- Integrated management of external On/Off or modulating auxiliary systems, such as electrical heaters, On/Off boilers or modulating boilers.
- Integrated management of cascade systems up to 3 units.
- Integrated management of simultaneous cooling/heating systems according to scheme.
- Integrated photovoltaic hybridization.
- Integrated energy meters to measure the electrical consumption, the heating/ cooling thermal power, the COP and the monthly and annual SPF.
- Integrated internet connection.

NetZero+ BW/CW 3-12	Place of installation			Indoors		
APPLICATION	Type of brine system ¹					
			Ground source / Air source / Open loop / Hybrid source ✓			
CERTIFICATIONS	Underwriter Laboratories (U	JL)		∨		
CERTIFICATIONS	Air-Conditioning, Heating and Refrigeration Institute (AHRI)			✓		
N-47+ PINICIN 2 42 CYCTEM?	Energy Star	CDECIFIC ATION				
NetZero+BW/CW 3-12 SYSTEM ²	TYPE OF PRODUCTION		UNITS	FULL LOAD	PART LOAD	
		Cooling capacity	Btuh	30,787	20,836	
	COOLING	EER Rating	Btuh / W	13.60	15.19	
WATER-LOOP (WLHP)		Fluid flow rate	gpm	8.30	5.50	
		Heating capacity	Btuh	68,212	30,597	
	HEATING	COP	W/W	4.64	6.01	
		Fluid flow rate	gpm	15.40	10.80	
		Cooling capacity	Btuh	32,057	21,536	
	COOLING	EER Rating	Btuh / W	18.57	22.03	
CROLIND WATER (CMILIP)		Fluid flow rate	gpm	8.20	5.40	
GROUND-WATER (GWHP)		Heating capacity	Btuh	62,244	23,617	
	HEATING	COP	W/W	3.47	4.54	
		Fluid flow rate	gpm	13.00	7.90	
		Cooling capacity	Btuh	29,297	20,681	
	COOLING	EER Rating	Btuh / W	13.72	18.64	
		Fluid flow rate	gpm	7.90	5.30	
GROUND-LOOP (GLHP)		Heating capacity	Btuh	48,688	23,532	
	HEATING	COP	W/W	2.87	3.98	
	112/11/10	Fluid flow rate	gpm	9.60	7.70	
NetZero+BW/CW 3-12 GENERAL	SPECIFICATIONS	Traid now rate	UNITS	5.00	7.70	
NCIZCIO DIVICIO 3 12 GENERAL	Modulation range of the co	mnressor	%	12.5 to	100.0	
PERFORMANCE	Max. DHW temperature without / with support 5		°F	145.4 /		
I EN ONMANCE	Noise power emission level ⁶		dB	34 to		
	Distribution / Set heating outlet temperature range		°F	50.0 to 140.0 / 68.0 to 140.0		
	Distribution / Set reating outlet temperature range Distribution / Set cooling outlet temperature range		°F	41.0 to 95.0 / 44.6 to 77.0		
	Brine inlet temperature range in heating applications		°F	-13.0 to 95.0		
OPERATION			°F	50.0 to 140.0		
LIMITS	Brine inlet temperature range in cooling applications			35.53 / 652.28		
LIMI12	Minimum / Maximum refrigerant circuit pressure		psi			
	Production / Pre-load circuit pressure		psi	7.25 to 43.51 / 21.756		
	Brine / Pre-load circuit pressure		psi	7.25 to 43.51 / 10.15		
	Volume / Max. DHW storage tank pressure (NetZero+ C)		galon / psi	43.59 / 116.03		
WORKING FLUIDS	R410A Refrigerant load		lb & oz	2.20		
	Compressor oil type / load		- / lb & oz	POE / 1.63		
	1/N/PE 230 V / 50-60 Hz ⁸		-	√		
CONTROL	Maximum recommended ex	xternal protection ⁹	-	C16		
ELECTRICAL DATA	Transformer primary circuit	fuse	А	0.5		
	Transformer secondary circu	uit fuse	А	2.5		
	1/N/PE 230 V / 50-60 Hz ⁸		-	✓		
	Maximum recommended ex	xternal protection ⁹	-	C32A		
ELECTRICAL DATA:	Maximum consumption ¹⁰ , E		kW / A	4.2 / 18.6		
SINGLE-PHASE	Maximum consumption ¹⁰ , E	332W131	kW / A	5.0 / 21.7		
	Minimum / Maximum starti	ing current ⁷	А	2.0 / 8.0		
	Correction of cosine Ø		-	0.96	/ 1	
DIMENSIONS /WEIGHT	11:11:11:11:12:00	LCM	inch	41.65 x 23.62 x 27.95	72.87 x 23.62 x 28.3	
	Height x width x depth BW CW					
DIMENSIONS/WEIGHT	Height x width x depth BVV	CVV	mm	1,058 x 600 x 710	1,851 x 600 x 720	

- Air source/Hybrid source by replacing/combining the ground 3. source circuit by/with one or more NetZero+ AU. Consult the NetZero+ AU manual for more detailed information.
- Rated as follows in accordance with the latest edition of ANSI / AHRI / ASHRAE / ISO 13256-2 Water-source heat 5. pumps. Testing and rating for performance. Rated accuracy by AHRI-sponsored, independent, third party testing.
- Considering brine and production flow rates in compliance with FN 14511
- Considering a heat slope from 68°F to 122°F in absence 7. of consumption.
 - Considering support provided by the emergency electrical 8. heater or the HTR system. Maximum DHW temperature with the HTR system can be limited by the compressor 9.
- discharge temperature
- In compliance with EN 12102.
- Starting current depends on the working conditions of the hydraulic circuits.
- The admissible voltage range for proper operation of the heat pump is $\pm 10\%$
 - Maximum consumption can vary significantly according to
- working conditions, or if the compressor's operation range is restricted. Consult the technical service manual for more detailed information.
- In compliance with EN 14511, this includes the consumption of the circulation pumps and the compressor









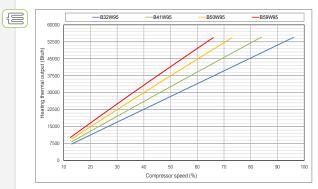


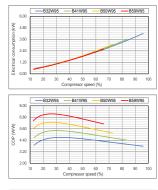


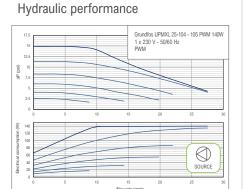


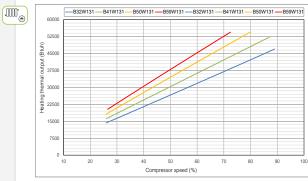
Performance curves

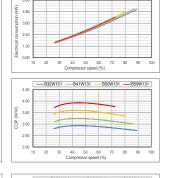
Thermal performance¹

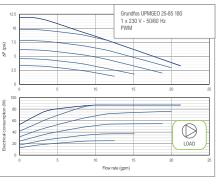


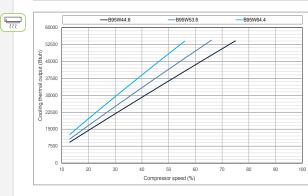


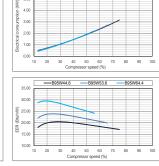


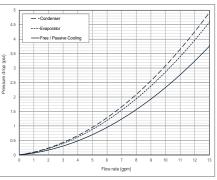












The COP and EER parameters shown in these curves take into account the full electrical power consumptions. Compressor, circulator pumps, controller, inverter and valves

NetZero* BW/CW 5-22

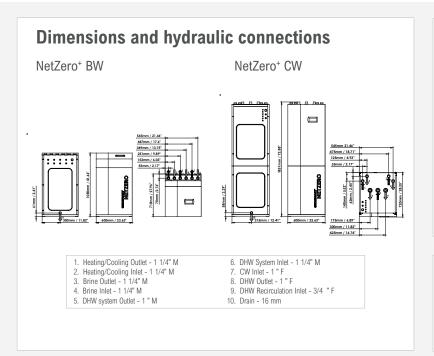
- Modulating thermal power control within a wide range (12.5 100%) and modulating flow rate control of both brine and production circuits (20.0 - 100%).
- Inverter technology and scroll compressor.
- Compact design including brine and production circulation pumps, brine and production expansion vessels, safety valves and DHW three-way valve.
- High Temperature Recovery system (HTR) for DHW production up to 158 °F without electrical support and simultaneous production of DHW and heating/cooling.
- Integrated management of up to 4 different emission temperatures, 2 buffer tanks (heating and cooling), 1 DHW tank, 1 pool and hourly control of DHW recirculation.
- Integrated management of air source collection modulating units, in case of air

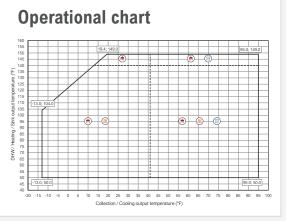
- source or hybrid configurations.
- Integrated management of external On/Off or modulating auxiliary systems, such as electrical heaters, On/Off boilers or modulating boilers.
- Integrated management of cascade systems up to 3 units.
- Integrated management of simultaneous cooling/heating systems according to scheme.
- Integrated photovoltaic hybridization.
- Integrated energy meters to measure the electrical consumption, the heating/ cooling thermal power, the COP and the monthly and annual SPF.
- Integrated internet connection.

NetZero⁺ BW/CW 5-22	Place of installation			lando o :		
APPLICATION			Indoors			
	Type of brine system ¹		Ground source / Air source / Open loop / Hybrid source			
CERTIFICATIONS	Underwriter Laboratories (L	JL)		✓ ✓		
CERTIFICATIONS	Air-Conditioning, Heating and Refrigeration Institute (AHRI)					
N - PHYSIN E 22 SYSTEM 2	Energy Star		√			
NetZero+BW/CW 5-22 SYSTEM ²	TYPE OF PRODUCTION		UNITS	FULL LOAD	PART LOAD	
		Cooling capacity	Btuh	44,782	30,182	
	COOLING	EER Rating	Btuh / W	13.28	14.68	
WATER-LOOP (WLHP)		Fluid flow rate	gpm	12.10	8.00	
,		Heating capacity	Btuh	96,053	73,713	
	HEATING	COP	W/W	3.99	5.53	
		Fluid flow rate	gpm	20.90	15.30	
GROUND-WATER (GWHP)		Cooling capacity	Btuh	48,967	32,706	
	COOLING	EER Rating	Btuh / W	18.75	22.05	
		Fluid flow rate	gpm	12.10	9.30	
		Heating capacity	Btuh	86,016	34,387	
	HEATING	COP	W/W	3.22	4.36	
		Fluid flow rate	gpm	17.60	11.50	
		Cooling capacity	Btuh	44,726	31,403	
	COOLING	EER Rating	Btuh / W	13.95	18.72	
CDOLIND LOOP (CLUP)		Fluid flow rate	gpm	12.00	8.10	
GROUND-LOOP (GLHP)		Heating capacity	Btuh	70,898	30,384	
	HEATING	COP	W/W	2.81	3.87	
	Fluid flow rate		gpm	20.70	9.80	
NetZero+BW/CW 5-22 GENERAL	SPECIFICATIONS		UNITS			
	Modulation range of the co	mpressor	%	15.0 to	100.0	
PERFORMANCE	Max. DHW temperature without / with support 5		°F	145.4 /	158.0	
	Noise power emission level ⁶		dB	35 to	46	
	Distribution / Set heating outlet temperature range		°F	50.0 to 140.0 / 68.0 to 140.0		
	Distribution / Set cooling outlet temperature range		°F	41.0 to 95.0 / 44.6 to 77.0		
	Brine inlet temperature range in heating applications		°F	-13.0 to 95.0		
OPERATION	Brine inlet temperature range in reating applications		°F	50.0 to 140.0		
LIMITS	Minimum / Maximum refrigerant circuit pressure		psi	35.53 / 652.28		
	Production / Pre-load circuit pressure		psi	7.25 to 43.51 / 21.75		
	Brine / Pre-load circuit pres	CITE	psi	7.25 to 43.51 / 21.75 7.25 to 43.51 / 10.15		
	Volume / Max. DHW storage tank pressure (NetZero+ C)		galon / psi	43.59 / 116.03		
	R410A Refrigerant load		lb & oz	3.31		
WORKING FLUIDS	Compressor oil type / load		- / lb & oz	POE / 2.60		
	1/N/PE 230 V / 50-60 Hz ⁸		7 1D Q 02	FOL 7 2.00 ✓		
CONTROL	Maximum recommended ex	eternal protection 9	-	C16		
ELECTRICAL DATA	Transformer primary circuit	fuso	Α	0.5		
ELECTRICAL DATA	Transformer secondary circuit	it fuse	A	2.5		
	Transformer secondary circuit fuse		A -	∠.5		
	1/N/PE 230 V / 50-60 Hz ⁸ Maximum recommended external protection ⁹		-			
ELECTRICAL DATA:	Maximum recommended ex	223W0E	kW / A	C32A		
				4.2 / 18.6		
SINGLE-PHASE	Maximum consumption ¹⁰ , E	552VV 15 (kW / A	5.0 / 21.7 2.0 / 8.0		
	Minimum / Maximum starti	ng current '	Α			
	Correction of cosine Ø		- to als	0.96		
DIMENSIONS (MEICH	Height x width x depth BW	l CW	inch	41.65 x 23.62 x 27.95	72.87 x 23.62 x 28.35	
DIMENSIONS/WEIGHT			mm	1,058 x 600 x 710	1,851 x 600 x 720	
	Empty weight (without assembly) BW CW		lb & oz	425.49	562.18	

- Air source/Hybrid source by replacing/combining the ground 3. source circuit by/with one or more NetZero+ AU. Consult the NetZero+ AU manual for more detailed information.
- Rated as follows in accordance with the latest edition of ANSI / AHRI / ASHRAE / ISO 13256-2 Water-source heat 5. pumps. Testing and rating for performance. Rated accuracy by AHRI-sponsored, independent, third party testing.
- Considering brine and production flow rates in compliance with FN 14511
- Considering a heat slope from 68°F to 122°F in absence 7. of consumption.
 - Considering support provided by the emergency electrical 8. heater or the HTR system. Maximum DHW temperature with the HTR system can be limited by the compressor 9.
- discharge temperature
- In compliance with EN 12102.
- Starting current depends on the working conditions of the hydraulic circuits.
- The admissible voltage range for proper operation of the heat pump is $\pm 10\%$
 - Maximum consumption can vary significantly according to
- working conditions, or if the compressor's operation range is restricted. Consult the technical service manual for more detailed information.
- In compliance with EN 14511, this includes the consumption of the circulation pumps and the compressor









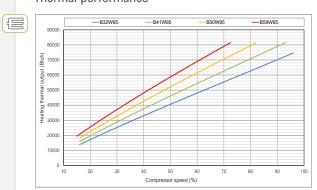


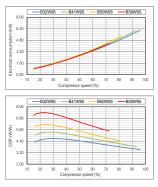


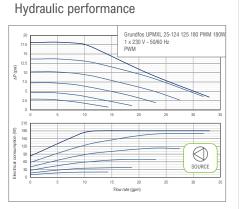


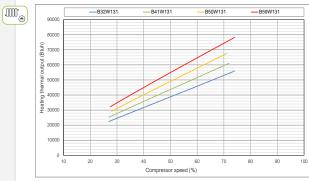
Performance curves

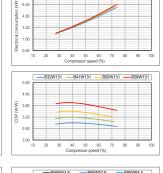
Thermal performance¹



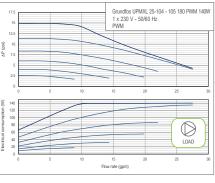


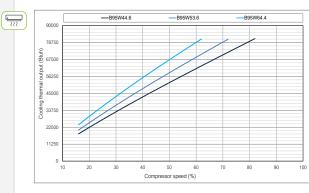


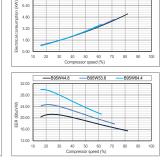


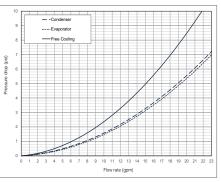


8.0









The COP and EER parameters shown in these curves take into account the full electrical power consumptions. Compressor, circulator pumps, controller, inverter and valves

Notes

Notes



NetZero* BW/CW 1-9

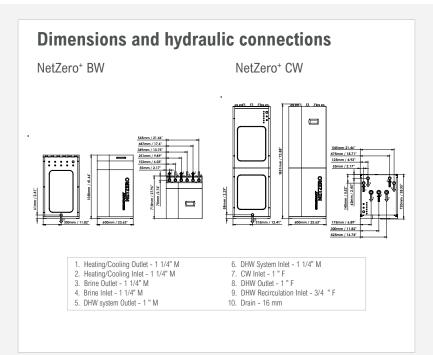
- Modulating thermal power control within a wide range (12.5 100%) and modulating flow rate control of both brine and production circuits (20.0 - 100%).
- Inverter technology and scroll compressor.
- Compact design including brine and production circulation pumps, brine and production expansion vessels, safety valves and DHW three-way valve.
- High Temperature Recovery system (HTR) for DHW production up to 70 °C without electrical support and simultaneous production of DHW and heating/cooling.
- Integrated management of up to 4 different emission temperatures, 2 buffer tanks (heating and cooling), 1 DHW tank, 1 pool and hourly control of DHW recirculation.
- Integrated management of air source collection modulating units, in case of air

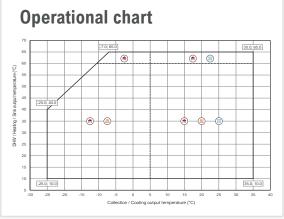
- source or hybrid configurations.
- Integrated management of external On/Off or modulating auxiliary systems, such as electrical heaters, On/Off boilers or modulating boilers.
- Integrated management of cascade systems up to 3 units.
- Integrated management of simultaneous cooling/heating systems according to scheme.
- Integrated photovoltaic hybridization.
- Integrated energy meters to measure the electrical consumption, the heating/ cooling thermal power, the COP and the monthly and annual SPF.
- Integrated internet connection.

NetZero+ BW/CW 1-9	Place of installation			Indoors		
APPLICATION						
	Type of brine system ¹ Underwriter Laboratories (111.\	Ground source / Air source / Open loop / Hybrid source ✓			
CERTIFICATIONS				▼		
CERTIFICATIONS	Energy Star	Air-Conditioning, Heating and Refrigeration Institute (AHRI)				
Not7aget DIALICIAL 1 O SYSTEM 2		SPECIFICATION	UNITS	FULL LOAD	PART LOAD	
NetZero+ BW/CW 1-9 SYSTEM 2	TYPE OF PRODUCTION					
	60011116	Cooling capacity	kWh	6.53	4.37	
	COOLING	EER Rating	Btuh / W	13.09	14.83	
WATER-LOOP (WLHP)		Fluid flow rate	m³ / h	1.66	1.09	
	LIEATING	Heating capacity	kWh	15.67	6.5	
	HEATING	COP	W/W	4.32	5.46	
		Fluid flow rate	m³ / h	3.19	2.07	
		Cooling capacity	kWh	7.01	4.65	
	COOLING	EER Rating	Btuh / W	18.6	22.43	
GROUND-WATER (GWHP)		Fluid flow rate	m³ / h	1.66	1.09	
	LIEATING	Heating capacity	kWh	13.56	5.7	
	HEATING	COP	W/W	3.35	4.14	
		Fluid flow rate	m³ / h	2.59	1.72	
	60011116	Cooling capacity	kWh	6.38	4.46	
	COOLING	EER Rating	Btuh / W	13.65	18.81	
GROUND-LOOP (GLHP)		Fluid flow rate	m³ / h	1.61	1.06	
	HEATING	Heating capacity	kWh	10.56	4.97	
		COP	W/W	2.83	3.87	
N 47 I DINIGNA O CENEDAL	L CRECIFICATIONS	Fluid flow rate	m³ / h	1.85	1.47	
NetZero+BW/CW 1-9 GENERAI			UNITS	42.5.	100.0	
DEDEC DALANCE	Modulation range of the compressor		%	12.5 to 100.0 63 / 70		
PERFORMANCE	Max. DHW temperature without / with support 5		°C dB	33 to 44		
	Noise power emission level ⁶		oC GR	10 to 60 / 20 to 60		
	Distribution / Set heating outlet temperature range		°C	5 to 35 / 7 to 25		
	Distribution / Set cooling outlet temperature range					
ODEDATION.	Brine inlet temperature range in heating applications		°C	-25 to 35		
OPERATION	Brine inlet temperature range in cooling applications		-	10 to 60		
LIMITS	Minimum / Maximum refrigerant circuit pressure		bar	2 / 45		
	Production / Pre-load circuit pressure		bar bar	0.5 to 3.0 / 1.5		
	Brine / Pre-load circuit pressure		I / bar	0.5 to 3.0 / 0.7 165 / 8		
	Volume / Max. DHW storage tank pressure (NetZero+ C) R410A Refrigerant load			1.00		
WORKING FLUIDS			kg - / kg	POE / 0.74		
	Compressor oil type / load 1/N/PE 230 V / 50-60 Hz 8		- / Kg -	POE / 0.74 ✓		
CONTROL			-	C16		
ELECTRICAL DATA		Maximum recommended external protection ⁹		0.5		
ELECTRICAL DATA		Transformer primary circuit fuse Transformer secondary circuit fuse		2.5		
			A -	∠.5		
	1/N/PE 230 V / 50-60 Hz ⁸		-			
	Maximum recommended external protection 9		- L\\\ / \	C10A		
TECTRICAL DATA:	Maximum consumption ¹⁰ , B32W95		kW / A	2.7 / 4.0		
	Maximum consumption ¹⁰ , B32W131		KVV / A	3.8 / 5.5		
			٨	0.9 / 1.9		
	Minimum / Maximum start		A			
ELECTRICAL DATA: SINGLE-PHASE	Minimum / Maximum start Correction of cosine Ø	ing current ⁷	-	0.96	/ 1	
	Minimum / Maximum start	ing current ⁷				

- Air source/Hybrid source by replacing/combining the ground 3. source circuit by/with one or more NetZero+ AU. Consult the NetZero+ AU manual for more detailed information.
- Rated as follows in accordance with the latest edition of ANSI / AHRI / ASHRAE / ISO 13256-2 Water-source heat 5. pumps. Testing and rating for performance. Rated accuracy by AHRI-sponsored, independent, third party testing.
- Considering brine and production flow rates in compliance with FN 14511
- Considering a heat slope from 68°F to 122°F in absence 7. of consumption.
 - Considering support provided by the emergency electrical 8. heater or the HTR system. Maximum DHW temperature with the HTR system can be limited by the compressor 9.
- discharge temperature.
- In compliance with EN 12102.
- Starting current depends on the working conditions of the hydraulic circuits.
- The admissible voltage range for proper operation of the heat pump is $\pm 10\%$
 - Maximum consumption can vary significantly according to
- working conditions, or if the compressor's operation range is restricted. Consult the technical service manual for more detailed information.
- In compliance with EN 14511, this includes the consumption of the circulation pumps and the compressor









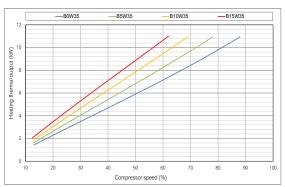


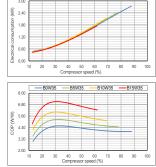


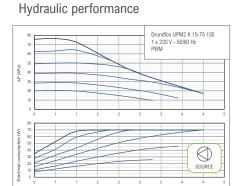


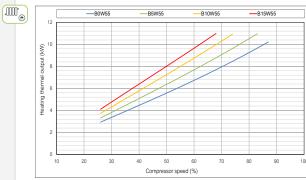
Performance curves

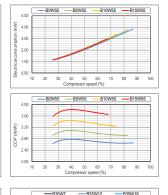
Thermal performance¹

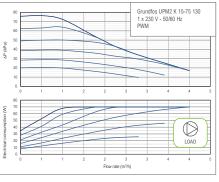


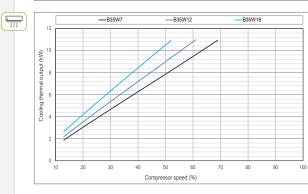


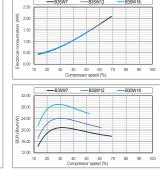


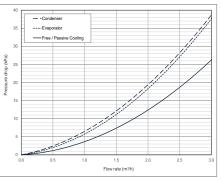












The COP and EER parameters shown in these curves take into account the full electrical power consumptions. Compressor, circulator pumps, controller, inverter and valves

NetZero* BW/CW 3-12

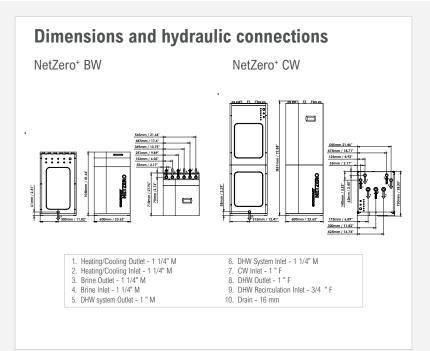
- Modulating thermal power control within a wide range (12.5 100%) and modulating flow rate control of both brine and production circuits (20.0 - 100%).
- Inverter technology and scroll compressor.
- Compact design including brine and production circulation pumps, brine and production expansion vessels, safety valves and DHW three-way valve.
- High Temperature Recovery system (HTR) for DHW production up to 70 °C without electrical support and simultaneous production of DHW and heating/cooling.
- Integrated management of up to 4 different emission temperatures, 2 buffer tanks (heating and cooling), 1 DHW tank, 1 pool and hourly control of DHW recirculation.
- Integrated management of air source collection modulating units, in case of air

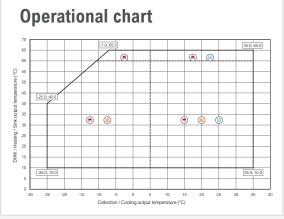
- source or hybrid configurations.
- Integrated management of external On/Off or modulating auxiliary systems, such as electrical heaters, On/Off boilers or modulating boilers.
- Integrated management of cascade systems up to 3 units.
- Integrated management of simultaneous cooling/heating systems according to scheme.
- Integrated photovoltaic hybridization.
- Integrated energy meters to measure the electrical consumption, the heating/ cooling thermal power, the COP and the monthly and annual SPF.
- Integrated internet connection.

	Place of installation			Indoors		
APPLICATION	Type of brine system ¹		Ground source / Air source / Open loop / Hybrid source			
	Underwriter Laboratories (L	11.\	Ground	u source / Air source / Open io	op / nybiid source	
CERTIFICATIONS	Air Conditioning Heating a	nd Pofrigoration Institute (AUPI)		✓		
	Air-Conditioning, Heating and Refrigeration Institute (AHRI)			✓		
NotZorot DIVICIN 2 12 CVCTEM?	Energy Star TYPE OF PRODUCTION SPECIFICATION		UNITS	FULL LOAD	PART LOAD	
NetZero+BW/CW 3-12 SYSTEM ²	TYPE OF PRODUCTION		kWh			
	60011116	Cooling capacity		9.02	6.11	
	COOLING	EER Rating	Btuh / W	13.6	15.19	
WATER-LOOP (WLHP)		Fluid flow rate	m³ / h	2.26	1.5	
	LIEATING	Heating capacity	kWh	19.99	8.97	
	HEATING		W/W	4.64	6.01	
		Fluid flow rate	m³ / h	4.2	2.95	
		Cooling capacity	kWh	9.4	6.31	
	COOLING	EER Rating	Btuh / W	18.57	22.03	
GROUND-WATER (GWHP)		Fluid flow rate	m³ / h	2.24	1.47	
, ,		Heating capacity	kWh	18.24	6.92	
	HEATING	COP	W/W	3.47	4.54	
		Fluid flow rate	m³ / h	3.55	2.15	
		Cooling capacity	kWh	8.59	6.06	
	COOLING	EER Rating	Btuh / W	13.72	18.64	
GROUND-LOOP (GLHP)		Fluid flow rate	m³ / h	2.15	1.45	
CROOND EGG! (GEIII)	HEATING	Heating capacity	kWh	14.27	6.9	
		COP	W/W	2.87	3.98	
	Fluid flow rate		m³ / h	2.62	2.1	
NetZero+BW/CW 3-12 GENERAL			UNITS			
	Modulation range of the co		%	12.5 to 100.0		
PERFORMANCE	Max. DHW temperature without / with support 5		°C	63 / 70		
	Noise power emission level ⁶		dB	34 to 45		
	Distribution / Set heating outlet temperature range		°C	10 to 60 / 20 to 60		
	Distribution / Set cooling outlet temperature range		°C	5 to 35 / 7 to 25		
	Brine inlet temperature range in heating applications		°C	-25 to 35		
OPERATION	Brine inlet temperature range in cooling applications		°C	10 to 60		
LIMITS	Minimum / Maximum refrigerant circuit pressure		bar	2 / 45		
	Production / Pre-load circuit pressure		bar	0.5 to 3.0 / 1.5		
	Brine / Pre-load circuit pres	sure	bar	0.5 to 3.0 / 0.7		
	Volume / Max. DHW storage tank pressure (NetZero+ C)		I / bar	165 / 8		
WORKING FLUIDS	R410A Refrigerant load		kg	1.00		
WORKING FLOIDS	Compressor oil type / load		- / kg	POE / 0.74		
	1/N/PE 230 V / 50-60 Hz ⁸		-	✓		
CONTROL	Maximum recommended ex	kternal protection ⁹	-	C16		
ELECTRICAL DATA	Transformer primary circuit fuse		А	0.5		
	Transformer secondary circu	uit fuse	А	2.5		
	1/N/PE 230 V / 50-60 Hz ⁸		-	✓		
	Maximum recommended external protection 9		-	C32A		
ELECTRICAL DATA:	Maximum consumption ¹⁰ , B		kW / A	4.2 / 18.6		
SINGLE-PHASE	Maximum consumption ¹⁰ , B	332W131	kW / A	5.0 / 21.7		
	Minimum / Maximum starti	ng current ⁷	А	2.0 / 8.0		
	Correction of cosine Ø		-	0.96 / 1		
	Height v width v donth DM	LCW	inch	41.65 x 23.62 x 27.95	72.87 x 23.62 x 28.35	
DIMENSIONS/WEIGHT	Height x width x depth BW	CVV	mm	1,058 x 600 x 710	1,851 x 600 x 720	
	Empty weight (without assembly) BW CW		kg	193	254	

- $\label{eq:air_source} \mbox{Air source/Hybrid source by replacing/combining the ground} \quad \mbox{3}.$ source circuit by/with one or more NetZero+ AU. Consult the NetZero+ AU manual for more detailed information.
- Rated as follows in accordance with the latest edition of ANSI / AHRI / ASHRAE / ISO 13256-2 Water-source heat 5. pumps. Testing and rating for performance. Rated accuracy by AHRI-sponsored, independent, third party testing.
- Considering brine and production flow rates in compliance with FN 14511
- Considering a heat slope from 68°F to 122°F in absence 7. of consumption.
 - Considering support provided by the emergency electrical 8. heater or the HTR system. Maximum DHW temperature with the HTR system can be limited by the compressor 9.
- discharge temperature
- In compliance with EN 12102.
- Starting current depends on the working conditions of the hydraulic circuits.
- The admissible voltage range for proper operation of the heat pump is $\pm 10\%$
 - Maximum consumption can vary significantly according to
- working conditions, or if the compressor's operation range is restricted. Consult the technical service manual for more detailed information.
- In compliance with EN 14511, this includes the consumption of the circulation pumps and the compressor









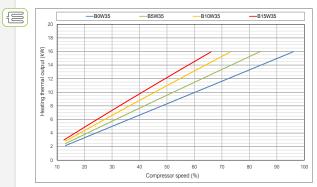


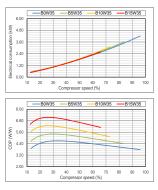


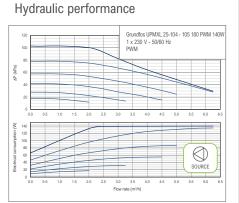


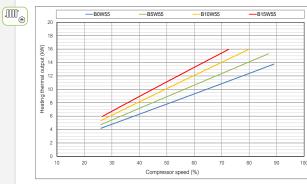
Performance curves

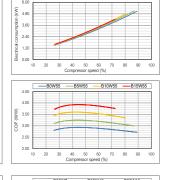
Thermal performance¹

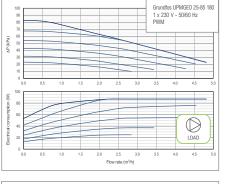


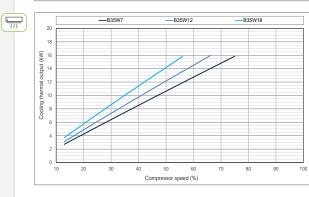


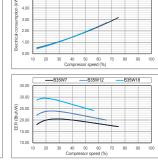


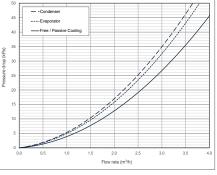












The COP and EER parameters shown in these curves take into account the full electrical power consumptions. Compressor, circulator pumps, controller, inverter and valves

NetZero* BW/CW 5-22

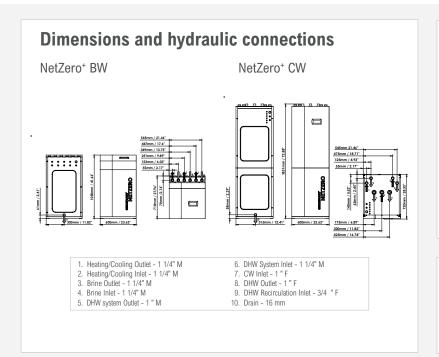
- Modulating thermal power control within a wide range (12.5 100%) and modulating flow rate control of both brine and production circuits (20.0 - 100%).
- Inverter technology and scroll compressor.
- Compact design including brine and production circulation pumps, brine and production expansion vessels, safety valves and DHW three-way valve.
- High Temperature Recovery system (HTR) for DHW production up to 70 °C without electrical support and simultaneous production of DHW and heating/cooling.
- Integrated management of up to 4 different emission temperatures, 2 buffer tanks (heating and cooling), 1 DHW tank, 1 pool and hourly control of DHW recirculation.
- Integrated management of air source collection modulating units, in case of air

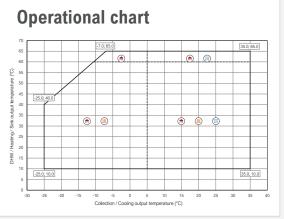
- source or hybrid configurations.
- Integrated management of external On/Off or modulating auxiliary systems, such as electrical heaters, On/Off boilers or modulating boilers.
- Integrated management of cascade systems up to 3 units.
- Integrated management of simultaneous cooling/heating systems according to scheme.
- Integrated photovoltaic hybridization.
- Integrated energy meters to measure the electrical consumption, the heating/ cooling thermal power, the COP and the monthly and annual SPF.
- Integrated internet connection.

	Place of installation			Indoors			
APPLICATION	Type of brine system ¹						
	Underwriter Laboratories (L			Ground source / Air source / Open loop / Hybrid source ✓			
CERTIFICATIONS	Air Conditioning Heating :	und Pofrigoration Institute (AUPI)		✓			
	Air-Conditioning, Heating and Refrigeration Institute (AHRI)		✓ ✓				
NotZarat DW/CW E 22 SYSTEM?		Energy Star TYPE OF PRODUCTION SPECIFICATION		UNITS FULL LOAD PART LOAD			
NetZero+BW/CW 5-22 SYSTEM ²	TYPE OF PRODUCTION	:	kWh				
	COOLING	Cooling capacity		13.13	8.85		
	COOLING	EER Rating	Btuh / W	13.28	14.68		
WATER-LOOP (WLHP)		Fluid flow rate	m³ / h	3.3	2.18		
		Heating capacity	kWh	28.15	21.61		
	HEATING	COP	W/W	3.99	5.53		
		Fluid flow rate	m³ / h	5.7	4.17		
		Cooling capacity	kWh	14.35	9.59		
	COOLING	EER Rating	Btuh / W	18.75	22.05		
GROUND-WATER (GWHP)		Fluid flow rate	m^3 / h	3.3	2.54		
GROUND-WATER (GWIP)		Heating capacity	kWh	25.21	10.08		
	HEATING	COP	W/W	3.22	4.36		
		Fluid flow rate	m³ / h	4.8	3.14		
		Cooling capacity	kWh	13.11	9.2		
	COOLING	EER Rating	Btuh / W	13.95	18.72		
	3332	Fluid flow rate	m³/h	3.27	2.21		
GROUND-LOOP (GLHP)		Heating capacity	kWh	20.78	8.91		
	HEATING	COP	W/W	2.81	3.87		
		Fluid flow rate	m ³ / h	5.65	2.67		
NetZero+BW/CW 5-22 GENERAI	CDECIFICATIONS	Tidid flow fate	UNITS	5.05	2.07		
Netzelo BW/CW 3-22 GENERAL	Modulation range of the co	amprossor	%	15.0 to	100.0		
PERFORMANCE	Max. DHW temperature without / with support 5		°C	63 /			
PERFORMANCE	Noise power emission level ⁶		dB	35 to			
			°C	10 to 60 / 20 to 60			
	Distribution / Set heating outlet temperature range Distribution / Set cooling outlet temperature range		°C	5 to 35 / 7 to 25			
			-	-25 to 35			
0000	Brine inlet temperature range in heating applications		°C				
OPERATION	Brine inlet temperature range in cooling applications		°C	10 to 60			
LIMITS	Minimum / Maximum refrigerant circuit pressure		bar	2 / 45			
	Production / Pre-load circuit pressure		bar	0.5 to 3.0 / 1.5			
	Brine / Pre-load circuit pressure		bar	0.5 to 3.0 / 0.7			
	Volume / Max. DHW storage tank pressure (NetZero+ C)		I / bar	165 / 8			
	R410A Refrigerant load			1.50			
WORKING FILLIDS			kg				
WORKING FLUIDS	Compressor oil type / load		к <u>д</u> - / kg	POE /	1.18		
WORKING FLUIDS	Compressor oil type / load 1/N/PE 230 V / 50-60 Hz ⁸						
	Compressor oil type / load 1/N/PE 230 V / 50-60 Hz ⁸ Maximum recommended ex	xternal protection ⁹		POE /			
CONTROL	Compressor oil type / load 1/N/PE 230 V / 50-60 Hz ⁸ Maximum recommended ex Transformer primary circuit	fuse	- / kg -	POE / ✓	6		
CONTROL	Compressor oil type / load 1/N/PE 230 V / 50-60 Hz ⁸ Maximum recommended ex	fuse	- / kg - -	POE / ✓ C1	6		
CONTROL	Compressor oil type / load 1/N/PE 230 V / 50-60 Hz ⁸ Maximum recommended ex Transformer primary circuit	fuse	- / kg - - - A	POE / ✓ C1 0.1	6 5 5		
CONTROL	Compressor oil type / load 1/N/PE 230 V / 50-60 Hz ⁸ Maximum recommended ex Transformer primary circuit Transformer secondary circu 1/N/PE 230 V / 50-60 Hz ⁸	fuse uit fuse	- / kg - - - A A	POE / C1 0.9	6 5 5		
CONTROL ELECTRICAL DATA	Compressor oil type / load 1/N/PE 230 V / 50-60 Hz ⁸ Maximum recommended ex Transformer primary circuit Transformer secondary circu 1/N/PE 230 V / 50-60 Hz ⁸ Maximum recommended ex	fuse uit fuse xternal protection 9	- / kg - - - A A -	POE / C1 0.: 2.: C32	6 5 5		
CONTROL ELECTRICAL DATA ELECTRICAL DATA:	Compressor oil type / load 1/N/PE 230 V / 50-60 Hz ⁸ Maximum recommended ex Transformer primary circuit Transformer secondary circuit 1/N/PE 230 V / 50-60 Hz ⁸ Maximum recommended ex Maximum consumption ¹⁰ , B	fuse uit fuse xternal protection ⁹ 832W95	- / kg - - - A A - - kW / A	POE / C1 0.: 2.: C32 4.2 /	6 5 5 8 18.6		
CONTROL ELECTRICAL DATA ELECTRICAL DATA:	Compressor oil type / load 1/N/PE 230 V / 50-60 Hz 8 Maximum recommended ex Transformer primary circuit Transformer secondary circuit 1/N/PE 230 V / 50-60 Hz 8 Maximum recommended ex Maximum consumption ¹⁰ , B Maximum consumption ¹⁰ , B	fuse uit fuse kternal protection 9 832W95 832W131	- / kg - - - - A - - - kW / A kW / A	POE / C1 0.9 2.1 C32 4.2 / 5.0 / 2	6 5 5 18.6 21.7		
WORKING FLUIDS CONTROL ELECTRICAL DATA ELECTRICAL DATA: SINGLE-PHASE	Compressor oil type / load 1/N/PE 230 V / 50-60 Hz 8 Maximum recommended ex Transformer primary circuit Transformer secondary circuit 1/N/PE 230 V / 50-60 Hz 8 Maximum recommended ex Maximum consumption ¹⁰ , B Maximum consumption ¹⁰ , B Minimum / Maximum starti	fuse uit fuse kternal protection 9 832W95 832W131	- / kg - - - - - - - - - - - - -	POE / C1 0.9 2.1 C32 4.2 / 5.0 / 2	6 5 5 18.6 21.7 8.0		
CONTROL ELECTRICAL DATA ELECTRICAL DATA:	Compressor oil type / load 1/N/PE 230 V / 50-60 Hz 8 Maximum recommended ex Transformer primary circuit Transformer secondary circuit 1/N/PE 230 V / 50-60 Hz 8 Maximum recommended ex Maximum consumption 10, B Maximum consumption 10, B Minimum / Maximum starti Correction of cosine Ø	fuse uit fuse xternal protection 9 332W95 332W131 ing current 7	- / kg - - - - - - - - - - - - -	POE / C1 0.9 2.1 C32 4.2 / 5.0 / 2 0.96	6 5 5 18.6 21.7 8.0		
CONTROL ELECTRICAL DATA ELECTRICAL DATA:	Compressor oil type / load 1/N/PE 230 V / 50-60 Hz 8 Maximum recommended ex Transformer primary circuit Transformer secondary circuit 1/N/PE 230 V / 50-60 Hz 8 Maximum recommended ex Maximum consumption ¹⁰ , B Maximum consumption ¹⁰ , B Minimum / Maximum starti	fuse uit fuse xternal protection 9 332W95 332W131 ing current 7	-/kg A A kW/A kW/A A	POE / C1 0.9 2.1 C32 4.2 / 5.0 / 2	6 5 5 18.6 21.7 8.0		

- Air source/Hybrid source by replacing/combining the ground 3.
 source circuit by/with one or more NetZero+AU. Consult the
 NetZero+AU manual for more detailed information. 4.
- Rated as follows in accordance with the latest edition of ANSI / AHRI / ASHRAE / ISO 13256-2 Water-source heat 5. pumps. Testing and rating for performance. Rated accuracy by AHRI-sponsored, independent, third party testing.
- Considering brine and production flow rates in compliance with EN 14511.
- Considering a heat slope from 68°F to 122°F in absence 7. of consumption.
 - Considering support provided by the emergency electrical 8. heater or the HTR system. Maximum DHW temperature with the HTR system can be limited by the compressor 9.
- discharge temperature.
- In compliance with EN 12102.
- Starting current depends on the working conditions of the hydraulic circuits.
- The admissible voltage range for proper operation of the heat pump is ±10%.
 - Maximum consumption can vary significantly according to
- working conditions, or if the compressor's operation range is restricted. Consult the technical service manual for more detailed information.
- In compliance with EN 14511, this includes the consumption of the circulation pumps and the compressor driver.









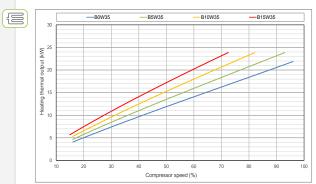


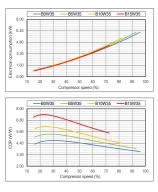


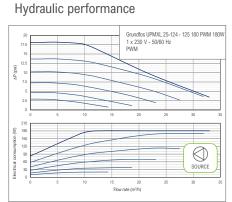


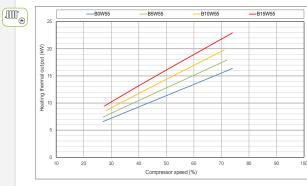
Performance curves

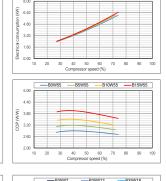
Thermal performance¹

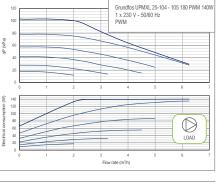


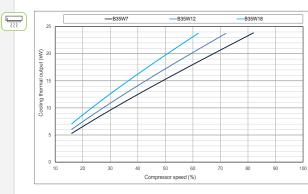


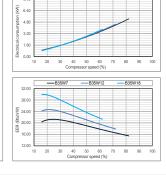


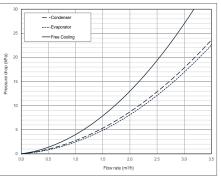












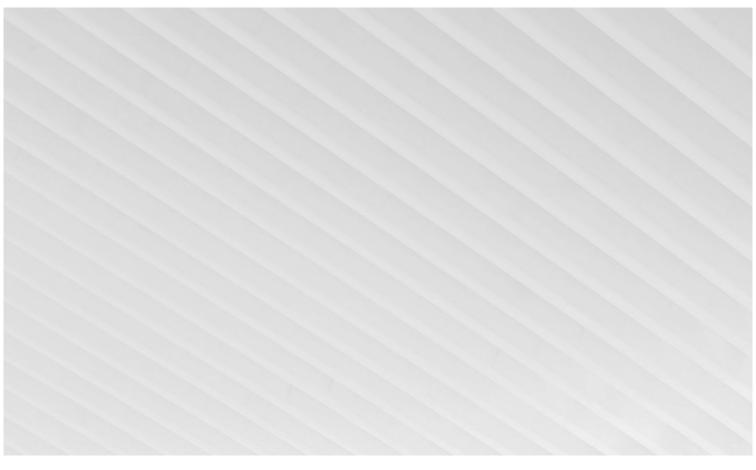
The COP and EER parameters shown in these curves take into account the full electrical power consumptions. Compressor, circulator pumps, controller, inverter and valves

Notes



Notes





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