



BOSCH Climate 5000

Water Source Heat Pump



BOSCH

Invented for life

Introduction to Bosch Thermotechnology

Bosch Thermotechnik GmbH is a leading supplier of resource-efficient heating products and hot water solutions in Europe. In fiscal 2011, the company generated sales of 3.1 billion Euros (68% outside Germany) and employed approx. 13,900 people. Bosch Thermotechnology has strong international and regional brands and manufactures a diversified product range in 21 plants in 11 European, North American and Asian countries. In 2011, Bosch Thermotechnology invested 127 million Euros in research and development, roughly 10.4% more than in the previous year. Intelligent networks and local systems for heating, ventilation, air-conditioning and electricity generation are fundamental technologies for the future building standard, which will generate more energy than is used.

Bosch Thermotechnology (Shandong) Co. Ltd is a division of Bosch Thermotechnology with focus on providing

energy efficient cooling, heating and comfort hot water equipment & solutions for commercial and industrial segments.

The division employs approx. 260 people with more than 40 engineers, and has a plant of 80000sqm with state-of-art manufacturing facility and high-demanding quality management system.

A comprehensive range of renewable heat pumps, chillers, fan coil units and air handling units meets almost all kinds of requirement from buildings like office, hospital, hotel, shopping mall or industrial plants.

Bosch Climate 5000 Water Source Heat Pump is a product engineered with most advanced technology which brings you great energy saving, and an ultimate quiet and comfortable indoor environment.

Achieve independence, save energy and protect the environment - for a secure future

Higher energy prices and the increase in environmental pollution compel us to change our heating and cooling behavior and look at new forms of energy. Our future energy usage must include renewable energies for heating and cooling. Heat pumps are an excellent alternative when it comes to making efficient use of these free sources of energy. Renewable energies make you independent from oil/gas prices, protect the environment and your bank account.

Natural heat: 100% efficient, and up to 80% free of charge

As you know, heat is out element. But did you know that heat is in nearly every element? Nature is an excellent supplier of energy and stores the heat of the sun, for instance, in the ground and surface water. With Bosch heat pumps, you simply draw this energy into your own home and, what's more, it is practically free. Up to 80% of the required heating energy is given to us by nature; you can see it in a significant reduction in your utility costs.



I provide the climate. You feel the comfort!

Bosch Water Source Heat Pumps

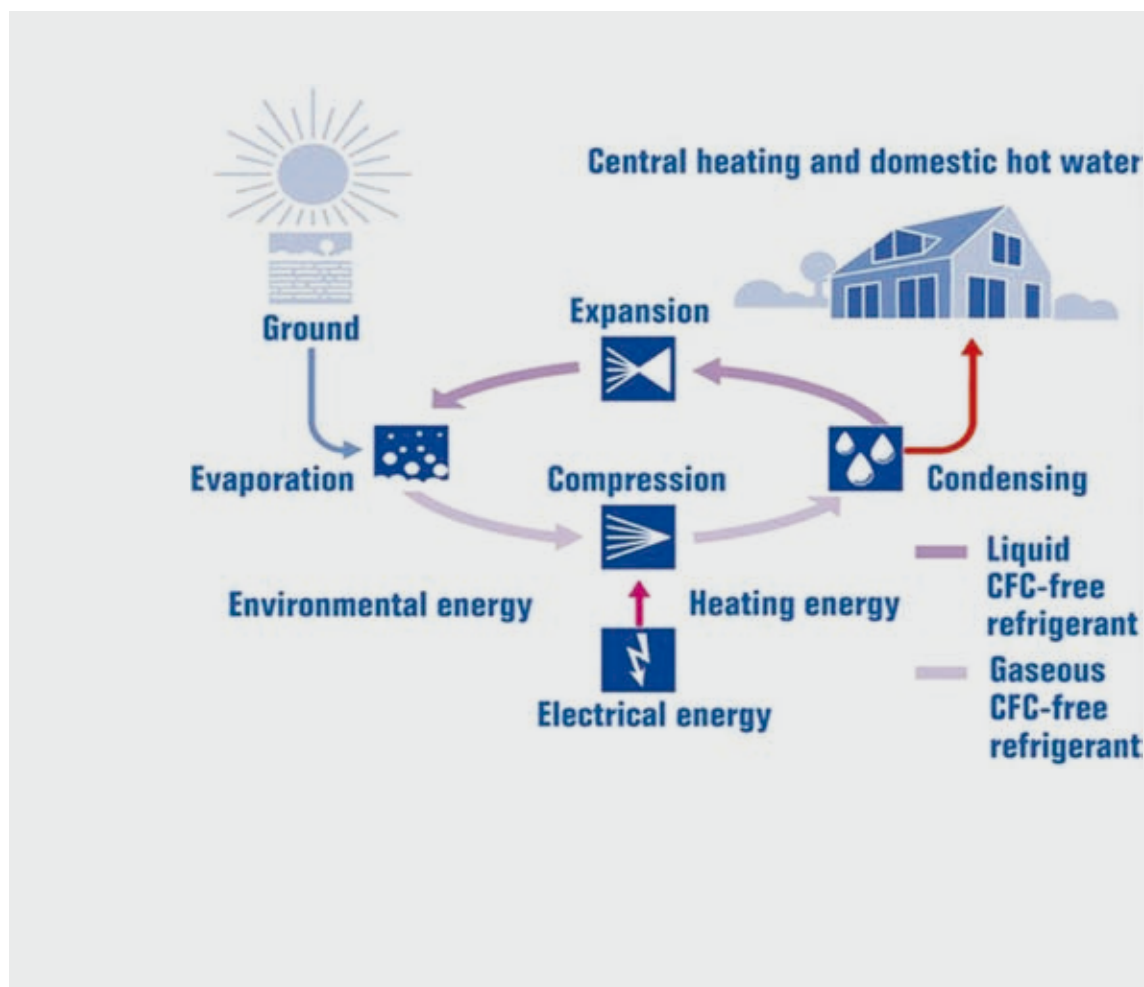
The energy of the future

Everything speaks in favour of Bosch heat pumps. Not only reduced running costs, but also reduced environmental pollution, as the produce zero emissions the choice is simple. When are you going to choose the energy of the future to heat/cool your home? Not only for yourself, but also for those you care about?

Heat pump principle

Water source heat pump is a kind of air conditioner. To explain how a heat pump works, the best place to start is the air conditioner in your house. Air conditioners remove heat from inside the room and transfer it to the outside. Heat pumps in heating mode essentially work in the same way- only in reverse. However, what

is crucial here is how the heat is transported. This task is performed by a refrigerant- a fluid with a particularly low boiling point. The refrigerant absorbs the ambient heat from the ground water, for instance, and in doing so, it evaporates. A compressor compresses this vapor and raises the pressure. This increases the temperature further until it reaches the desired level, thus producing a flow of heat. The vapor transfers the heat to indoor air and then reverts to a fluid. An expansion valve reduces the pressure to its original level – the fluid cools down again and the cycle starts anew: heat can be absorbed again and transferred to the heating system. That's how simple heating can be the heat pump does all this producing zero emissions.



Does heat come from the ground or from the water?

Bosch has the right answer for you

Heat is our element

If you are banking on renewable energy for heating and cooling, you now have a good reason to think you're right. Using this technology you can save a lot of money and protect the environment from harmful emissions. By using Bosch water source heat pumps, for example.

Water source heat pump

WSHPs are heat pumps which use water as source of heat for heating and cooling. They are always used in two kinds of heat pump systems-geothermal systems and water loop systems.

Geothermal heat pump system

Geothermal heat pump system uses the natural heat storage ability of the earth, ground water or surface water as main source for heating and cooling. It consists of water source heat pumps, ground heat exchanger, indoor air conditioning system and control systems. Typical designs for geothermal heat pumps include ground loop system (vertical loops in boreholes & horizontal loops in trenches), ground water system and surface water system. Geothermal heat pump system is one of the most energy efficient and environmentally friendly technologies available today and it's the smart choice for saving you money and preserving our environment.

Vertical Ground Loop System



Horizontal Ground Loop System



Ground-Water Heat Pump System



Surface-Water Heat Pump System

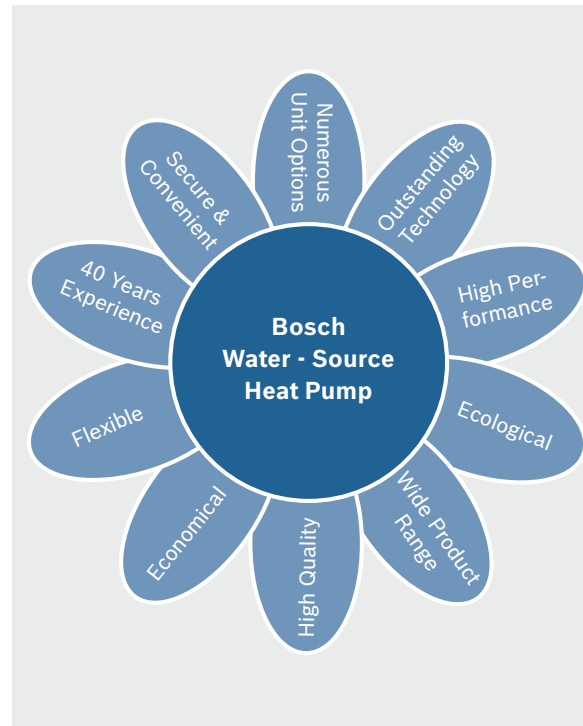


Water loop heat pump system

Water loop HP system is a decentralized system used boiler/cooling tower as backup heat source. The heat surplus in interior areas of building can make up heat loss in outer areas of building in this system, which leads to save energy. Meanwhile, owners can control units by individual requirement and charge separately which means equal and convenience.

No matter what your needs, Bosch has an HVAC unit designed for you!

- ▶ Expert Experience: Production since 1969, 40 years of heat pump experience.
- ▶ Flexible: Provide heating, cooling and domestic hot water.
- ▶ Economical: Higher efficiency which can save 40% to 60% operating cost compared with air-source heat pumps.
- ▶ Ecological: Environmentally friendly refrigerant R410a, CFC free.
- ▶ High Quality: Use of components from world famous brands.
- ▶ Wide Product Range: Multiple configurations designed for different buildings and systems.
- ▶ High Performance: High efficiency and reliable operation
- ▶ Quality starts with Bosch good design.
- ▶ Secure & Convenient: Intelligent unit protection features ensure easy operation, greater comfort and reliability.
- ▶ Tailor-made solutions: Numerous unit options satisfy your particular demand.



"I get twice the benefit from my new heat pump because it doesn't just provide heat on cold days, when it gets really hot it can cool my home as well."



Be in harmony with nature: Bosch WSHP

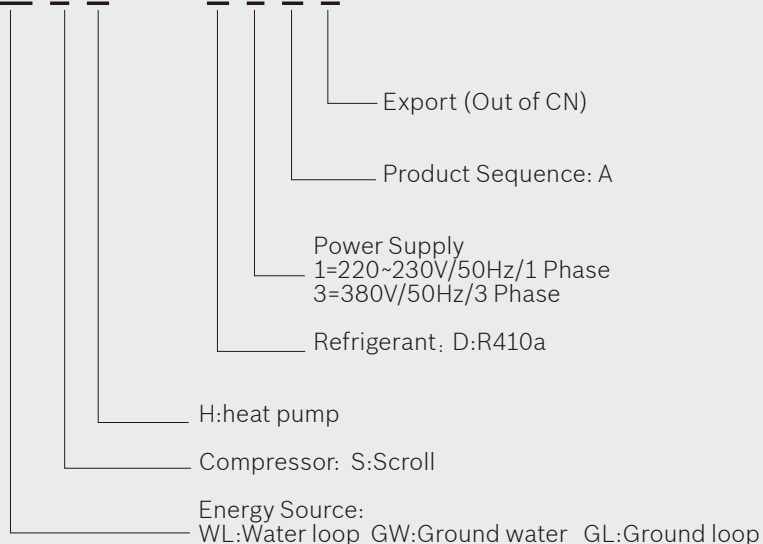
Are you looking for a device providing both heating and cooling for your home? Do you want a heating facility with highest efficiency? Or are you looking for a heat source for your radiant floors? You have found the right solution to these problems because Bosch water source heat pumps are what you are looking for - all you have to do is to choose.

Technical Characteristics:







- ▶ High efficiency
Optimized refrigerant system design plus most advanced scroll compressor and coaxial heat exchanger
- ▶ Environmentally friendly
Environmentally friendly refrigerant R410A, CFC free
- ▶ Modular design
Making it easy to enlarge capacity if needed
- ▶ Intelligent
Intelligent Self-diagnostic function
- ▶ Space saving and easy transportation
Occupies less space and can be moved and transported easily through doorways, elevators or hallways
- ▶ Flexible
Various unit sizes allow for installation in almost all kinds of buildings
- ▶ Multiple protections
Overload protection, High/low voltage protection, Water shortage protection, Anti-freezing protection etc, make the unit more reliable

Nomenclature

BOSCH Climate 5000 GL S H - 35 D 3 A E



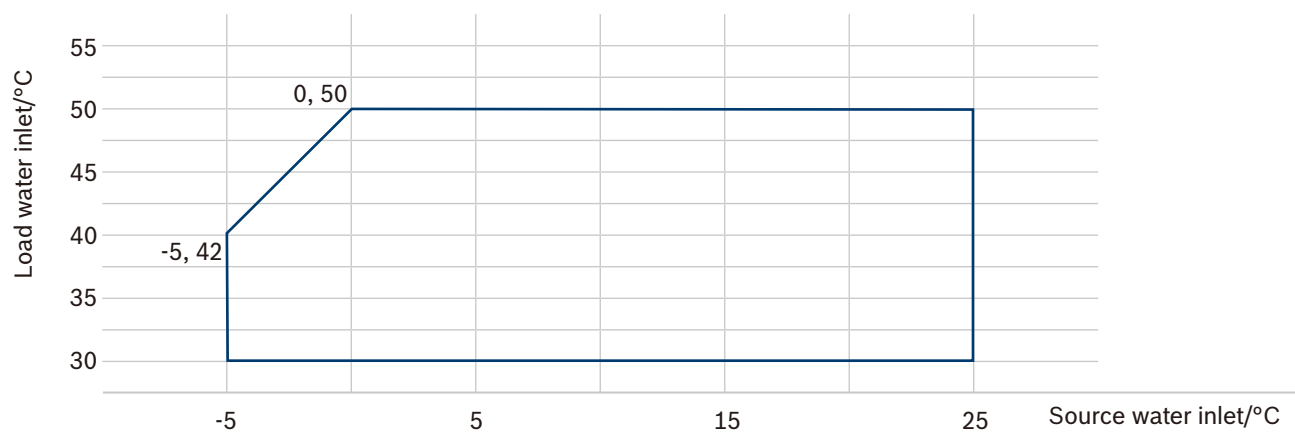
Features

Graphic	Advantage	Detail
	Best structure	<ul style="list-style-type: none"> ·High strength aluminum frame inside ·Stable groove+Strong connections= Professional connections
 	Best compressor	<ul style="list-style-type: none"> ·Lower pressure drop ·High reliability, compliance, precision ·100% volumetric efficiency ·Perfect low temperature performance ·Axial flexible seal ·Radial flexible seal
	Best coaxial heat exchanger	<ul style="list-style-type: none"> ·High efficiency ·Excellent corrosion resistance ·Outstanding Anti-freezing capability ·Cleanness
	Best noise level	<ul style="list-style-type: none"> ·Top case insulation material ·Sound absorption solution ·Sound insulation solution ·Damping solution
	User-friendly controller	<ul style="list-style-type: none"> ·LED display ·Touch-sensitive button ·Intelligent self-diagnostic function

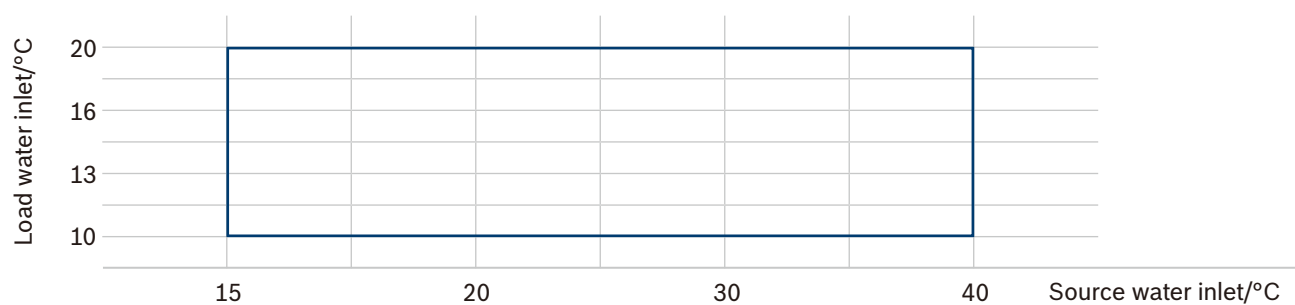


Operating range

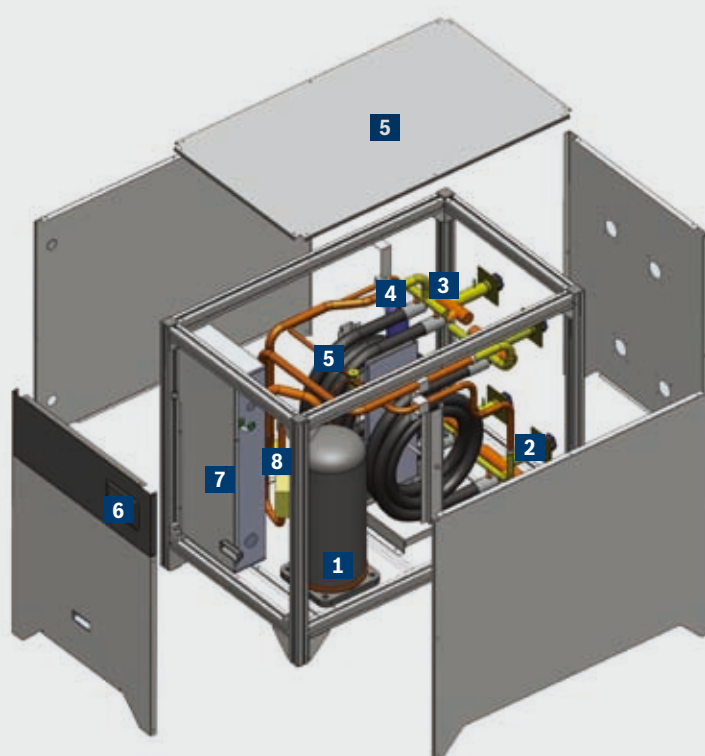
Heating



Cooling



Explosive View



- 1 Compressor
- 2 Evaporator
- 3 Condenser
- 4 Dry filter
- 5 Thermostatic expansion valve
- 6 Controller
- 7 Control box
- 8 4-way valve

Specification

			08D1AE	12D3AE	16D3AE	20D3AE	25D3AE
Water Loop Condition							
Cooling Capacity		kW	5.8	9.3	12.4	13.3	22.3
Cooling Power Input		kW	1.40	2.42	3.16	3.40	5.80
EER		-	4.14	3.84	3.92	3.90	3.84
Heating Capacity		kW	8.0	11.7	16.3	19.6	32.9
Heating Power Input		kW	1.80	2.97	3.90	4.20	7.80
COP		-	4.44	3.95	4.18	4.67	4.21
Load Water Flow		m³/h	1.0	1.6	2.2	2.3	4.0
Load Water Pressure Drop		kpa	25.0	25.4	21.0	20.0	21.0
Source Water Flow		m³/h	1.4	1.9	2.7	2.9	4.7
Source Water Pressure Drop		kpa	14.0	39.4	12.4	25.0	23.0
Ground Water Condition							
Cooling Capacity		kW	6.6	10.1	13.5	14.5	24.4
Cooling Power Input		kW	1.17	2.10	2.75	2.83	5.00
EER		-	5.63	4.81	4.89	5.12	4.88
Heating Capacity		kW	7.0	10.5	13.7	16.2	27.7
Heating Power Input		kW	1.76	2.91	3.81	4.20	7.30
COP		-	3.97	3.61	3.58	3.86	3.79
Load Water Flow		m³/h	1.2	1.7	2.3	2.6	4.1
Load Water Pressure Drop		kpa	20.0	29.5	13.0	14.0	15.0
Source Water Flow		m³/h	0.7	0.9	1.3	1.5	2.4
Source Water Pressure Drop		kpa	15.0	12.9	8.1	9.0	6.0
Ground Loop Condition							
Cooling Capacity		kW	6.3	9.9	12.9	13.7	23.7
Cooling Power Input		kW	1.25	2.20	2.84	3.00	5.23
EER		-	5.01	4.49	4.53	4.56	4.53
Heating Capacity		kW	6.8	10.1	13.5	15.8	27.0
Heating Power Input		kW	1.77	2.88	3.79	4.24	7.25
COP		-	3.85	3.52	3.57	3.73	3.72
Load Water Flow		m³/h	1.1	1.7	2.2	2.3	4.1
Load Water Pressure Drop		kpa	28.0	29.1	12.9	13.0	14.0
Source Water Flow		m³/h	1.4	2.0	3.2	3.1	4.9
Source Water Pressure Drop		kpa	11.0	43.3	20.7	34.0	25.0
General							
Power supply		V/Ph/Hz	220/1/50	380/3/50			
Refrigerant		-	R410A				
Refrigerant Charge		kg	1.6	1.7	1.8	2.5	4.7
Compressor Type			Scroll Compressor				
Compressor Qty		unit	1	1	1	1	1
Compressor RLA		-	12.8	5.8	7.3	10.7	18.6
Compressor LRA		-	54	49	58	67	100
Load Water Pipe	FPT	Φ(mm)	DN20	DN25	DN25	DN25	DN32
Source Water Pipe	FPT	Φ(mm)	DN20	DN25	DN25	DN25	DN32
Net Dimension	Width	mm	826	826	826	826	1168
	Depth	mm	692	692	692	692	711
	Height	mm	648	648	648	648	953
Net Weight		kg	100	110	124	140	241
Noise Level		dB(A)	50	51	51	52	53

			30D3AE	35D3AE	45D3AE	67D3AE	70D3AE	100D3AE
Water Loop Condition								
Cooling Capacity		kW	27.7	33.2	41.3	53.8	64.4	80.1
Cooling Power Input		kW	6.39	7.55	10.04	12.52	14.79	19.67
EER		-	4.34	4.40	4.11	4.30	4.35	4.07
Heating Capacity		kW	37.3	44.0	55.9	72.4	85.4	108.4
Heating Power Input		kW	8.10	9.60	12.37	15.87	18.81	24.24
COP		-	4.60	4.58	4.52	4.56	4.54	4.47
Load Water Flow		m ³ /h	4.7	5.4	7.2	9.2	11.1	13.8
Load Water Pressure Drop		kpa	39.3	30.4	33.3	39.5	39.2	39.6
Source Water Flow		m ³ /h	5.5	6.4	8	10.7	12.4	15.5
Source Water Pressure Drop		kpa	48.8	27.6	28.1	57.7	60.1	71.2
Ground Water Condition								
Cooling Capacity		kW	30.3	35.0	46.1	58.7	67.9	89.4
Cooling Power Input		kW	5.55	6.52	8.74	10.87	12.78	17.13
EER		-	5.45	5.36	5.27	5.40	5.31	5.22
Heating Capacity		kW	31.2	35.5	46.7	60.5	68.9	90.6
Heating Power Input		kW	8.06	9.45	11.88	15.48	18.52	23.28
COP		-	3.87	3.76	3.93	3.91	3.72	3.89
Load Water Flow		m ³ /h	5.0	6.2	7.8	10.1	11.7	15.4
Load Water Pressure Drop		kpa	44	37.5	39.6	50.3	48.3	48.3
Source Water Flow		m ³ /h	2.8	3.1	4	5.4	6	7.8
Source Water Pressure Drop		kpa	8	6.0	5.5	16.5	15.2	15.3
Ground Loop Condition								
Cooling Capacity		kW	29.0	33.3	43.1	56.2	64.6	83.6
Cooling Power Input		kW	5.73	6.74	9.08	11.76	13.38	18.04
EER		-	5.06	5.06	4.75	4.78	4.83	4.63
Heating Capacity		kW	31.5	35.4	46.0	61.1	68.7	89.2
Heating Power Input		kW	8.03	9.44	11.88	16.22	18.53	24.68
COP		-	3.93	3.75	3.87	3.77	3.71	3.62
Load Water Flow		m ³ /h	5.0	5.7	7.1	9.7	11.1	14.4
Load Water Pressure Drop		kpa	45	34.7	37.1	47.2	39.7	41.5
Source Water Flow		m ³ /h	5.5	6.6	8.4	11.5	12.8	16.3
Source Water Pressure Drop		kpa	40.8	29.0	31.6	62.3	61.7	71.6
General								
Power supply		V/Ph/Hz	380/3/50					
Refrigerant		-	R410A					
Refrigerant Charge		kg	3.6	6.0	5.9	7.0	9.5	13.0
Compressor Type			Scroll Compressor					
Compressor Qty		unit	1	1	1	2	2	2
Compressor RLA		-	20	20.7	29.3	40	41.4	58.6
Compressor LRA		-	110	110	174	220	220	348
Load Water Pipe	FPT	Φ(mm)	DN32	DN40	DN40	DN50	DN50	DN50
Source Water Pipe	FPT	Φ(mm)	DN32	DN40	DN40	DN50	DN50	DN50
Net Dimension	Width	mm	1168	1168	1168	1168	1168	1168
	Depth	mm	711	711	711	711	711	711
	Height	mm	953	953	953	1778	1778	1778
Net Weight		kg	252	285	315	484	560	620
Noise Level		dB(A)	53	54	54	55	56	61

Note:

- Cooling: Load Water inlet/outlet: 12C/7C; Source water inlet/outlet: 30C/35C(Water Loop), 18C/29C(Ground Water), 25C/30C(Ground Loop).
- Heating: Load Water inlet/outlet: 40C/45C; Source water inlet: 20C/(Water Loop), 15C(Ground Water), 10C(Ground Loop). same source water flow as in cooling mode.
- RLA: Rated load current; LRA: Locked Rotor current.
- Glycol will be needed when source water inlet below 3C, Glycol concentration: 10%~20%;
- Product specification might be changed without prior notice due to product engineering evolution. pls always refer to the nameplate of equipment.

Coefficient table

Water loop_Cooling(°C)

Source water inlet	20		25		30		35		40	
Chilled water outlet	Cooling capacity	Power input	Cooling capacity	Power input	Cooling capacity	Power input	Cooling capacity	Power input	Cooling capacity	Power input
5	1.039	0.775	0.984	0.884	0.930	1.003	0.872	1.138	0.810	1.302
7	1.116	0.768	1.054	0.881	1.000	1.000	0.938	1.135	0.872	1.293
10	1.233	0.765	1.171	0.878	1.105	0.997	1.039	1.129	0.969	1.280
12	1.318	0.762	1.248	0.877	1.178	0.996	1.112	1.125	1.039	1.277
15	1.457	0.759	1.380	0.876	1.302	0.995	1.225	1.125	1.147	1.270

Ground water_Cooling(°C)

Source water inlet	15		18		20		22		25	
Chilled water outlet	Cooling capacity	Power input	Cooling capacity	Power input	Cooling capacity	Power input	Cooling capacity	Power input	Cooling capacity	Power input
5	0.948	0.929	0.920	1.007	0.899	1.060	0.864	1.074	0.843	1.208
7	1.031	0.926	1.000	1.000	0.976	1.057	0.927	1.071	0.920	1.201
10	1.147	0.915	1.112	0.993	1.084	1.046	1.024	1.067	1.021	1.191
12	1.224	0.908	1.189	0.986	1.161	1.039	1.098	1.067	1.098	1.187
15	1.357	0.898	1.315	0.975	1.287	1.028	1.210	1.067	1.210	1.177

Ground loop_Cooling(°C)

Source water inlet	15		18		20		22		25	
Chilled water outlet	Cooling capacity	Power input	Cooling capacity	Power input	Cooling capacity	Power input	Cooling capacity	Power input	Cooling capacity	Power input
5	0.951	0.929	0.923	1.007	0.867	1.148	0.811	1.307	0.748	1.491
7	1.031	0.926	1.000	1.000	0.941	1.141	0.881	1.300	0.818	1.481
10	1.147	0.915	1.112	0.993	1.045	1.131	0.983	1.290	0.916	1.466
12	1.224	0.908	1.189	0.986	1.119	1.124	1.056	1.283	0.983	1.456
15	1.357	0.898	1.315	0.975	1.245	1.117	1.168	1.272	1.091	1.445

Water loop_Heating(°C)

Source water inlet	15		17		18		20		22	
Hot water outlet	Heating capacity	Power input	Heating capacity	Power input	Heating capacity	Power input	Heating capacity	Power input	Heating capacity	Power input
35	0.913	0.751	0.969	0.745	0.997	0.743	1.056	0.737	1.117	0.732
40	0.906	0.839	0.963	0.839	0.991	0.836	1.053	0.836	1.120	0.836
42	0.893	0.884	0.951	0.884	0.979	0.881	1.038	0.881	1.101	0.879
45	0.876	0.955	0.931	0.955	0.958	0.953	1.016	0.950	1.078	0.950
47	0.865	1.008	0.918	1.006	0.944	1.003	1.000	1.000	1.061	0.997
50	0.849	1.090	0.900	1.088	0.926	1.084	0.979	1.082	1.038	1.079
55	0.822	1.245	0.868	1.241	0.893	1.237	0.943	1.232	0.998	1.227

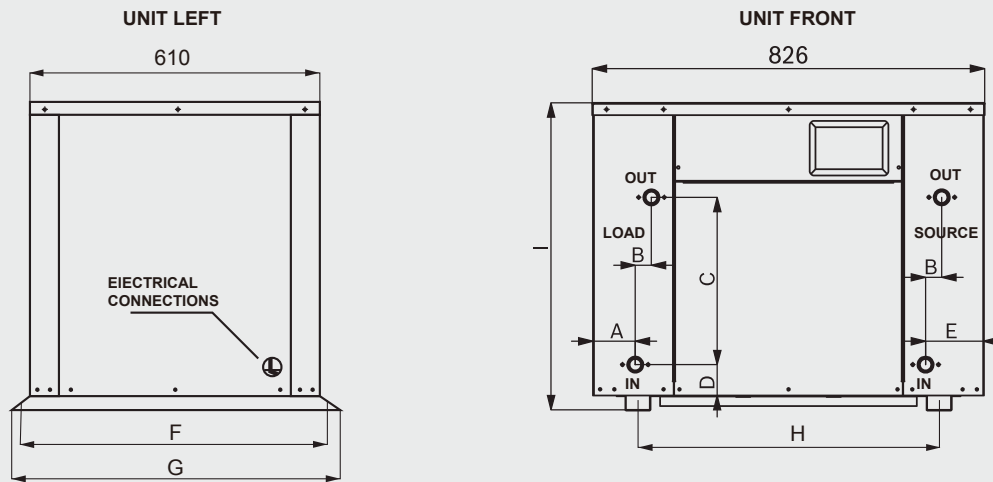
Ground water_Heating(°C)

Source water inlet	12		15		18		22		25	
Hot water outlet	Heating capacity	Power input	Heating capacity	Power input	Heating capacity	Power input	Heating capacity	Power input	Heating capacity	Power input
35	0.978	0.782	1.066	0.774	1.162	0.766	1.300	0.755	1.395	0.747
40	0.944	0.887	1.038	0.880	1.180	0.871	1.300	0.863	1.387	0.856
42	0.925	0.935	1.015	0.926	1.147	0.916	1.261	0.909	1.367	0.902
45	0.917	1.012	1.000	1.000	1.128	0.988	1.241	0.981	1.342	0.974
47	0.908	1.065	0.992	1.053	1.117	1.041	1.226	1.031	1.323	1.024
50	0.899	1.151	0.979	1.137	1.100	1.122	1.202	1.110	1.300	1.103
55	0.880	1.307	0.957	1.295	1.069	1.271	1.165	1.259	1.255	1.247

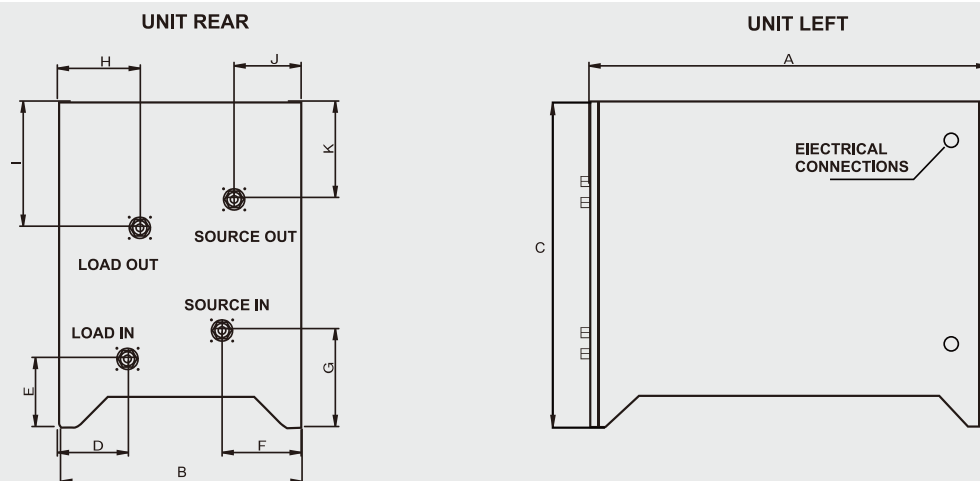
Ground loop_Heating(°C)

Source water inlet	-3		0		3		6		10	
Hot water outlet	Heating capacity	Power input	Heating capacity	Power input	Heating capacity	Power input	Heating capacity	Power input	Heating capacity	Power input
35	0.726	0.803	0.796	0.797	0.870	0.789	0.952	0.784	1.066	0.774
40	0.709	0.910	0.776	0.900	0.848	0.900	0.925	0.890	1.033	0.880
42	0.703	0.960	0.768	0.950	0.838	0.940	0.913	0.940	1.021	0.930
45	0.692	1.030	0.757	1.020	0.826	1.020	0.897	1.010	1.000	1.000
47	-	-	0.750	1.080	0.820	1.070	0.890	1.060	0.990	1.050
50	-	-	-	-	0.800	1.160	0.870	1.150	0.970	1.140

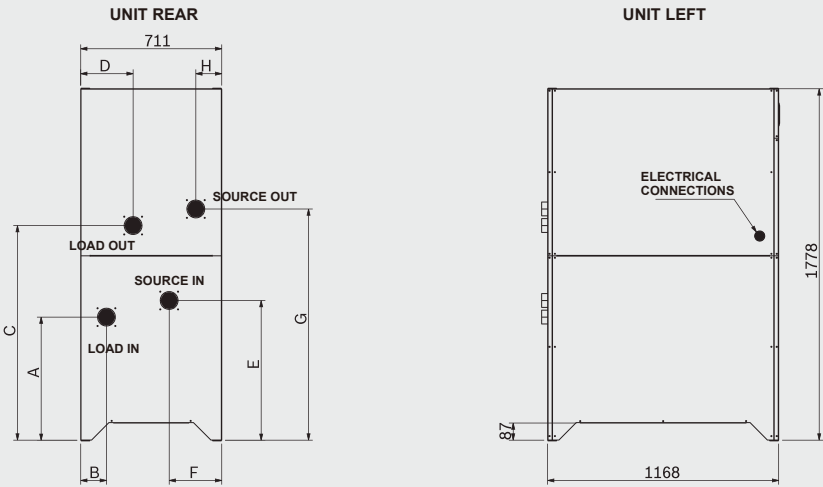
Dimension



Model	Dimension (mm)										Water pipe
	A	B	C	D	E	F	G	H	I		
GW/GL/WLSH-08D1AE	61.5	45	390	93.5	106.5	652	692	634	648		DN20
GW/GL/WLSH-12D3AE	58.5	35	384	100.5	93.5	652	692	634	648		DN25
GW/GL/WLSH-16D3AE	94.5	35	305	97.5	129.5	652	692	634	648		DN25
GW/GL/WLSH-20D3AE	89	34	352	65	123	652	692	634	648		DN25



Model	Dimension (mm)											Water pipe
	A	B	C	D	E	F	G	H	I	J	K	
GW/GL/WLSH-25D3AE	1168	711	953	208	223.5	265	210	271.5	299	217	264	DN32
GW/GL/WLSH-30D3AE	1168	711	953	208	202	231	287	243	367	196	282	DN32
GW/GL/WLSH-35D3AE	1168	711	953	173	212	217	248	223	301	171	264	DN40
GW/GL/WLSH-45D3AE	1168	711	953	174	206	219	290	219	292	174	199	DN40



Model	Dimension (mm)								Water pipe
	A	B	C	D	E	F	G	H	
GW/GL/WLSH-67D3AE	655.5	163.5	1040	288.5	739.5	276.5	1124	151.5	DN50
GW/GL/WLSH-70D3AE	660.5	125.5	1101	263.5	695.5	257	1134	118.5	DN50
GW/GL/WLSH-100D3AE	623	130	1087	265	707	265.5	1171	130.5	DN50



Electrical parameters

Model	Power input	Compressor		Max. fuse current (A)
		RLA	LRA	
GW/GL/WLSH-08D1AE	220V/1Ph/50Hz	12.8	54	16
GW/GL/WLSH-12D3AE	380V/3Ph/50Hz	5.8	49	10
GW/GL/WLSH-16D3AE	380V/3Ph/50Hz	7.3	58	10
GW/GL/WLSH-20D3AE	380V/3Ph/50Hz	10.7	67	16
GW/GL/WLSH-25D3AE	380V/3Ph/50Hz	18.6	100	25
GW/GL/WLSH-30D3AE	380V/3Ph/50Hz	20	110	32
GW/GL/WLSH-35D3AE	380V/3Ph/50Hz	20.7	110	32
GW/GL/WLSH-45D3AE	380V/3Ph/50Hz	29.3	174	40
GW/GL/WLSH-67D3AE	380V/3Ph/50Hz	40	220	63
GW/GL/WLSH-70D3AE	380V/3Ph/50Hz	41.4	220	63
GW/GL/WLSH-100D3AE	380V/3Ph/50Hz	58.6	348	80

RLA: Rated load current; LRA: Locked Rotor current.



Bosch reserves the right to change any specification, design and information without any prior notice for further improvement on quality and performance.

