## Engineering and installation WPL 15/20/25 ACS

**STIEBEL ELTRON** 

## Engineering and installation

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STIEBEL ELTRON GmbH & Co. KG, 37603 Holzminden

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#### Specification

Dimensions in the diagrams are in millimetres unless stated otherwise. Pressure figures may be stated in pascals (MPa, hPa, kPa) or in bars (bar, mbar). The details of threaded connections are given in accordance with ISO 228. Fuse types and sizes are stated in accordance with VDE. Output details apply to new appliances with clean heat exchangers.



## Air | water heat pumps Appliance types and applications

#### Appliance types and applications

	WPL A/AS	WPL AC/ACS
Ideal for the following:		
Detached and two-family house		
Apartment huilding		
Non-residential huilding		
Suitable for the following building projects:		
New build	•	•
Modernisation, heating flow temperature < 55 °C	•	•
Modernisation, heating flow temperature < 70 °C		
With the following functions and features:		
Heating	•	•
		•
Inverter (output-dependent compressor control)	•	•
DHW heating with a floor mounted cylinder	•	•
DHW neating with a cylinder module	•	•
Mono mode DHW neating > 60 °C		
	•	<u> </u>
Appliance installation		
Outdoor installation	•	•
Little installation effort, compact	•	•
Flexible system solution for the following:		
Heat pump and solar thermal system combination	•	•
Combination with solar thermal system	•	•
Combination of several heat pumps (cascade)	•	•
Installation in tight spaces	•	•
Swimming pool water heating	•	•
Mono mode operation	•	•
Mono energetic operation	•	•
Combination with other heat generators (dual mode)	•	•



#### At a glance

- » Air | water heat pump installed outdoors for heating and cooling
- » Inverter technology: Variable speed compressor for perfectly matched heating output
- » Enhanced vapour injection/enhanced saturated vapour injection for high flow temperatures even at low outside temperatures
- » Low operating noise thanks to infinitely adjustable fan speed and encapsulated refrigerant circuit
- » Active cooling through refrigerant circuit reversal for a comfortable indoor environment
- » High efficiency all year round for low running costs
- » Mono mode DHW heating possible for low running costs
- » Can be integrated into a home network and controlled via smartphone

Safety and quality



APPLICATION: Inverter air | water heat pump with output-dependent control, designed as a mono block appliance for compact outdoor installation. Can be used for heating and DHW operation; the AC version also provides efficient cooling via circuit reversal. Suitable for new build and modernisation due to the high flow temperatures. EQUIPMENT/CONVENIENCE: Optimum noise reduction due to encapsulated refrigerant circuit and isolated compressor. The wide gaps between the evaporator fins create low air resistance and, in combination with the modulating fan, result in a low sound power level. The combined enhanced vapour injection/enhanced saturated vapour injection cools the scroll compressor at low outside temperatures, enabling a higher heating output/flow temperature to be achieved. In combination with the ISG (optional accessory), the heat pump controller (accessory) can be used to control the system via a home network or a mobile terminal device. With integral heat and electricity metering via refrigerant circuit data. An emergency/booster heater enables mono energetic operation. The refrigerant circuit is hermetically sealed, tested for tightness at the factory and filled with safety refrigerant R410A. EFFICIENCY: The waste heat from the inverter is used to raise the return temperature, thereby increasing the overall efficiency of the system. Demand-dependent and energy efficient defrosting through circuit reversal. The condensate pan is heated by the refrigerant circuit to enable efficient defrosting. **INSTALLATION:** Integral anti-vibration mounts for direct connection to the heating system. Pivoting electrical connection panel for better accessibility. Quick access to the condensate pan via cleaning aperture at the rear. The metal casing is corrosion-protected and made from galvanised, powder coated sheet steel, with an alpine white stove enamel finish. The fan grille, recessed grips and cover are made from weatherproof and UV-resistant plastic in aluminium white.

#### Function

Heat is extracted from the outdoor air via the heat exchanger (evaporator) on the air side across the entire application range (see specification). The heating water is heated to the flow temperature in the heat exchanger on the water side (condenser) using electrical energy (compressor). At low air temperatures, the humidity in the air precipitates as hoarfrost on the evaporator fins. This hoarfrost is automatically defrosted. Water created by this defrosting process collects in the defrost pan and is drained off via a hose. The energy required for defrosting is drawn from the heating system. The heat pump automatically reverts to heating mode at the end of the defrost cycle. The heat pump manager and output control function match the heat pump heating output variably to the actual heat demand.

#### Specification

		WPL 15 AS	WPL 15 ACS	WPL 20 A	WPL 20 AC	WPL 25 A	WPL 25 AC
		236638	236639	236640	236641	236644	236645
Heating output							
Heating output at A7/W35 (min./max.)	kW	3.50/7.40	3.50/7.40	6.13/11.19	6.13/11.19	6.13	6.13/14.00
Heating output at A2/W35 (min./max.)	kW	3.10/7.09	3.10/7.09	4.59/10.71	4.59/10.71	4.59/13.64	4.59/13.64
Heating output at A-7/W35 (min./max.)	kW	2.50/6.86	2.50/6.86	4.40/9.54	4.40/9.54	4.40/12.86	4.40/12.86
Heating output at A7/W35 (EN 14511)	kW	4.28	4.28	6.13	6.13	7.84	7.84
Heating output at A2/W35 (EN 14511)	kW	4.23	4.23	6.83	6.83	8.33	8.33
Heating output at A-7/W35 (EN 14511)	kW	6.86	6.86	9.54	9.54	12.86	12.86
Heating output at A-7/W55 (EN 14511)	kW	7.09	7.09	10.73	10.73	13.93	13.93
Heating output at A-15/W35 (EN 14511)	kW	6.16	6.16	8.51	8.51	12.05	12.05
Heating output in silent mode at A-7/W35 (70 %)	kW	4.80	4.80	7.10	7.10	9.00	9.00
Max. heating output in silent mode at A-7/W35	kW	4.30	4.30	7.10	7.10	7.85	7.85
Max. cooling capacity at A35/W7	kW		7.86		11.49		14.88
Cooling capacity at A35/W7 partial load	kW		2.15		4.80		4.80
Max. cooling capacity at A35/W18	kW		8.66		15.26		17.06
Cooling capacity at A35/W18 partial load	kW		3.25		6.76		6.76
Power consumption							
Power consumption at A7/W35 (EN 14511)	kW	0.94	0.94	1.37	1.37	1.54	1.54
Power consumption at A2/W35 (EN 14511)	kW	1.09	1.09	1.71	1.71	2.00	2.00
Power consumption at A-7/W35 (EN 14511)	kW	2.42	2.42	2.93	2.93	4.16	4.16
Power consumption at A-15/W35 (EN 14511)	kW	2.45	2.45	2.91	2.91	4.48	4.48
Power consumption at A-7/W55 (EN 14511)	kW	3.38	3.38	4.10	4.10	5.76	5.76
Max. power consumption, fan heating	kW	0.1	0.1	0.2	0.2	0.2	0.2
Power consumption, emergency/booster heater	kW	6.2	6.2	8.8	8.8	8.8	8.8
Coefficient of performance							
COP at A7/W35 (EN 14511)		4.55	4.55	4.48	4.48	5.09	5.09
COP at A2/W35 (EN 14511)		3.88	3.88	4.00	4.00	4.17	4.17
COP at A-7/W35 (EN 14511)		2.83	2.83	3.26	3.26	2.93	2.93
COP at A-15/W35 (EN 14511)		2.51	2.51	2.92	2.92	2.69	2.69
COP at A-7/W55 (EN 14511)		2.10	2.10	2.62	2.62	2.42	2.42
SCOP (EN 14825)		4.20	4.48	4.30	4.48	4.65	4.78
Max. cooling capacity factor at A35/W7			2.41		2.53		2.38
Cooling capacity factor at A35/W7 partial load			2.39		2.84		2.84
Max. cooling capacity factor at A35/W18			2.87		3.12		2.83
Cooling capacity factor at A35/W18 partial load			3.78		3.76		3.76
Sound emissions							
Sound power level (EN 12102)	dB(A)	50	50	54	54	54	54
Sound pressure level at 5 m in free field	dB(A)	28	28	32	32	32	32
Max. sound power level for outdoor installation	dB(A)	61	61	66	66	66	66
Sound power level in silent mode 70 %	dB(A)	52	52	54	54	57	57
Max. sound power level, silent mode	dB(A)	50	50	54	54	54	54
Application limits							
Min. application limit, heat source	°C	-20	-20	-20	-20	-20	-20
Max. application limit, heat source	°C	40	40	40	40	40	40
Min. application limit on the heating side	°C	15	15	15	15	15	15
Max. application limit on heating side	°C	65	65	65	65	65	65
Application limit, heat source at W65	°C	-20	-20	-20	-20	-20	-20
Min. cooling mode application limit for outside temperature	°C		15		15		15
Max. cooling mode application limit for outside temperature	°C		40		40		40
Energy data							
Energy efficiency class		A+/A++	A++/A++	A++/A++	A++/A++	A++/A++	A++/A++

		WPL 15 AS	WPL 15 ACS	WPL 20 A	WPL 20 AC	WPL 25 A	WPL 25 AC
Electrical data							
Max. power consumption without emergency/booster heater	kW	4.9	4.9	6.0	6.0	8.9	8.9
Rated voltage, compressor	V	230	230	400	400	400	400
Rated voltage, control unit	V	230	230	230	230	230	230
Rated voltage, emergency/booster heater	V	230	230	400	400	400	400
Compressor phases		1/N/PE	1/N/PE	3/N/PE	3/N/PE	3/N/PE	3/N/PE
Control unit phases		1/N/PE	1/N/PE	1/N/PE	1/N/PE	1/N/PE	1/N/PE
Emergency/booster heater phases		2/N/PE	2/N/PE	3/N/PE	3/N/PE	3/N/PE	3/N/PE
Compressor fuse protection	A	1 x B 20	1 x B 20	3 x B 16			
Control unit fuse protection	A	1 x B 16	1 x B 16	1 x B 16	1 x B 16	1 x B 16	1 x B 16
Fuse protection, emergency/booster heater	A	2 x B 16	2 x B 16	3 x B 16	3 x B 16	3 x B 16	3 x B 16
Starting current	A	7	7	4	4	4	4
Max. operating current	A	19.5	19.5	8.3	8.3	12.1	12.1
Versions							
Refrigerant		R410 A	R410 A	R410 A	R410 A	R410 A	R410 A
Refrigerant charge	kg	4.2	4.2	4.7	5.5	4.7	5.5
CO <sub>2</sub> equivalent (CO <sub>2</sub> e)	t	8.77	8.77	9.81	11.48	9.81	11.48
Global warming potential of the refrigerant (GWP100)		2088	2088	2088	2088	2088	2088
IP rating		IP14B	IP14B	IP14B	IP14B	IP14B	IP14B
Condenser material		1.4401/Cu	1.4401/Cu	1.4401/Cu	1.4401/Cu	1.4401/Cu	1.4401/Cu
Dimensions							
Height	mm	900	900	1045	1045	1045	1045
Width	mm	1270	1270	1490	1490	1490	1490
Depth	mm	593	593	593	593	593	593
Weights							
Weight	kg	160	160	175	175	175	175
Connections							
Connection, heating flow/return		28 mm	28 mm	28 mm	28 mm	28 mm	28 mm
Water quality requirements							
Water hardness	°dH	≤3	≤3	≤3	≤3	≤3	≤3
pH value (with aluminium fittings)		8.0-8.5	8.0-8.5	8.0-8.5	8.0-8.5	8.0-8.5	8.0-8.5
pH value (without aluminium fittings)		8.0-10.0	8.0-10.0	8.0-10.0	8.0-10.0	8.0-10.0	8.0-10.0
Conductivity (softening)	µS/cm	<1000	<1000	<1000	<1000	<1000	<1000
Conductivity (desalination)	µS/cm	20-100	20-100	20-100	20-100	20-100	20-100
Chloride	mg/l	<30	<30	<30	<30	<30	<30
Oxygen 8-12 weeks after filling (softening)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Oxygen 8-12 weeks after filling (desalination)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Values							
Permissible operating pressure, heating circuit	MPa	0.3	0.3	0.3	0.3	0.3	0.3
Flow rate on heat source side	m³/h	2300	2300	4000	4000	4000	4000
Heating flow rate (EN 14511) at A7/W35, B0/W35 and 5 K	m³/h	0.73	0.73	1.06	1.06	1.4	1.4
Nominal heating flow rate at A-7/W35 and 7 K	m³/h	0.52	0.52	0.76	0.76	1.00	1.00
Nominal internal pressure drop, heating	hPa	45	45	100	100	100	100
Min. heating flow rate	m³/h	0.7	0.7	1.0	1.0	1.0	1.0

#### Output data



- max. W55 1
- max. W45 2
- max. W35 3

#### **WPL 20**

3



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#### WPL 25



- Х Outside temperature [°C]
- Heating output [kW] Y
- max. W55 1
- 2 max. W45
- max. W35 3

- min. W55 4 min. W45
- 5
- 6 min. W35

#### Installation location requirements

- Never install the appliance inside a shaft. »
- The heat pump module must be level (horizontal). »
- The main wind direction must not be towards the fan. »
- When selecting the installation site, remember that the appli-» ance generates noise during operation.
- Maintain as small a clearance as possible between the heat » pump module and the hydraulic module in order to keep line losses to a minimum.
- » In winter, the heat pump module must not be covered with snow or be submerged if there is heavy rainfall.
- The appliance must be firmly attached to the mounting rail, » which in turn must be secured to the foundation/kerbstones.

#### **WPL 15**



- Air discharge 2
- Main wind direction 3
- Supply line recess 4
- 5 Condensate drain recess

#### WPL 20. WPL 25



Air intake 1

- 2 Air discharge
- 3 Main wind direction
- 4 Supply line recess
- Condensate drain recess 5

#### Example: Laying pipes above ground



- А 100
- В 300
- Depth of frost line С
- Heating flow 1
- Heating return 2
- Condensate drain 3
- Condensate drain conduit 4
- Foundation 5
- Gravel bed 6

## MK 1 mounting bracket

#### WPL 15



- A Depth of frost line
- 1 Heating flow
- 2 Heating return
- 3 Conduit for supply lines
- 4 Foundation
- 5 Mounting bracket
- 6 Gravel bed
- 7 Condensate drain conduit
- 8 Condensate drain

#### T-support SK 1



- A Depth of frost line
- B 300
- 1 Heating flow
- 2 Heating return
- 3 Conduit for supply lines
- 4 Foundation
- 5 T-support
- 6 Gravel bed
- 7 Condensate drain conduit
- 8 Condensate drain
- 9 Cover
- Observe the structural limits of the T-support used.

#### WK 2 wall mounting bracket

**Note** To prevent disturbance due to structure-borne noise transmission, never install the wall mounting bracket on the external walls of living areas or bedrooms.

▶ Install the wall mounting bracket on a garage wall, for example.



- Heating flow 1
- Heating return 2
- 3 Condensate drain
- Condensate drain conduit 4
- 5 Wall mounting bracket
- Observe the structural limits of the wall mounting bracket used.

#### Siting



mm

Diameter

Condensate drain

Drain

Air intake

Air discharge

d45

d47

<u>g01</u> g02 25

25

#### Siting



				WPL 20 A	WPL 20 AC	WPL 25 A	WPL 25 AC
e01	Heating flow	Type of connection		Push-fit connection	Push-fit connection	Push-fit connection	Push-fit connection
		Diameter		28	28	28	28
e02	Heating return	Type of connection		Push-fit connection	Push-fit connection	Push-fit connection	Push-fit connection
		Diameter	mm	28	28	28	28
d45	Condensate drain	Diameter		25	25	25	25
<u>d47</u>	Drain						
<u>g</u> 01	Air intake						
g02	Air discharge						



Maintain the minimum clearances to ensure trouble-free operation of the appliance and facilitate maintenance work.



Never install the appliance in a recess. Two sides of the appliance must remain exposed.

#### Material losses

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Please note that both the flow of outdoor air into the appliance, and the flow of exhaust air from the appliance must be unimpeded.

If the air intake and discharge of the appliance are obstructed by surrounding objects, this may cause a thermal short circuit.





- 1 Main wind direction
- 2 Air discharge
- 3 Wall

#### Heating connection

Connect the heat pump into the water side of heating systems in accordance with the standard circuit diagram.

Prior to connecting the heat pump, thoroughly flush the heating system, check for tightness and carefully vent it.

Observe the correct connection of heating flow and return as well as the correct pipework cross-section.

Anti-vibration mounts are built into the appliance to reduce the transmission of structure-borne noise on the water side.

Fit thermal insulation in accordance with the Energy Saving Ordinance [Germany].

#### Heat pump with buffer cylinder and DHW heating

# 

#### Heat pump circulation pump

		WPL 15	WPL 20	WPL 25
Flow rate	m³/h	0.7	1.0	1.0
Pressure differential	hPa	195	195	195
Circulation pump	Туре		U	P 25/7.5 PVC
Cu pipe	Ø	28	28	28
Wall thickness	mm	1.0	1.0	1.0

The sizing is based on a single pipe length of 10 m, the stated heating circuit pump and the pipe diameter. A different heating circuit pump must be used for longer pipelines.

#### **Electrical connection**

Notify the local power supply utility of the heat pump connection.

All electrical installation work, particularly earthing measures, must be carried out in accordance with VDE regulations and the requirements of the local power supply utility.

The connection must comply with the electrical connection diagram. For this, also observe the installation instructions for the heat pump manager and any further accessories used.



**Note** Observe the standards and regulations applicable in your country.



























## Appendix

Key Pos.	WPMsystem				
X1.1	CAN A	X3.1	CAN A	I	Source
X1.2	CAN B	X3.2	CAN B	11	Heating circuit without mixer
X1.3	Outside temperature sensor	X3.3	Not assigned		Heating circuit with mixer
X1.4	Buffer or heating circuit sensor 1	X3.4	Swimming pool sensor, primary	IV	Cold water connection
X1.5	Flow sensor	X3.5	Swimming pool sensor, secondary	V	DHW connection
X1.6	Heating circuit sensor 2	X3.6	Heating circuit sensor 4	VI	DHW circulation connection
X1.7	Heating circuit sensor 3	X3.7	Heating circuit sensor 5	VII	Swimming pool
X1.8	DHW cylinder sensor	X3.8	DHW cylinder 2 sensor	VIII	Solar collector
X1.9	Source sensor	X3.9	Differential sensor 1.1 / thermostat sensor 1	IX	Differential control
X1.10	Heat generator 2 sensor	X3.10	Differential sensor 1.2	Х	DHW circulation / pasteurisation pump
X1.11	Sensor, cooling	X3.11	Differential sensor 2.1 / thermostat sensor 2		
X1.12	DHW circulation sensor	X3.12	Differential sensor 2.2		
X1.13	FE7 remote control	X3.13	Not assigned		
	Telephone remote switch	X3.14	Analogue input 3, 0-10 V		
	Heating curve optimisation	X3.15	Analogue input 4, 0-10 V		
	SG-Ready	X3.16	PWM output 3		
X1.14	Analogue input 1, 0-10 V	X3.17	PWM output 4		
X1.15	Analogue input 2, 0-10 V	X3.18	CAN B		
X1.16	PWM output 1	X3.19	CAN A		
X1.17	PWM output 2				
X1.18	CAN B	X4.1	Power supply		
X1.19	CAN A	X4.2	Swimming pool input		
			Pumps L		
X2.1	Power supply	X4.3	Heating circuit pump 4		
X2.2	Power supply utility, enable contact (country specific)	X4.4	Heating circuit pump 5		
	Pumps L	X4.5	DHW charging pump 2		
X2.3	Heating circuit pump 1	X4.6	Buffer charging pump 3		
X2.4	Heating circuit pump 2	X4.7	Buffer charging pump 4		
X2.5	Heating circuit pump 3	X4.8	Buffer charging pump 5		
X2.6	Buffer charging pump 1	X4.9	Buffer charging pump 6		
X2.7	Buffer charging pump 2	X4.10	Output, differential controller 1,		
X2.8	DHW charging pump		thermostat 1		
X2.9	Source pump / defrost	X4.11	Output, differential controller 2,		
X2.10	Fault output		thermostat 2		
X2.11	Heat generator 2 DHW	X4.12	Pool pump, primary		
X2.12	Heat generator 2 heating	X4.13	Pool pump, secondary		
X2.13	Cooling	X4.14	Heating circuit mixer 4		
X2.14	Heating circuit mixer 2	X4.15	Heating circuit mixer 5		
X2 15	Heating circuit mixer 3				

Key Pos.	WPM 3
1	Heat pump
2	WPM3
2-1	MSM
2a	Outside temperature sensor
2b	Return temperature sensor
2c	Flow temperature sensor
2d	DHW temperature sensor
2e	Heating circuit temperature sensor for mixer
2f	Temperature sensor, heat generator 2
2g	Heat source sensor
2h	Swimming pool temperature sensor
2k	Solar collector sensor
2s	Solar cylinder sensor/cooling sensor

Key Pos.	WPM 3
3	Circulation pump for the heat pump - source
3a	Circulation pump for the heat pump, heating
3b	Circulation pump for DHW heating
3c	Circulation pump, heating circuit 1
3d	Circulation pump, heating circuit 2
3e	Circulation pump for swimming pool heating
3f	Circulation pump for the solar thermal system
3g	Circulation pump for solid fuel boilers

# Support brackets for outdoor installation Support bracket



**SK 1** 



Corrosion-protected wall mounting bracket made from zinc-plated steel for on-site installation. Height adjustments can be made on the wall rail, while the appliance rail provides the possibility to align the appliance. Standard delivery includes: 2 pce incl. anti-vibration mounts and 2 m self-limiting ribbon heater.

			WIX L
			234722
Support l	ength	mm	800
Weight		kg	175
Accesso	ry for		
236639	WPL 15 ACS		
236641	WPL 20 AC		
236645	WPL 25 AC		

Stainless steel, T-shaped support for floorstanding, concrete-embedded installation. Standard delivery includes: 2 pce incl. installation aid for a defined clearance dimension, anti-vibration mounts, plus 1 m self-limiting ribbon heater.

		SK 1
		232964
Height	mm	950
Depth	mm	570
Weight	kg	175
Accessory for		

230236	WPL 10 AC
236639	WPL 15 ACS
236638	WPL 15 AS
236640	WPL 20 A
236641	WPL 20 AC
236644	WPL 25 A
236645	WPL 25 AC

MK 1



Corrosion-protected support for floor mounting in matching design, including anti-vibration mounts. For weather-protected connection of the heat pump.

			МК 1
			233047
Height		mm	254
Width		mm	1260
Depth		mm	575
Accesso	ry for		
230236	WPL 10 AC		
236638	WPL 15 AS		
236639	WPL 15 ACS		

# Connection set for WPL 15/20/25 AC(S) AS-WP 1



The connection set is suitable for connecting  $32 \times 2.9$  supply lines coming from the ground. In addition to the connection pieces, the standard delivery includes a white painted cover hood to protect against the elements.

AS-WP 1
233622
32 x 2.9 mm



The connection set is suitable for connecting supply lines coming from the ground with the option of G 1 1/4 A connection. In addition to the connection pieces, the standard delivery includes a white painted cover hood to protect against the elements.

	AS-WP 2
	233623
Connection	G 1 1/4

# Ribbon heater for condensate connection HZB



Self-limiting flexible ribbon heater to keep the condensate connection for air | water heat pumps free of ice. Both versions have a 2 m connecting cable. Heated length: HZB-1: 1 m; HZB-2: 2 m. HZB-1 HZB-2

		232978	232979
Rated output per metre at 10 °C outdoor air temperature	W	10	10
Max. ambient temperature	°C	65	65
Min. handling/installation temperature	°C	-45	-45
Min. bending radius	cm	2.5	2.5
Outer sheath material		TPE-0	TPE-0
Width	mm	5.5	5.5
Height	mm	8.0	8.0
Weight	kg	0.200	0.240



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STIEBEL ELTRON GmbH & Co. KG | Dr.-Stiebel-Strasse 33 37603 Holzminden | www.stiebel-eltron.de

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