

<b>PRODUCT CARD</b>				<b>Low temperature application</b>			
Product information in accordance with (in accordance with EU Regulation No. 813/2013)				<b>Average climate</b>			
Model: ZHHH-01-15K-R290-R5-M							
Air-to-water heat pump: YES							
Brine-to-water heat pump: NO							
Low-temperature heat pump: NO							
Equipped with a supplementary heater: NO							
Heat pump combination heater: NO							
Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low temperature heat pumps, parameters shall be declared for low-temperature application							
Parameters shall be declared for average climate conditions.							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output	$P_{rated}$	10	kW	Seasonal space heating energy efficiency	$\eta_s$	196	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature $T_j$				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature $T_j$			
$T_j = -7\text{ °C}$	$P_{dh}$	9,0	kW	$T_j = -7\text{ °C}$	COPd or PERd	3,36	-
$T_j = +2\text{ °C}$	$P_{dh}$	5,7	kW	$T_j = +2\text{ °C}$	COPd or PERd	4,98	-
$T_j = +7\text{ °C}$	$P_{dh}$	3,6	kW	$T_j = +7\text{ °C}$	COPd or PERd	5,89	-
$T_j = +12\text{ °C}$	$P_{dh}$	3,0	kW	$T_j = +12\text{ °C}$	COPd or PERd	7,17	-
$T_j = \text{bivalent temperature}$	$P_{dh}$	10,23	kW	$T_j = \text{bivalent temperature}$	COPd or PERd	2,92	-
$T_j = \text{operation limit temperature}$	$P_{dh}$	10,23	kW	$T_j = \text{operation limit temperature}$	COPd or PERd	2,92	-
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20 °C)	$P_{dh}$	-	kW	For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20 °C)	COPd or PERd	-	-
Bivalent temperature	$T_{biv}$	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	$P_{cych}$	-	kW	Cycling interval efficiency	COPcyc or PERcyc	-	-
Degradation co-efficient (**)	$C_{dh}$	0,95	-	Heating water operating limit temperature	WTOL	65	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	$P_{OFF}$	0,019	kW	Rated heat output	$P_{sup}$	0,000	kW
Thermostat-off mode	$P_{TO}$	0,020	kW	Type of energy input	Electric		
Standby mode	$P_{SB}$	0,019	kW				
Crankcase heater mode	$P_{CK}$	0,000	kW				
Other items							
Capacity control	Variable			Rated air flow rate, outdoors		4000	m <sup>3</sup> /h
Sound power level outdoors	$L_{WA}$	54	dB	Rated brine or water flow rate, outdoor heat exchanger		-	m <sup>3</sup> /h
Annual electricity consumption	$Q_{HE}$	4259/15	kWh/GJ				

<b>PRODUCT CARD</b>				<b>Medium temperature application</b>			
Product information in accordance with (in accordance with EU Regulation No. 813/2013)				<b>Average climate</b>			
Model: ZHHH-01-15K-R290-R5-M							
Air-to-water heat pump: YES							
Brine-to-water heat pump: NO							
Low-temperature heat pump: NO							
Equipped with a supplementary heater: NO							
Heat pump combination heater: NO							
Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low temperature heat pumps, parameters shall be declared for low-temperature application							
Parameters shall be declared for average climate conditions.							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output	P <sub>rated</sub>	10	kW	Seasonal space heating energy efficiency	η <sub>s</sub>	148	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T <sub>j</sub>				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T <sub>j</sub>			
T <sub>j</sub> = - 7 °C	P <sub>dh</sub>	9,0	kW	T <sub>j</sub> = - 7 °C	COP <sub>d</sub> or PER <sub>d</sub>	2,55	-
T <sub>j</sub> = + 2 °C	P <sub>dh</sub>	5,3	kW	T <sub>j</sub> = + 2 °C	COP <sub>d</sub> or PER <sub>d</sub>	3,76	-
T <sub>j</sub> = + 7 °C	P <sub>dh</sub>	3,4	kW	T <sub>j</sub> = + 7 °C	COP <sub>d</sub> or PER <sub>d</sub>	4,50	-
T <sub>j</sub> = + 12 °C	P <sub>dh</sub>	2,9	kW	T <sub>j</sub> = + 12 °C	COP <sub>d</sub> or PER <sub>d</sub>	5,51	-
T <sub>j</sub> = bivalent temperature	P <sub>dh</sub>	10,0	kW	T <sub>j</sub> = bivalent temperature	COP <sub>d</sub> or PER <sub>d</sub>	2,19	-
T <sub>j</sub> = operation limit temperature	P <sub>dh</sub>	10,0	kW	T <sub>j</sub> = operation limit temperature	COP <sub>d</sub> or PER <sub>d</sub>	2,19	-
For air-to-water heat pumps: T <sub>j</sub> = - 15 °C (if TOL < - 20 °C)	P <sub>dh</sub>	-	kW	For air-to-water heat pumps: T <sub>j</sub> = - 15 °C (if TOL < - 20 °C)	COP <sub>d</sub> or PER <sub>d</sub>	-	-
Bivalent temperature	T <sub>biv</sub>	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	P <sub>cych</sub>	-	kW	Cycling interval efficiency	COP <sub>cyc</sub> or PER <sub>cyc</sub>	-	-
Degradation co-efficient (**)	C <sub>dh</sub>	0,96	-	Heating water operating limit temperature	WTOL	65	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P <sub>OFF</sub>	0,019	kW	Rated heat output	P <sub>sup</sub>	0,000	kW
Thermostat-off mode	P <sub>TO</sub>	0,020	kW	Type of energy input	Electric		
Standby mode	P <sub>SB</sub>	0,019	kW				
Crankcase heater mode	P <sub>CK</sub>	0,000	kW				
Other items							
Capacity control	Variable			Rated air flow rate, outdoors		4000	m3/h
Sound power level outdoors	L <sub>WA</sub>	54	dB	Rated brine or water flow rate, outdoor heat exchanger		-	m3/h
Annual electricity consumption	Q <sub>HE</sub>	5469/20	kWh/GJ				

PRODUCT CARD				Low temperature application			
Product information in accordance with (in accordance with EU Regulation No. 813/2013)				Warmer climate			
Model: ZHHH-01-15K-R290-R5-M							
Air-to-water heat pump: YES							
Brine-to-water heat pump: NO							
Low-temperature heat pump: NO							
Equipped with a supplementary heater: NO							
Heat pump combination heater: NO							
Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low temperature heat pumps, parameters shall be declared for low-temperature application							
Parameters shall be declared for warmer climate conditions.							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output	$P_{rated}$	10	kW	Seasonal space heating energy efficiency	$\eta_s$	232	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature $T_j$				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature $T_j$			
$T_j = + 2 \text{ °C}$	$P_{dh}$	10,3	kW	$T_j = + 2 \text{ °C}$	COPd or PERd	3,54	-
$T_j = + 7 \text{ °C}$	$P_{dh}$	6,7	kW	$T_j = + 7 \text{ °C}$	COPd or PERd	5,34	-
$T_j = + 12 \text{ °C}$	$P_{dh}$	3,4	kW	$T_j = + 12 \text{ °C}$	COPd or PERd	7,31	-
$T_j = \text{bivalent temperature}$	$P_{dh}$	10,3	kW	$T_j = \text{bivalent temperature}$	COPd or PERd	3,54	-
$T_j = \text{operation limit temperature}$	$P_{dh}$	10,3	kW	$T_j = \text{operation limit temperature}$	COPd or PERd	3,54	-
For air-to-water heat pumps: $T_j = - 15 \text{ °C}$ (if TOL < - 20 °C)	$P_{dh}$	-	kW	For air-to-water heat pumps: $T_j = - 15 \text{ °C}$ (if TOL < - 20 °C)	COPd or PERd	-	-
Bivalent temperature	$T_{biv}$	2	°C	For air-to-water heat pumps: Operation limit temperature	TOL	2	°C
Cycling interval capacity for heating	$P_{cyc}$	-	kW	Cycling interval efficiency	COPcyc or PERcyc	-	-
Degradation co-efficient (**)	$C_{dh}$	0,96	-	Heating water operating limit temperature	WTOL	65	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	$P_{OFF}$	0,019	kW	Rated heat output	$P_{sup}$	0,000	kW
Thermostat-off mode	$P_{TO}$	0,020	kW	Type of energy input	Electric		
Standby mode	$P_{SB}$	0,019	kW				
Crankcase heater mode	$P_{CK}$	0,000	kW				
Other items							
Capacity control	Variable			Rated air flow rate, outdoors		4000	m <sup>3</sup> /h
Sound power level outdoors	$L_{WA}$	54	dB	Rated brine or water flow rate, outdoor heat exchanger		-	m <sup>3</sup> /h
Annual electricity consumption	$Q_{HE}$	2328/8	kWh/GJ				

<b>PRODUCT CARD</b>				<b>Medium temperature application</b>			
Product information in accordance with (in accordance with EU Regulation No. 813/2013)				<b>Warmer climate</b>			
Model: ZHHH-01-15K-R290-R5-M							
Air-to-water heat pump: YES							
Brine-to-water heat pump: NO							
Low-temperature heat pump: NO							
Equipped with a supplementary heater: NO							
Heat pump combination heater: NO							
Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low temperature heat pumps, parameters shall be declared for low-temperature application							
Parameters shall be declared for warmer climate conditions.							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output	$P_{rated}$	10	kW	Seasonal space heating energy efficiency	$\eta_s$	172	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature $T_j$				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature $T_j$			
$T_j = + 2 \text{ °C}$	$P_{dh}$	10,2	kW	$T_j = + 2 \text{ °C}$	COPd or PERd	2,67	-
$T_j = + 7 \text{ °C}$	$P_{dh}$	6,8	kW	$T_j = + 7 \text{ °C}$	COPd or PERd	3,86	-
$T_j = + 12 \text{ °C}$	$P_{dh}$	3,0	kW	$T_j = + 12 \text{ °C}$	COPd or PERd	5,30	-
$T_j = \text{bivalent temperature}$	$P_{dh}$	10,2	kW	$T_j = \text{bivalent temperature}$	COPd or PERd	2,67	-
$T_j = \text{operation limit temperature}$	$P_{dh}$	10,2	kW	$T_j = \text{operation limit temperature}$	COPd or PERd	2,67	-
For air-to-water heat pumps: $T_j = - 15 \text{ °C}$ (if $TOL < - 20 \text{ °C}$ )	$P_{dh}$	-	kW	For air-to-water heat pumps: $T_j = - 15 \text{ °C}$ (if $TOL < - 20 \text{ °C}$ )	COPd or PERd	-	-
Bivalent temperature	$T_{biv}$	2	°C	For air-to-water heat pumps: Operation limit temperature	TOL	2	°C
Cycling interval capacity for heating	$P_{cych}$	-	kW	Cycling interval efficiency	COPcyc or PERcyc	-	-
Degradation co-efficient (**)	$C_{dh}$	0,97	-	Heating water operating limit temperature	WTOL	65	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	$P_{OFF}$	0,019	kW	Rated heat output	$P_{sup}$	0,000	kW
Thermostat-off mode	$P_{TO}$	0,020	kW	Type of energy input	Electric		
Standby mode	$P_{SB}$	0,019	kW				
Crankcase heater mode	$P_{CK}$	0,000	kW				
Other items							
Capacity control	Variable			Rated air flow rate, outdoors		4000	m <sup>3</sup> /h
Sound power level outdoors	$L_{WA}$	54	dB	Rated brine or water flow rate, outdoor heat exchanger		-	m <sup>3</sup> /h
Annual electricity consumption	$Q_{HE}$	3120/11	kWh/GJ				

<b>PRODUCT CARD</b>				<b>Low temperature application</b>			
Product information in accordance with (in accordance with EU Regulation No. 813/2013)				<b>Colder climate</b>			
Model: ZHHH-01-15K-R290-R5-M							
Air-to-water heat pump: YES							
Brine-to-water heat pump: NO							
Low-temperature heat pump: NO							
Equipped with a supplementary heater: NO							
Heat pump combination heater: NO							
Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low temperature heat pumps, parameters shall be declared for low-temperature application							
Parameters shall be declared for colder climate conditions.							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output	$P_{rated}$	13	kW	Seasonal space heating energy efficiency	$\eta_s$	163	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature $T_j$				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature $T_j$			
$T_j = -7\text{ °C}$	$P_{dh}$	8,1	kW	$T_j = -7\text{ °C}$	COPd or PERd	3,39	-
$T_j = +2\text{ °C}$	$P_{dh}$	4,9	kW	$T_j = +2\text{ °C}$	COPd or PERd	5,02	-
$T_j = +7\text{ °C}$	$P_{dh}$	3,4	kW	$T_j = +7\text{ °C}$	COPd or PERd	6,63	-
$T_j = +12\text{ °C}$	$P_{dh}$	3,4	kW	$T_j = +12\text{ °C}$	COPd or PERd	7,61	-
$T_j = \text{bivalent temperature}$	$P_{dh}$	10,6	kW	$T_j = \text{bivalent temperature}$	COPd or PERd	2,67	-
$T_j = \text{operation limit temperature}$	$P_{dh}$	9,1	kW	$T_j = \text{operation limit temperature}$	COPd or PERd	1,90	-
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20 °C)	$P_{dh}$	10,6	kW	For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20 °C)	COPd or PERd	2,67	-
Bivalent temperature	$T_{biv}$	-15	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-22	°C
Cycling interval capacity for heating	$P_{cyc}$	-	kW	Cycling interval efficiency	COPcyc or PERcyc	-	-
Degradation co-efficient (**)	$C_{dh}$	0,96	-	Heating water operating limit temperature	WTOL	65	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	$P_{OFF}$	0,019	kW	Rated heat output	$P_{sup}$	4,136	kW
Thermostat-off mode	$P_{TO}$	0,020	kW	Type of energy input	Electric		
Standby mode	$P_{SB}$	0,019	kW				
Crankcase heater mode	$P_{CK}$	0,000	kW				
Other items							
Capacity control	Variable			Rated air flow rate, outdoors		4000	m <sup>3</sup> /h
Sound power level outdoors	$L_{WA}$	54	dB	Rated brine or water flow rate, outdoor heat exchanger		-	m <sup>3</sup> /h
Annual electricity consumption	$Q_{HE}$	7840/28	kWh/GJ				

<b>PRODUCT CARD</b>				<b>Medium temperature application</b>			
Product information in accordance with (in accordance with EU Regulation No. 813/2013)				<b>Colder climate</b>			
Model: ZHHH-01-15K-R290-R5-M							
Air-to-water heat pump: YES							
Brine-to-water heat pump: NO							
Low-temperature heat pump: NO							
Equipped with a supplementary heater: NO							
Heat pump combination heater: NO							
Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low temperature heat pumps, parameters shall be declared for low-temperature application							
Parameters shall be declared for colder climate conditions.							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output	$P_{rated}$	13	kW	Seasonal space heating energy efficiency	$\eta_s$	131	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature $T_j$				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature $T_j$			
$T_j = -7\text{ °C}$	$P_{dh}$	8,1	kW	$T_j = -7\text{ °C}$	COPd or PERd	2,75	-
$T_j = +2\text{ °C}$	$P_{dh}$	5,0	kW	$T_j = +2\text{ °C}$	COPd or PERd	4,05	-
$T_j = +7\text{ °C}$	$P_{dh}$	3,3	kW	$T_j = +7\text{ °C}$	COPd or PERd	5,32	-
$T_j = +12\text{ °C}$	$P_{dh}$	3,3	kW	$T_j = +12\text{ °C}$	COPd or PERd	6,38	-
$T_j = \text{bivalent temperature}$	$P_{dh}$	10,9	kW	$T_j = \text{bivalent temperature}$	COPd or PERd	2,06	-
$T_j = \text{operation limit temperature}$	$P_{dh}$	8,9	kW	$T_j = \text{operation limit temperature}$	COPd or PERd	1,53	-
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20 °C)	$P_{dh}$	10,9	kW	For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20 °C)	COPd or PERd	2,06	-
Bivalent temperature	$T_{biv}$	-15	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-22	°C
Cycling interval capacity for heating	$P_{cych}$	-	kW	Cycling interval efficiency	COPcyc or PERcyc	-	-
Degradation co-efficient (**)	$C_{dh}$	1,00	-	Heating water operating limit temperature	WTOL	65	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	$P_{OFF}$	0,019	kW	Rated heat output	$P_{sup}$	4,342	kW
Thermostat-off mode	$P_{TO}$	0,020	kW	Type of energy input	Electric		
Standby mode	$P_{SB}$	0,019	kW				
Crankcase heater mode	$P_{CK}$	0,000	kW				
Other items							
Capacity control	Variable			Rated air flow rate, outdoors		4000	m <sup>3</sup> /h
Sound power level outdoors	$L_{WA}$	54	dB	Rated brine or water flow rate, outdoor heat exchanger		-	m <sup>3</sup> /h
Annual electricity consumption	$Q_{HE}$	9738/35	kWh/GJ				

Product information (in accordance with EU Regulation No. 811/2013)			
Supplier Name:		<b>JBG-2 Sp. z o.o.</b>	
Contact details:		<b>ul. Gajowa 5, 43-254 Warszowice, Poland</b>	
Supplier's model identifier:		ZHHH-01-15K-R290-R5-M	
Average climate	Seasonal space heating energy efficiency class	W35	A+++
		W55	A++
	Seasonal space heating energy efficiency	W35	196%
		W55	148%
	Rated heat output	W35	10 kW
		W55	10 kW
	Annual electricity consumption	W35	4259 kWh/year
		W55	5469 kWh/year
SCOP	W35	4,96	
	W55	3,77	
Cold climate	Seasonal space heating energy efficiency class	W35	A++
		W55	A++
	Seasonal space heating energy efficiency	W35	163%
		W55	131%
	Rated heat output	W35	13 kW
		W55	13 kW
	Annual electricity consumption	W35	7840 kWh/year
		W55	9738 kWh/year
SCOP	W35	4,15	
	W55	3,36	
Warm climate	Seasonal space heating energy efficiency class	W35	A+++
		W55	A+++
	Seasonal space heating energy efficiency	W35	232%
		W55	172%
	Rated heat output	W35	10 kW
		W55	10 kW
	Annual electricity consumption	W35	2328 kWh/year
		W55	3120 kWh/year
SCOP	W35	5,89	
	W55	4,37	
Outdoors	Sound power level $L_{wa}$	54 dB	
Special precautions for assembly, installation and maintenance are included in the separate file named: „Precautions Heat Pump JBG2.pdf”			

W35 - low temperature heating; W - water temperature at the outlet from the heat pump  
W55 - medium temperature heating; W - water temperature at the outlet from the heat pump