

**PRODUCT CARD** Low temperature application Product information in accordance with (in accordance with Average climate EU Regulation No. 813/2013) 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 kW Seasonal space heating Prated 10 ηs 196 % energy efficiency Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj outdoor temperature Tj Tj = − 7 °C 9,0 kW 3.36 Ti = -7 °C $P_{dh}$ COPd or PERd COPd or Tj = + 2 °C kW Tj = + 2 °C 4,98  $P_{dh}$ 5,7 PERd COPd or 5,89 Tj = + 7 °C  $P_{dh}$ 3,6 kW Tj = + 7 °C PERd COPd or Tj = + 12 °C  $P_{dh}$ kW Ti = + 12 °C 7 17 3.0 PERd Tj = bivalent temperature  $P_{dh}$ 10,23 kW Tj = bivalent temperature COPd or 2,92 PERd Tj = operation limit  $P_{dh}$ 10,23 kW Tj = operation limit COPd or 2,92 temperature temperature PERd COPd or For air-to-water heat  $P_{dh}$ kW For air-to-water heat --PERd pumps: pumps: Tj = – 15 °C (if TOL < – 20 Tj = – 15 °C (if TOL < – 20 °C) °C) Bivalent temperature -10 °C For air-to-water heat TOL -10 °C Tbiv pumps: Operation limit temperature Cycling interval efficiency Cycling interval capacity  $\mathsf{P}_{\mathsf{cych}}$ kW COPcyc for or PE<u>Rcyc</u> heating Degradation co-efficient 0.95 Heating water operating 65 °C  $C_{\text{dh}}$ WTOL -(\*\*) limit temperature Power consumption in modes other than active mode Supplementary heater Off mode 0,019 kW Rated heat output POFF Psup 0,000 kW Thermostat-off mode Рто 0.020 kW Type of energy input Electric Standby mode Psb 0,019 kW Crankcase heater mode Рск 0,000 kW Other items Rated air flow rate, 4000 m3/h Capacity control Variable outdoors Sound power level Lwa 54 dB Rated brine or water flow m3/h outdoors rate, outdoor heat exchanger Annual electricity 4259/15 kWh/GJ Q<sub>HE</sub> consumption

PRODUCT CARD Product information in accordance with (in accordance with EU Regulation No. 813/2013)				Medium temperature application Average climate				
Model: ZHHH-01-15K-R29		0.013/2013)						
Air-to-water heat pump: YI	ES							
Brine-to-water heat pump:								
Low-temperature heat pun	NO: NO							
Equipped with a supplement	•	NO						
Heat pump combination he								
	ed for mediu			t for low-temperature heat pumps	s. For low ter	mperature	heat pumps,	
Parameters shall be declar								
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit	
Rated heat output	Prated	10	kW	Seasonal space heating energy efficiency	ηs	148	%	
Declared capaci temperature 2		g for part load at itdoor temperatu		Declared coefficient o ratio for part load at	indoor temp	erature 20		
Ti = − 7 °C	P <sub>dh</sub>	9,0	kW	Ti = - 7 °C	or temperatu COPd or	re Tj 2,55	-	
,	• un	5,5			PERd	_,		
Tj = + 2 °C	P <sub>dh</sub>	5,3	kW	Tj = + 2 °C	COPd or PERd	3,76	-	
Tj = + 7 °C	P <sub>dh</sub>	3,4	kW	Tj = + 7 °C	COPd or PERd	4,50	-	
Tj = + 12 °C	P <sub>dh</sub>	2,9	kW	Tj = + 12 °C	COPd or PERd	5,51	-	
Tj = bivalent temperature	P <sub>dh</sub>	10,0	kW	Tj = bivalent temperature	COPd or PERd	2,19	-	
Tj = operation limit temperature	P <sub>dh</sub>	10,0	kW	Tj = operation limit temperature	COPd or PERd	2,19	-	
For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C)	P <sub>dh</sub>	-	kW	For air-to-water heat pumps: Tj = $-15$ °C (if TOL < $-20$ °C)	COPd or PERd	-	-	
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	COPcyc or PERcyc	-	-	
Degradation co-efficient (**)	C <sub>dh</sub>	0,96	-	Heating water operating limit	WTOL	65	°C	
Power consumpti	ion in modes	s other than activ	l ve mode	temperature Supple	ementary he	ater	1	
Off mode	POFF	0,019	kW	Rated heat output	P <sub>sup</sub>	0,000	kW	
Thermostat-off mode	Рто	0,020	kW	Type of energy input		Electri	C	
Standby mode	P <sub>SB</sub>	0,019	kW		<u> </u>			
Crankcase heater mode	Рск	0,000	kW					
Other items		•	·	· ·				
				Rated air flow rate,		4000	m3/h	
Capacity control		Variable		outdoors				
Sound power level outdoors	Lwa	54	dB	Rated brine or water flow rate, outdoor heat		-	m3/h	
Annual electricity consumption	Q <sub>HE</sub>	5469/20	kWh/GJ	exchanger				



**PRODUCT CARD** Low temperature application Product information in accordance with (in accordance with Warmer climate EU Regulation No. 813/2013) 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 kW Seasonal space heating Prated 10 ηs 232 % energy efficiency Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj outdoor temperature Tj 10,3 Tj = + 2 °C Ti = + 2 °C  $P_{dh}$ kW COPd or 3.54 PERd Tj = + 7 °C  $P_{dh}$ 6,7 kW Tj = + 7 °C COPd or 5,34 PERd Ti = + 12 °C  $\mathsf{P}_{\mathsf{dh}}$ kW Ti = + 12 °C COPd or 7 31 34 PERd COPd or Tj = bivalent temperature  $P_{dh}$ 10.3 kW Tj = bivalent temperature 3.54 PERd Tj = operation limit  $\mathsf{P}_{\mathsf{dh}}$ 10,3 kW Tj = operation limit COPd or 3,54 temperature temperature PERd COPd or For air-to-water heat  $P_{dh}$ kW For air-to-water heat --\_ PERd pumps: pumps: Tj = - 15 °C (if TOL < - $T_{j} = -15 \ ^{\circ}C \ (if \ TOL < -20)$ 20 °C) °Č) Bivalent temperature T<sub>biv</sub> 2 °C For air-to-water heat TOL 2 °C pumps: Operation limit temperature Cycling interval efficiency Cycling interval capacity Pcych kW COPcyc --for or PERcyc heating  $C_{\text{dh}}$ 65 °C Degradation co-efficient 0.96 Heating water operating WTOL \_ (\*\*) limit temperature Power consumption in modes other than active mode Supplementary heater Off mode 0,019 kW Rated heat output kW POFF Psup 0,000 Thermostat-off mode 0,020 kW Рто Type of energy input Electric Standby mode Psb 0,019 kW Crankcase heater mode 0,000 kW Рск Other items Capacity control Variable Rated air flow rate, 4000 m3/h outdoors Rated brine or water flow Sound power level Lwa 54 dB m3/h outdoors rate, outdoor heat exchanger Annual electricity Q<sub>HE</sub> 2328/8 kWh/GJ consumption



## PRODUCT CARD

JBG-2 sp. z o.o.

PR	DUCT	CARD		Medium tempe	rature a	applica	tion
	duct information in accordance with (in accordance with EU Regulation No. 813/2013)		Warm	er clima	te		
Model: ZHHH-01-15K-R29		. 813/2013)					
Air-to-water heat pump: YI	ES						
Brine-to-water heat pump:							
Low-temperature heat pur	np: NO						
Equipped with a supplement	ntary heater:	NO					
Heat pump combination he	ater: NO						
Parameters shall be declar	ed for mediu	m-temperature a	pplication, excep	t for low-temperature heat pumps	s. For low ter	nperature l	neat pumps,
parameters shall be declar	ed for low-ter	mperature applic	ation				
Parameters shall be declar	ed for warme	er climate conditi	ons.				
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>	172	%
		g for part load at i		Declared coefficient o	f performanc	e or prima	y energy
temperature 2	20 °C and ou	tdoor temperatur	e Tj	ratio for part load at	indoor temp or temperatu		°C and
Tj = + 2 °C	P <sub>dh</sub>	10,2	kW	Tj = + 2 °C	COPd or PERd	2,67	-
Tj = + 7 °C	P <sub>dh</sub>	6,8	kW	Tj = + 7 °C	COPd or PERd	3,86	-
Tj = + 12 °C	P <sub>dh</sub>	3,0	kW	Tj = + 12 °C	COPd or PERd	5,30	-
Tj = bivalent temperature	P <sub>dh</sub>	10,2	kW	Tj = bivalent temperature	COPd or PERd	2,67	-
Tj = operation limit temperature	P <sub>dh</sub>	10,2	kW	Tj = operation limit temperature	COPd or PERd	2,67	-
For air-to-water heat pumps: Tj = - 15 °C (if TOL < - 20 °C)	P <sub>dh</sub>	-	kW	For air-to-water heat pumps: Tj = $-15$ °C (if TOL < $-20$ °C)	COPd or PERd	-	-
Bivalent temperature	T <sub>biv</sub>	2	°C	For air-to-water heat pumps: Operation limit temperature	TOL	2	°C
Cycling interval capacity for heating	P <sub>cych</sub>	-	kW	Cycling interval efficiency	COPcyc or PERcyc	-	-
Degradation co-efficient (**)	C <sub>dh</sub>	0,97	-	Heating water operating limit temperature	WTOL	65	°C
Power consumpt	ion in modes	other than active	e mode		ementary he	ater	
Off mode	POFF	0,019	kW	Rated heat output	P <sub>sup</sub>	0,000	kW
Thermostat-off mode	Рто	0,020	kW	Type of energy input		Electric	:
Standby mode	P <sub>SB</sub>	0,019	kW	1	1		
Crankcase heater mode	Рск	0,000	kW	1			
Other items				<u>_</u>			
Capacity control		Variable		Rated air flow rate, outdoors		4000	m3/h
Sound power level outdoors	Lwa	54	dB	Rated brine or water flow rate, outdoor heat		-	m3/h
Annual electricity consumption	Q <sub>HE</sub>	3120/11	kWh/GJ	_ exchanger			



## PRODUCT CARD JBG-2 sp. z o.o.

**PRODUCT CARD** Low temperature application Product information in accordance with (in accordance with Colder climate EU Regulation No. 813/2013) 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. Value Item Symbol Unit Value Unit Item Symbol Rated heat output Prated 13 kW Seasonal space heating ηs 163 % energy efficiency Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj outdoor temperature Tj Tj = − 7 °C kW Tj = − 7 °C COPd or 3,39  $P_{dh}$ 8.1 PERd Tj = + 2 °C  $P_{dh}$ 4,9 kW Tj = + 2 °C COPd or 5,02 -PERd COPd or Tj = + 7 °C Tj = + 7 °C  $P_{dh}$ 3,4 kW 6,63 PERd Tj = + 12 °C  $P_{dh}$ 3,4 kW Tj = + 12 °C COPd or 7,61 PERd COPd or Ti = bivalent temperature  $\mathsf{P}_{\mathsf{dh}}$ 10.6 kW Ti = bivalent temperature 2.67 -PERd COPd or Tj = operation limit  $P_{dh}$ 9.1 kW Tj = operation limit 1.90 \_ PFRd temperature temperature For air-to-water heat  $\mathsf{P}_{\mathsf{dh}}$ 10,6 kW For air-to-water heat COPd or 2,67 pumps: pumps: PERd Tj = – 15 °C (if TOL < – 20 °C) Tj = - 15 °C (if TOL < - 20 °Č) Bivalent temperature Tbiv -15 °C For air-to-water heat TOL -22 °C pumps: Operation limit temperature Cycling interval efficiency Cycling interval capacity P<sub>cych</sub> kW COPcyc --for or heating PERcyc Degradation co-efficient 0,96 Heating water operating WTOL 65 °C  $C_{dh}$ (\*\*) limit temperature Power consumption in modes other than active mode Supplementary heater Off mode POFF 0.019 kW Rated heat output  $\mathsf{P}_{\mathsf{sup}}$ 4.136 kW Thermostat-off mode Рто 0,020 kW Type of energy input Electric Standby mode  $P_{SB}$ 0,019 kW Crankcase heater mode Рск 0,000 kW Other items Capacity control Rated air flow rate 4000 Variable m3/h outdoors Sound power level 54 dB Rated brine or water flow m3/h Lwa outdoors rate, outdoor heat exchanger Annual electricity QHE 7840/28 kWh/GJ consumption

PRODUCT CARD Product information in accordance with (in accordance with EU Regulation No. 813/2013)			Medium temperature application Colder climate					
EU Reg Model: ZHHH-01-15K-R29		0. 813/2013)						
Air-to-water heat pump: YE								
Brine-to-water heat pump: 1								
Low-temperature heat pur								
Equipped with a supplement	•	NO						
		NO						
Heat pump combination he								
parameters shall be declare	ed for low-te	mperature applic	cation	t for low-temperature heat pumps	s. For low ter	nperature	neat pumps,	
Parameters shall be declar	ed for colde	r climate conditio	ons.					
tem	Symbol	Value	Unit	Item	Symbol	Value	Unit	
Rated heat output	Prated	13	kW	Seasonal space heating energy efficiency	ηs	131	%	
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj				Declared coefficient or ratio for part load at		erature 20		
Tj = - 7 °C	P <sub>dh</sub>	8,1	kW	Tj = - 7 °C	COPd or PERd	2,75	-	
Tj = + 2 °C	P <sub>dh</sub>	5,0	kW	Tj = + 2 °C	COPd or PERd	4,05	-	
Tj = + 7 °C	P <sub>dh</sub>	3,3	kW	Tj = + 7 °C	COPd or PERd	5,32	-	
Tj = + 12 °C	P <sub>dh</sub>	3,3	kW	Tj = + 12 °C	COPd or PERd	6,38	-	
Tj = bivalent temperature	P <sub>dh</sub>	10,9	kW	Tj = bivalent temperature	COPd or PERd	2,06	-	
Tj = operation limit temperature	P <sub>dh</sub>	8,9	kW	Tj = operation limit temperature	COPd or PERd	1,53	-	
For air-to-water heat pumps: Tj = – 15 °C (if TOL < – 20 °C)	P <sub>dh</sub>	10,9	kW	For air-to-water heat pumps: Tj = $-15$ °C (if TOL < $-20$ °C)	COPd or PERd	2,06	-	
Bivalent temperature	T <sub>biv</sub>	-15	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-22	°C	
Cycling interval capacity for heating	P <sub>cych</sub>	-	kW	Cycling interval efficiency	COPcyc or PERcyc	-	-	
Degradation co-efficient (**)	C <sub>dh</sub>	1,00	-	Heating water operating limit temperature	WTOL	65	°C	
Power consumption in modes other than active mode				Supplementary heater				
Off mode	Poff	0,019	kW	Rated heat output	P <sub>sup</sub>	4,342	kW	
Thermostat-off mode	Рто	0,020	kW	Type of energy input		Electric	C	
Standby mode	P <sub>SB</sub>	0,019	kW	1	1			
Crankcase heater mode	Рск	0,000	kW	-				
Other items								
				Rated air flow rate,		4000	m3/h	
Capacity control		Variable		outdoors				
Sound power level outdoors	Lwa	54	dB	Rated brine or water flow rate, outdoor heat		-	m3/h	
Annual electricity consumption	Q <sub>HE</sub>	9738/35	kWh/GJ	exchanger				



## PRODUCT CARD

JBG-2 sp. z o.o.

upplier Name:			JBG-2 Sp. z o.o.		
Contact details:		ul. Gajowa 5, 43-254 Warszowice, Poland			
Supplier's mode		14/05	ZHHH-01-15K-R290-R5-M		
	Seasonal space heating energy	W35	A+++		
Average climate	efficiency class	W55	A++		
	Seasonal space heating energy	W35	196%		
	efficiency	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	W35	A++		
	efficiency class	W55	A++		
	Seasonal space heating energy	W35	163%		
	efficiency	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	W35	A+++		
	efficiency class	W55	A+++		
	Seasonal space heating energy	W35	232%		
	efficiency	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 <sub>wa</sub>		54 dB		

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