EcoDesign Manual

Air-to-water Chillers and Heat Pumps for cold climates

NESEA PRO KWFA

COMFORT

EN

KEYTER TECHNOLOGIES, S.L. – A-3132 Road km 15 – P.O. Box 650 – 14900 Lucena, Córdoba, Spain | Tel: +34 957 510 752 | www.keyter.com | info@keyter.com

EcoDesign Manual

Air-to-water Chillers and Heat Pumps for cold climates

NESEA PRO KWFA

COMFORT

Reversible Heat Pump (Cooling Mode)

EN

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NESEA PRO REVERSIBLE HEAT PUMP

Information requirements according to Regulation (EU) 2016/2281

Model:	**KWFA1020INS4D**
Refrigerant fluid:	R290
Outdoor side heat exchanger chiller:	air
Indoor side heat exchanger chiller:	water
Type:	compressor driven vapour compression
Driver of compressor:	electric motor
Application temperatures:	12/7°C
Acoustic elements:	STD

COOLING MODE

Item	Symbol	Value	Unit
Rated cooling capacity	$P_{rated,c}$	13.7	kW
Declared cooling capacity for part load at given outdoor temperatures T_j			
T_j = + 35 °C	**Pdc**	13.7	kW
T_j = + 30 °C	**Pdc**	10.1	kW
T_j = + 25 °C	**Pdc**	6.5	kW
T_j = + 20 °C	**Pdc**	3.7	kW
Degradation co-efficient	**Cdc**	0.9	---

Item	Symbol	Value	Unit
Seasonal space cooling energy efficiency	$\eta_{s,c}$	202.2	%
Declared energy efficiency ratio or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T_j			
T_j = + 35 °C	EER_d	2.6	%
T_j = + 30 °C	EER_d	4.2	%
T_j = + 25 °C	EER_d	6.4	%
T_j = + 20 °C	EER_d	7.1	%

Power consumption in modes other than active mode

Off mode	P_{OFF}	0.000	kW
Thermostat-off mode	P_{TO}	0.024	kW

Crankcase heater mode	P_{CK}	0.000	kW
Standby mode	P_{SB}	0.024	kW

Other items

Capacity control	Variable		
Water flow rate capacity control	Fixed		
Sound power level (outdoor)	L_{WA}	76.0	dB
Emissions of nitrogen oxides	NO_X	0	mg/kWh input *GCV*
GWP of the refrigerant	---	3	kg CO_2 eq (100 years)

For air-to-water comfort chillers: air flow rate, outdoor measured	---	8000	m^3/h
For water/brine-to-water chillers: rated brine or water flow rate, outdoor side heat exchanger	---	N/A	m^3/h

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NESEA PRO REVERSIBLE HEAT PUMP

Information requirements according to Regulation (EU) 2016/2281

Model:	**KWFA1020INS4K**
Refrigerant fluid:	R454C
Outdoor side heat exchanger chiller:	air
Indoor side heat exchanger chiller:	water
Type:	compressor driven vapour compression
Driver of compressor:	electric motor
Application temperatures:	12/7°C
Acoustic elements:	STD

COOLING MODE

Item	Symbol	Value	Unit
Rated cooling capacity	$P_{rated,c}$	14.0	kW
Declared cooling capacity for part load at given outdoor temperatures T_j			
T_j = + 35 °C	**Pdc**	14.0	kW
T_j = + 30 °C	**Pdc**	10.3	kW
T_j = + 25 °C	**Pdc**	7.2	kW
T_j = + 20 °C	**Pdc**	8.1	kW
Degradation co-efficient	**Cdc**	0.9	---

Item	Symbol	Value	Unit
Seasonal space cooling energy efficiency	$\eta_{s,c}$	190.0	%
Declared energy efficiency ratio or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T_j			
T_j = + 35 °C	EER_d	2.4	%
T_j = + 30 °C	EER_d	3.8	%
T_j = + 25 °C	EER_d	6.0	%
T_j = + 20 °C	EER_d	8.1	%

Power consumption in modes other than active mode

Off mode	P_{OFF}	0.000	kW
Thermostat-off mode	P_{TO}	0.024	kW

Crankcase heater mode	P_{CK}	0.000	kW
Standby mode	P_{SB}	0.024	kW

Other items

Capacity control	Variable		
Water flow rate capacity control	Fixed		
Sound power level (outdoor)	L_{WA}	76.0	dB
Emissions of nitrogen oxides	NO_X	0	mg/kWh input *GCV*
GWP of the refrigerant	---	3	kg CO_2 eq (100 years)

For air-to-water comfort chillers: air flow rate, outdoor measured	---	8000	m^3/h
For water/brine-to-water chillers: rated brine or water flow rate, outdoor side heat exchanger	---	N/A	m^3/h

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EcoDesign Manual

Air-to-water Chillers and Heat Pumps for cold climates

NESEA PRO KWFA

COMFORT

Reversible Heat Pump (Heating Mode)

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EcoDesign Manual

Air-to-water Chillers and Heat Pumps for cold climates

NESEA PRO KWFA

COMFORT

Reversible Heat Pump (Heating Mode)

Average climate 30/35ºC

EN

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NESEA PRO REVERSIBLE HEAT PUMP

Information requirements according to Regulation (EU) 813/2013

Model:	**KWFA1020INS4D**
Refrigerant fluid:	R290
Heat pump type:	air-water
Application temperatures:	30/35ºC
Equipped with a supplementary heater:	yes
Heat pump combination heater:	no
Acoustic elements:	STD

HEATING MODE

Parameters declared for average climate conditions

Item	Symbol	Value	Unit
Rated heat output (*)	***Prated***	19	kW
Declared capacity for heating for part load at indoor temperature 20 ºC and outdoor temperature T_j			
T_j = - 7 ºC	***Pdh***	14.8	kW
T_j = + 2 ºC	***Pdh***	8.9	kW
T_j = + 7 ºC	***Pdh***	5.7	kW
T_j = + 12 ºC	***Pdh***	5.9	kW
T_j = bivalent temperature	***Pdh***	13.4	kW
T_j = operation limit temperature	***Pdh***	13.6	kW
For air-to-water heat pumps: T_j = - 15 ºC (if *TOL* < - 20 ºC)	***Pdh***	N/A	kW
Bivalent temperature	***Tbiv***	-5	ºC
Degradation co-efficient	***Cdh***	0.9	---

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	$\eta_{s,h}$	182.6	%
Net seasonal coefficient of performance in active mode (**)	***SCOPnet***	4.65	---
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20ºC and outdoor temperature T_j			
T_j = - 7 ºC	***COPd***	2.8	---
T_j = + 2 ºC	***COPd***	4.8	---
T_j = + 7 ºC	***COPd***	5.9	---
T_j = + 12 ºC	***COPd***	6.9	---
T_j = bivalent temperature	***COPd***	3.2	---
T_j = operation limit temperature	***COPd***	3.1	---
For air-to-water heat pumps: T_j = - 15 ºC (if *TOL* < - 20 ºC)	***COPd***	N/A	---
Operation limit temperature	***TOL***	-10	ºC
Heating water operation limit temperature	***WTOL***	65	ºC

Power consumption in modes other than active mode

Off mode	P_{OFF}	0.000	kW
Thermostat-off mode	P_{TO}	0.024	kW
Standby mode	P_{SB}	0.024	kW
Crankcase heater mode	P_{CK}	0.140	kW

Supplementary heater

Rated heat output (*)	***Psup***	3.0	kW
Type of energy input	Electric		

Other items

Capacity control	Variable		
Water flow rate capacity control	Fixed		
Sound power level (indoors/outdoors)	L_{WA}	0/76.4	dB
Emissions of nitrogen oxides	NO_X	0	mg/kWh

For air-to-water heat pumps: rated air flow rate, outdoors	---	8000	m^3/h
For water-/brine-to-water heat pumps: rated brine or water flow rate, outdoor heat exchanger	---	N/A	m^3/h

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output ***Prated*** is equal to the design load for heating ***Pdesign,h*** , and the rated heat output of a supplementary heater ***Psup*** is equal to the supplementary capacity for heating ***sup(Tj)*** .

(**) For electrically driven heat pumps, the net seasonal coefficient of performance in active mode ***SCOPnet*** is equal to the estimated average seasonal performance factor ***SPF*** , parameter that is needed for the calculation of the amount of the renewable energy supplied by heat pumps.

NESEA PRO REVERSIBLE HEAT PUMP

Information requirements according to Regulation (EU) 813/2013

Model:	**KWFA1020INS4K**
Refrigerant fluid:	R454C
Heat pump type:	air-water
Application temperatures:	30/35ºC
Equipped with a supplementary heater:	yes
Heat pump combination heater:	no
Acoustic elements:	STD

HEATING MODE

Parameters declared for average climate conditions

Item	Symbol	Value	Unit
Rated heat output (*)	***Prated***	19	kW
Declared capacity for heating for part load at indoor temperature 20 ºC and outdoor temperature T_j			
T_j = - 7 ºC	***Pdh***	14.1	kW
T_j = + 2 ºC	***Pdh***	8.8	kW
T_j = + 7 ºC	***Pdh***	8.5	kW
T_j = + 12 ºC	***Pdh***	10.3	kW
T_j = bivalent temperature	***Pdh***	13.1	kW
T_j = operation limit temperature	***Pdh***	12.7	kW
For air-to-water heat pumps: T_j = - 15 ºC (if *TOL* < - 20 ºC)	***Pdh***	N/A	kW
Bivalent temperature	***Tbiv***	-5	ºC
Degradation co-efficient	***Cdh***	0.9	---

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	$\eta_{s,h}$	169.1	%
Net seasonal coefficient of performance in active mode (**)	***SCOPnet***	4.30	---
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20ºC and outdoor temperature T_j			
T_j = - 7 ºC	***COPd***	2.5	---
T_j = + 2 ºC	***COPd***	4.8	---
T_j = + 7 ºC	***COPd***	4.5	---
T_j = + 12 ºC	***COPd***	9.7	---
T_j = bivalent temperature	***COPd***	2.9	---
T_j = operation limit temperature	***COPd***	3.0	---
For air-to-water heat pumps: T_j = - 15 ºC (if *TOL* < - 20 ºC)	***COPd***	N/A	---
Operation limit temperature	***TOL***	-10	ºC
Heating water operation limit temperature	***WTOL***	65	ºC

Power consumption in modes other than active mode

Off mode	P_{OFF}	0.000	kW
Thermostat-off mode	P_{TO}	0.024	kW
Standby mode	P_{SB}	0.024	kW
Crankcase heater mode	P_{CK}	0.140	kW

Supplementary heater

Rated heat output (*)	***Psup***	3.5	kW
Type of energy input	Electric		

Other items

Capacity control	Variable		
Water flow rate capacity control	Fixed		
Sound power level (indoors/outdoors)	L_{WA}	0/76.4	dB
Emissions of nitrogen oxides	NO_X	0	mg/kWh

For air-to-water heat pumps: rated air flow rate, outdoors	---	8000	m^3/h
For water-/brine-to-water heat pumps: rated brine or water flow rate, outdoor heat exchanger	---	N/A	m^3/h

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output ***Prated*** is equal to the design load for heating ***Pdesign,h*** , and the rated heat output of a supplementary heater ***Psup*** is equal to the supplementary capacity for heating ***sup(Tj)*** .

(**) For electrically driven heat pumps, the net seasonal coefficient of performance in active mode ***SCOPnet*** is equal to the estimated average seasonal performance factor ***SPF*** , parameter that is needed for the calculation of the amount of the renewable energy supplied by heat pumps.

EcoDesign Manual

Air-to-water Chillers and Heat Pumps for cold climates

NESEA PRO KWFA

COMFORT

Reversible Heat Pump (Heating Mode)

Average climate 47/55ºC

EN

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NESEA PRO REVERSIBLE HEAT PUMP

Information requirements according to Regulation (EU) 813/2013

Model:	**KWFA1020INS4D**
Refrigerant fluid:	R290
Heat pump type:	air-water
Application temperatures:	47/55ºC
Equipped with a supplementary heater:	yes
Heat pump combination heater:	no
Acoustic elements:	STD

HEATING MODE

Parameters declared for average climate conditions

Item	Symbol	Value	Unit
Rated heat output (*)	***Prated***	18	kW
Declared capacity for heating for part load at indoor temperature 20 ºC and outdoor temperature T_j			
T_j = - 7 ºC	***Pdh***	14.9	kW
T_j = + 2 ºC	***Pdh***	8.7	kW
T_j = + 7 ºC	***Pdh***	5.6	kW
T_j = + 12 ºC	***Pdh***	5.7	kW
T_j = bivalent temperature	***Pdh***	13.2	kW
T_j = operation limit temperature	***Pdh***	13.8	kW
For air-to-water heat pumps: T_j = - 15 ºC (if *TOL* < - 20 ºC)	***Pdh***	N/A	kW
Bivalent temperature	***Tbiv***	-5	ºC
Degradation co-efficient	***Cdh***	0.9	---

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	$\eta_{s,h}$	147.7	%
Net seasonal coefficient of performance in active mode (**)	***SCOPnet***	3.77	---
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20ºC and outdoor temperature T_j			
T_j = - 7 ºC	***COPd***	2.3	---
T_j = + 2 ºC	***COPd***	3.8	---
T_j = + 7 ºC	***COPd***	5.0	---
T_j = + 12 ºC	***COPd***	6.9	---
T_j = bivalent temperature	***COPd***	2.5	---
T_j = operation limit temperature	***COPd***	2.5	---
For air-to-water heat pumps: T_j = - 15 ºC (if *TOL* < - 20 ºC)	***COPd***	N/A	---
Operation limit temperature	***TOL***	-10	ºC
Heating water operation limit temperature	***WTOL***	65	ºC

Power consumption in modes other than active mode

Off mode	P_{OFF}	0.000	kW
Thermostat-off mode	P_{TO}	0.024	kW
Standby mode	P_{SB}	0.024	kW
Crankcase heater mode	P_{CK}	0.140	kW

Supplementary heater

Rated heat output (*)	***Psup***	2.5	kW
Type of energy input	Electric		

Other items

Capacity control	Variable		
Water flow rate capacity control	Fixed		
Sound power level (indoors/outdoors)	L_{WA}	0/76.4	dB
Emissions of nitrogen oxides	NO_X	0	mg/kWh

For air-to-water heat pumps: rated air flow rate, outdoors	---	8000	m^3/h
For water-/brine-to-water heat pumps: rated brine or water flow rate, outdoor heat exchanger	---	N/A	m^3/h

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output ***Prated*** is equal to the design load for heating ***Pdesign,h*** , and the rated heat output of a supplementary heater ***Psup*** is equal to the supplementary capacity for heating ***sup(Tj)*** .

(**) For electrically driven heat pumps, the net seasonal coefficient of performance in active mode ***SCOPnet*** is equal to the estimated average seasonal performance factor ***SPF*** , parameter that is needed for the calculation of the amount of the renewable energy supplied by heat pumps.

NESEA PRO REVERSIBLE HEAT PUMP

Information requirements according to Regulation (EU) 813/2013

Model:	**KWFA1020INS4K**
Refrigerant fluid:	R454C
Heat pump type:	air-water
Application temperatures:	47/55ºC
Equipped with a supplementary heater:	yes
Heat pump combination heater:	no
Acoustic elements:	STD

HEATING MODE

Parameters declared for average climate conditions

Item	Symbol	Value	Unit
Rated heat output (*)	***Prated***	18	kW
Declared capacity for heating for part load at indoor temperature 20 ºC and outdoor temperature T_j			
T_j = - 7 ºC	***Pdh***	14.1	kW
T_j = + 2 ºC	***Pdh***	8.6	kW
T_j = + 7 ºC	***Pdh***	8.0	kW
T_j = + 12 ºC	***Pdh***	9.8	kW
T_j = bivalent temperature	***Pdh***	12.9	kW
T_j = operation limit temperature	***Pdh***	13.0	kW
For air-to-water heat pumps: T_j = - 15 ºC (if *TOL* < - 20 ºC)	***Pdh***	N/A	kW
Bivalent temperature	***Tbiv***	-5	ºC
Degradation co-efficient	***Cdh***	0.9	---

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	$\eta_{s,h}$	137.1	%
Net seasonal coefficient of performance in active mode (**)	***SCOPnet***	3.51	---
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20ºC and outdoor temperature T_j			
T_j = - 7 ºC	***COPd***	2.1	---
T_j = + 2 ºC	***COPd***	3.8	---
T_j = + 7 ºC	***COPd***	3.9	---
T_j = + 12 ºC	***COPd***	8.1	---
T_j = bivalent temperature	***COPd***	2.3	---
T_j = operation limit temperature	***COPd***	2.3	---
For air-to-water heat pumps: T_j = - 15 ºC (if *TOL* < - 20 ºC)	***COPd***	N/A	---
Operation limit temperature	***TOL***	-10	ºC
Heating water operation limit temperature	***WTOL***	65	ºC

Power consumption in modes other than active mode

Off mode	P_{OFF}	0.000	kW
Thermostat-off mode	P_{TO}	0.024	kW
Standby mode	P_{SB}	0.024	kW
Crankcase heater mode	P_{CK}	0.140	kW

Supplementary heater

Rated heat output (*)	***Psup***	3.0	kW
Type of energy input	Electric		

Other items

Capacity control	Variable		
Water flow rate capacity control	Fixed		
Sound power level (indoors/outdoors)	L_{WA}	0/76.4	dB
Emissions of nitrogen oxides	NO_X	0	mg/kWh

For air-to-water heat pumps: rated air flow rate, outdoors	---	8000	m^3/h
For water-/brine-to-water heat pumps: rated brine or water flow rate, outdoor heat exchanger	---	N/A	m^3/h

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output ***Prated*** is equal to the design load for heating ***Pdesign,h*** , and the rated heat output of a supplementary heater ***Psup*** is equal to the supplementary capacity for heating ***sup(Tj)*** .

(**) For electrically driven heat pumps, the net seasonal coefficient of performance in active mode ***SCOPnet*** is equal to the estimated average seasonal performance factor ***SPF*** , parameter that is needed for the calculation of the amount of the renewable energy supplied by heat pumps.

EcoDesign Manual

Air-to-water Chillers and Heat Pumps for cold climates

NESEA PRO KWFA

COMFORT

Reversible Heat Pump (Heating Mode)

Average climate 55/65ºC

EN

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NESEA PRO REVERSIBLE HEAT PUMP

Information requirements according to Regulation (EU) 813/2013

Model:	**KWFA1020INS4D**
Refrigerant fluid:	R290
Heat pump type:	air-water
Application temperatures:	55/65ºC
Equipped with a supplementary heater:	yes
Heat pump combination heater:	no
Acoustic elements:	STD

HEATING MODE

Parameters declared for average climate conditions

Item	Symbol	Value	Unit
Rated heat output (*)	***Prated***	17	kW
Declared capacity for heating for part load at indoor temperature 20 ºC and outdoor temperature T_j			
T_j = - 7 ºC	***Pdh***	14.9	kW
T_j = + 2 ºC	***Pdh***	8.6	kW
T_j = + 7 ºC	***Pdh***	5.5	kW
T_j = + 12 ºC	***Pdh***	5.7	kW
T_j = bivalent temperature	***Pdh***	13.0	kW
T_j = operation limit temperature	***Pdh***	13.9	kW
For air-to-water heat pumps: T_j = - 15 ºC (if *TOL* < - 20 ºC)	***Pdh***	N/A	kW
Bivalent temperature	***Tbiv***	-5	ºC
Degradation co-efficient	***Cdh***	0.9	---

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	$\eta_{s,h}$	130.5	%
Net seasonal coefficient of performance in active mode (**)	***SCOPnet***	3.34	---
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20ºC and outdoor temperature T_j			
T_j = - 7 ºC	***COPd***	2.0	---
T_j = + 2 ºC	***COPd***	3.3	---
T_j = + 7 ºC	***COPd***	4.5	---
T_j = + 12 ºC	***COPd***	6.2	---
T_j = bivalent temperature	***COPd***	2.2	---
T_j = operation limit temperature	***COPd***	2.1	---
For air-to-water heat pumps: T_j = - 15 ºC (if *TOL* < - 20 ºC)	***COPd***	N/A	---
Operation limit temperature	***TOL***	-10	ºC
Heating water operation limit temperature	***WTOL***	65	ºC

Power consumption in modes other than active mode

Off mode	P_{OFF}	0.000	kW
Thermostat-off mode	P_{TO}	0.024	kW
Standby mode	P_{SB}	0.024	kW
Crankcase heater mode	P_{CK}	0.140	kW

Supplementary heater

Rated heat output (*)	***Psup***	2.2	kW
Type of energy input	Electric		

Other items

Capacity control	Variable		
Water flow rate capacity control	Fixed		
Sound power level (indoors/outdoors)	L_{WA}	0/76.4	dB
Emissions of nitrogen oxides	NO_X	0	mg/kWh

For air-to-water heat pumps: rated air flow rate, outdoors	---	8000	m^3/h
For water-/brine-to-water heat pumps: rated brine or water flow rate, outdoor heat exchanger	---	N/A	m^3/h

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output ***Prated*** is equal to the design load for heating ***Pdesign,h*** , and the rated heat output of a supplementary heater ***Psup*** is equal to the supplementary capacity for heating ***sup(Tj)*** .

(**) For electrically driven heat pumps, the net seasonal coefficient of performance in active mode ***SCOPnet*** is equal to the estimated average seasonal performance factor ***SPF*** , parameter that is needed for the calculation of the amount of the renewable energy supplied by heat pumps.

NESEA PRO REVERSIBLE HEAT PUMP

Information requirements according to Regulation (EU) 813/2013

Model:	**KWFA1020INS4K**
Refrigerant fluid:	R454C
Heat pump type:	air-water
Application temperatures:	55/65ºC
Equipped with a supplementary heater:	yes
Heat pump combination heater:	no
Acoustic elements:	STD

HEATING MODE

Parameters declared for average climate conditions

Item	Symbol	Value	Unit
Rated heat output (*)	***Prated***	17	kW
Declared capacity for heating for part load at indoor temperature 20 ºC and outdoor temperature T_j			
T_j = - 7 ºC	***Pdh***	14.1	kW
T_j = + 2 ºC	***Pdh***	8.5	kW
T_j = + 7 ºC	***Pdh***	7.8	kW
T_j = + 12 ºC	***Pdh***	9.6	kW
T_j = bivalent temperature	***Pdh***	12.8	kW
T_j = operation limit temperature	***Pdh***	13.1	kW
For air-to-water heat pumps: T_j = - 15 ºC (if *TOL* < - 20 ºC)	***Pdh***	N/A	kW
Bivalent temperature	***Tbiv***	-5	ºC
Degradation co-efficient	***Cdh***	0.9	---

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	$\eta_{s,h}$	117.4	%
Net seasonal coefficient of performance in active mode (**)	***SCOPnet***	3.01	---
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20ºC and outdoor temperature T_j			
T_j = - 7 ºC	***COPd***	1.8	---
T_j = + 2 ºC	***COPd***	3.2	---
T_j = + 7 ºC	***COPd***	3.4	---
T_j = + 12 ºC	***COPd***	6.8	---
T_j = bivalent temperature	***COPd***	2.0	---
T_j = operation limit temperature	***COPd***	2.0	---
For air-to-water heat pumps: T_j = - 15 ºC (if *TOL* < - 20 ºC)	***COPd***	N/A	---
Operation limit temperature	***TOL***	-10	ºC
Heating water operation limit temperature	***WTOL***	65	ºC

Power consumption in modes other than active mode

Off mode	P_{OFF}	0.000	kW
Thermostat-off mode	P_{TO}	0.024	kW
Standby mode	P_{SB}	0.024	kW
Crankcase heater mode	P_{CK}	0.140	kW

Supplementary heater

Rated heat output (*)	***Psup***	2.7	kW
Type of energy input	Electric		

Other items

Capacity control	Variable		
Water flow rate capacity control	Fixed		
Sound power level (indoors/outdoors)	L_{WA}	0/76.4	dB
Emissions of nitrogen oxides	NO_X	0	mg/kWh

For air-to-water heat pumps: rated air flow rate, outdoors	---	8000	m^3/h
For water-/brine-to-water heat pumps: rated brine or water flow rate, outdoor heat exchanger	---	N/A	m^3/h

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output ***Prated*** is equal to the design load for heating ***Pdesign,h*** , and the rated heat output of a supplementary heater ***Psup*** is equal to the supplementary capacity for heating ***sup(Tj)*** .

(**) For electrically driven heat pumps, the net seasonal coefficient of performance in active mode ***SCOPnet*** is equal to the estimated average seasonal performance factor ***SPF*** , parameter that is needed for the calculation of the amount of the renewable energy supplied by heat pumps.

EcoDesign Manual

Air-to-water Chillers and Heat Pumps for cold climates

NESEA PRO KWFA

COMFORT

Reversible Heat Pump (Heating Mode)

Warmer climate 30/35ºC

EN

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NESEA PRO

REVERSIBLE AIR TO WATER HEAT PUMP

Information requirements in accordance with Regulation (EU) 2016/2281

Model	**KWFA-1020-IVS4D**
Refrigerant fluid	R290
Outdoor heat exchanger of the chiller:	Air
Indoor heat exchanger of the chiller:	Water
Aplication temperatures	30/35ºC
Equipped with an auxiliary heater:	No
Combined heater and heat pump:	No

Heating Mode

Declared parameters for average heating season

Element	Symbol	Value	Unit
Rated heat output (*)	$P_{rated,h}$	16.3	kW
Declared heating capacity for part load at an indoor temperature of 20 ºC and an outdoor temperature T j			
T_j = - 7 ºC	**Pdh**	N/A	kW
T_j = + 2 ºC	**Pdh**	16.3	kW
T_j = + 7 ºC	**Pdh**	11.6	kW
T_j = + 12 ºC	**Pdh**	13.4	kW
T j = bivalent temperature	**Pdh**	16.3	kW
T j = operational limit	**Pdh**	16.3	kW
Air-to-water heat pumps: T j = -15 ºC (if TOL < -20 ºC)	**Pdh**	N/A	kW
Bivalent temperature	**Tbiv**	2	ºC
Degradation coefficient of heat pumps	**Cdh**	0.9	---

Element	Symbol	Value	Unit
Seasonal space heating energy efficiency	$\eta_{s,h}$	228.9	%
Declared coefficient of performance or gas usage efficiency or auxiliary energy factor for part load at the given outdoor temperatures T j			
T_j = - 7 ºC	COP_d	N/A	---
T_j = + 2 ºC	COP_d	3.68	---
T_j = + 7 ºC	COP_d	5.76	---
T_j = + 12 ºC	COP_d	7.68	---
T j = bivalent temperature	COP_d	3.68	---
T j = operational limit	COP_d	3.68	---
Air-to-water heat pumps: T j = -15 ºC (if TOL < -20 ºC)	COP_d	N/A	---
Air-to-air heat pumps: operational limit temperature	**TOL**	-10	ºC
Water heating limit temperature	**WTOL**	65	ºC

Energy consumption in modes other than active mode

Off mode	P_{OFF}	0.000	kW
Thermostat-off mode	P_{TO}	0.024	kW
Standby mode	P_{SB}	0.024	kW
Crankcase heater mode	P_{CK}	0.065	kW

Backup heater

Rated heat output (*)	**Psup**	0.0	kW
Type of energy consumed	N/A		

Other elements

Capacity control	Variable		
Water flow rate capacity control	Fixed		
Sound power level (indoor/outdoor)	L_{WA}	0/76.4	dB
Nitrogen oxide emissions	NO_x	0	mg/kWh

Air-to-air heat pumps: declared outdoor air flow rate	---	8000	m^3/h
For water-to-air/brine-to-air heat pumps: nominal brine or water flow rate, outdoor heat exchanger	---	N/A	m^3/h

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesign,h, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

NESEA PRO REVERSIBLE AIR TO WATER HEAT PUMP

Information requirements in accordance with Regulation (EU) 2016/2281

Model	**KWFA-1020-IVS4K**
Refrigerant fluid	R454C
Outdoor heat exchanger of the chiller:	Air
Indoor heat exchanger of the chiller:	Water
Aplication temperatures	30/35ºC
Equipped with an auxiliary heater:	No
Combined heater and heat pump:	No

Heating Mode

Declared parameters for average heating season

Element	Symbol	Value	Unit
Rated heat output (*)	$P_{rated,h}$	16.5	kW
Declared heating capacity for part load at an indoor temperature of 20 ºC and an outdoor temperature T j			
T_j = - 7 ºC	***Pdh***	N/A	kW
T_j = + 2 ºC	***Pdh***	16.5	kW
T_j = + 7 ºC	***Pdh***	11.6	kW
T_j = + 12 ºC	***Pdh***	14.0	kW
T j = bivalent temperature	***Pdh***	16.5	kW
T j = operational limit	***Pdh***	16.5	kW
Air-to-water heat pumps: T j = -15 ºC (if TOL < -20 ºC)	***Pdh***	N/A	kW
Bivalent temperature	***Tbiv***	2	ºC
Degradation coefficient of heat pumps	***Cdh***	0.9	---

Element	Symbol	Value	Unit
Seasonal space heating energy efficiency	$\eta_{s,h}$	213.6	%
Declared coefficient of performance or gas usage efficiency or auxiliary energy factor for part load at the given outdoor temperatures T j			
T_j = - 7 ºC	COP_d	N/A	---
T_j = + 2 ºC	COP_d	3.49	---
T_j = + 7 ºC	COP_d	5.32	---
T_j = + 12 ºC	COP_d	7.27	---
T j = bivalent temperature	COP_d	3.49	---
T j = operational limit	COP_d	3.49	---
Air-to-water heat pumps: T j = -15 ºC (if TOL < -20 ºC)	COP_d	N/A	---
Air-to-air heat pumps: operational limit temperature	***TOL***	-10	ºC
Water heating limit temperature	***WTOL***	65	ºC

Energy consumption in modes other than active mode

Off mode	P_{OFF}	0.000	kW
Thermostat-off mode	P_{TO}	0.024	kW
Standby mode	P_{SB}	0.024	kW
Crankcase heater mode	P_{CK}	0.065	kW

Backup heater

Rated heat output (*)	***Psup***	0.0	kW
Type of energy consumed	N/A		

Other elements

Capacity control	Variable		
Water flow rate capacity control	Fixed		
Sound power level (indoor/outdoor)	L_{WA}	0/76.4	dB
Nitrogen oxide emissions	NO_x	0	mg/kWh

Air-to-air heat pumps: declared outdoor air flow rate	---	8000	m^3/h
For water-to-air/brine-to-air heat pumps: nominal brine or water flow rate, outdoor heat exchanger	---	N/A	m^3/h

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesign,h, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

EcoDesign Manual

Air-to-water Chillers and Heat Pumps for cold climates

NESEA PRO KWFA

COMFORT

Reversible Heat Pump (Heating Mode)

Warmer climate 47/55ºC

EN

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NESEA PRO

REVERSIBLE AIR TO WATER HEAT PUMP

Information requirements in accordance with Regulation (EU) 2016/2281

Model	**KWFA-1020-IVS4D**
Refrigerant fluid	R290
Outdoor heat exchanger of the chiller:	Air
Indoor heat exchanger of the chiller:	Water
Aplication temperatures	47/55ºC
Equipped with an auxiliary heater:	No
Combined heater and heat pump:	No

Heating Mode

Declared parameters for average heating season

Element	Symbol	Value	Unit
Rated heat output (*)	$P_{rated,h}$	15.6	kW
Declared heating capacity for part load at an indoor temperature of 20 ºC and an outdoor temperature T j			
T_j = - 7 ºC	**Pdh**	N/A	kW
T_j = + 2 ºC	**Pdh**	15.6	kW
T_j = + 7 ºC	**Pdh**	10.9	kW
T_j = + 12 ºC	**Pdh**	13.1	kW
T j = bivalent temperature	**Pdh**	15.6	kW
T j = operational limit	**Pdh**	15.6	kW
Air-to-water heat pumps: T j = -15 ºC (if TOL < -20 ºC)	**Pdh**	N/A	kW
Bivalent temperature	**Tbiv**	2	ºC
Degradation coefficient of heat pumps	**Cdh**	0.9	---

Element	Symbol	Value	Unit
Seasonal space heating energy efficiency	$\eta_{s,h}$	177.4	%
Net seasonal coefficient of performance in active mode (**)	**SCOPnet**	4.57	---
Declared coefficient of performance or gas usage efficiency or auxiliary energy factor for part load at the given outdoor temperatures T j			
T_j = - 7 ºC	COP_d	N/A	---
T_j = + 2 ºC	COP_d	2.66	---
T_j = + 7 ºC	COP_d	4.14	---
T_j = + 12 ºC	COP_d	6.55	---
T j = bivalent temperature	COP_d	2.66	---
T j = operational limit	COP_d	2.66	---
Air-to-water heat pumps: T j = -15 ºC (if TOL < -20 ºC)	COP_d	N/A	---
Air-to-air heat pumps: operational limit temperature	**TOL**	-10	ºC
Water heating limit temperature	**WTOL**	65	ºC

Energy consumption in modes other than active mode

Off mode	P_{OFF}	0.000	kW
Thermostat-off mode	P_{TO}	0.024	kW
Standby mode	P_{SB}	0.024	kW
Crankcase heater mode	P_{CK}	0.065	kW

Backup heater

Rated heat output (*)	**Psup**	0.0	kW
Type of energy consumed	N/A		

Other elements

Capacity control	Variable		
Water flow rate capacity control	Fixed		
Sound power level (indoor/outdoor)	L_{WA}	0/76.4	dB
Nitrogen oxide emissions	NO_x	0	mg/kWh

Air-to-air heat pumps: declared outdoor air flow rate	---	8000	m^3/h
For water-to-air/brine-to-air heat pumps: nominal brine or water flow rate, outdoor heat exchanger	---	N/A	m^3/h

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesign,h, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

NESEA PRO

REVERSIBLE AIR TO WATER HEAT PUMP

Information requirements in accordance with Regulation (EU) 2016/2281

Model	**KWFA-1020-IVS4K**
Refrigerant fluid	R454C
Outdoor heat exchanger of the chiller:	Air
Indoor heat exchanger of the chiller:	Water
Aplication temperatures	47/55ºC
Equipped with an auxiliary heater:	No
Combined heater and heat pump:	No

Heating Mode

Declared parameters for average heating season

Element	Symbol	Value	Unit
Rated heat output (*)	$P_{rated,h}$	15.7	kW
Declared heating capacity for part load at an indoor temperature of 20 ºC and an outdoor temperature T j			
T_j = - 7 ºC	**Pdh**	N/A	kW
T_j = + 2 ºC	**Pdh**	15.7	kW
T_j = + 7 ºC	**Pdh**	10.9	kW
T_j = + 12 ºC	**Pdh**	13.6	kW
T j = bivalent temperature	**Pdh**	15.7	kW
T j = operational limit	**Pdh**	15.7	kW
Air-to-water heat pumps: T j = -15 ºC (if TOL < -20 ºC)	**Pdh**	N/A	kW
Bivalent temperature	**Tbiv**	2	ºC
Degradation coefficient of heat pumps	**Cdh**	0.9	---

Element	Symbol	Value	Unit
Seasonal space heating energy efficiency	$\eta_{s,h}$	166.1	%
Net seasonal coefficient of performance in active mode (**)	**SCOPnet**	4.28	---
Declared coefficient of performance or gas usage efficiency or auxiliary energy factor for part load at the given outdoor temperatures T j			
T_j = - 7 ºC	COP_d	N/A	---
T_j = + 2 ºC	COP_d	2.53	---
T_j = + 7 ºC	COP_d	3.87	---
T_j = + 12 ºC	COP_d	6.16	---
T j = bivalent temperature	COP_d	2.53	---
T j = operational limit	COP_d	2.53	---
Air-to-water heat pumps: T j = -15 ºC (if TOL < -20 ºC)	COP_d	N/A	---
Air-to-air heat pumps: operational limit temperature	**TOL**	-10	ºC
Water heating limit temperature	**WTOL**	65	ºC

Energy consumption in modes other than active mode

Off mode	P_{OFF}	0.000	kW
Thermostat-off mode	P_{TO}	0.024	kW
Standby mode	P_{SB}	0.024	kW
Crankcase heater mode	P_{CK}	0.065	kW

Backup heater

Rated heat output (*)	**Psup**	0.0	kW
Type of energy consumed	N/A		

Other elements

Capacity control	Variable		
Water flow rate capacity control	Fixed		
Sound power level (indoor/outdoor)	L_{WA}	0/76.4	dB
Nitrogen oxide emissions	NO_x	0	mg/kWh

Air-to-air heat pumps: declared outdoor air flow rate	---	8000	m^3/h
For water-to-air/brine-to-air heat pumps: nominal brine or water flow rate, outdoor heat exchanger	---	N/A	m^3/h

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesign,h, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

EcoDesign Manual

Air-to-water Chillers and Heat Pumps for cold climates

NESEA PRO KWFA

COMFORT

Reversible Heat Pump (Heating Mode)

Warmer climate 55/65ºC

EN

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NESEA PRO

REVERSIBLE AIR TO WATER HEAT PUMP

Information requirements in accordance with Regulation (EU) 2016/2281

Model	**KWFA-1020-IVS4D**
Refrigerant fluid	R290
Outdoor heat exchanger of the chiller:	Air
Indoor heat exchanger of the chiller:	Water
Aplication temperatures	55/65ºC
Equipped with an auxiliary heater:	No
Combined heater and heat pump:	No

Heating Mode

Declared parameters for average heating season

Element	Symbol	Value	Unit
Rated heat output (*)	$P_{rated,h}$	15.2	kW
Declared heating capacity for part load at an indoor temperature of 20 ºC and an outdoor temperature T j			
T_j = - 7 ºC	***Pdh***	N/A	kW
T_j = + 2 ºC	***Pdh***	15.2	kW
T_j = + 7 ºC	***Pdh***	10.6	kW
T_j = + 12 ºC	***Pdh***	12.9	kW
T j = bivalent temperature	***Pdh***	15.2	kW
T j = operational limit	***Pdh***	15.2	kW
Air-to-water heat pumps: T j = -15 ºC (if TOL < -20 ºC)	***Pdh***	N/A	kW
Bivalent temperature	***Tbiv***	2	ºC
Degradation coefficient of heat pumps	***Cdh***	0.9	---

Element	Symbol	Value	Unit
Seasonal space heating energy efficiency	$\eta_{s,h}$	155.3	%
Net seasonal coefficient of performance in active mode (**)	**SCOPnet**	4.00	---
Declared coefficient of performance or gas usage efficiency or auxiliary energy factor for part load at the given outdoor temperatures T j			
T_j = - 7 ºC	COP_d	N/A	---
T_j = + 2 ºC	COP_d	2.25	---
T_j = + 7 ºC	COP_d	3.59	---
T_j = + 12 ºC	COP_d	5.84	---
T j = bivalent temperature	COP_d	2.25	---
T j = operational limit	COP_d	2.25	---
Air-to-water heat pumps: T j = -15 ºC (if TOL < -20 ºC)	COP_d	N/A	---
Air-to-air heat pumps: operational limit temperature	***TOL***	-10	ºC
Water heating limit temperature	***WTOL***	65	ºC

Energy consumption in modes other than active mode

Off mode	P_{OFF}	0.000	kW
Thermostat-off mode	P_{TO}	0.024	kW
Standby mode	P_{SB}	0.024	kW
Crankcase heater mode	P_{CK}	0.065	kW

Backup heater

Rated heat output (*)	***Psup***	0.0	kW
Type of energy consumed	N/A		

Other elements

Capacity control	Variable		
Water flow rate capacity control	Fixed		
Sound power level (indoor/outdoor)	L_{WA}	0/76.4	dB
Nitrogen oxide emissions	NO_x	0	mg/kWh

Air-to-air heat pumps: declared outdoor air flow rate	---	8000	m^3/h
For water-to-air/brine-to-air heat pumps: nominal brine or water flow rate, outdoor heat exchanger	---	N/A	m^3/h

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesign,h, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

NESEA PRO

REVERSIBLE AIR TO WATER HEAT PUMP

Information requirements in accordance with Regulation (EU) 2016/2281

Model	**KWFA-1020-IVS4K**
Refrigerant fluid	R454C
Outdoor heat exchanger of the chiller:	Air
Indoor heat exchanger of the chiller:	Water
Aplication temperatures	55/65ºC
Equipped with an auxiliary heater:	No
Combined heater and heat pump:	No

Heating Mode

Declared parameters for average heating season

Element	Symbol	Value	Unit
Rated heat output (*)	$P_{rated,h}$	15.1	kW
Declared heating capacity for part load at an indoor temperature of 20 ºC and an outdoor temperature T j			
T_j = - 7 ºC	**Pdh**	N/A	kW
T_j = + 2 ºC	**Pdh**	15.1	kW
T_j = + 7 ºC	**Pdh**	10.6	kW
T_j = + 12 ºC	**Pdh**	13.3	kW
T j = bivalent temperature	**Pdh**	15.1	kW
T j = operational limit	**Pdh**	15.1	kW
Air-to-water heat pumps: T j = -15 ºC (if TOL < -20 ºC)	**Pdh**	N/A	kW
Bivalent temperature	**Tbiv**	2	ºC
Degradation coefficient of heat pumps	**Cdh**	0.9	---

Element	Symbol	Value	Unit
Seasonal space heating energy efficiency	$\eta_{s,h}$	145.1	%
Net seasonal coefficient of performance in active mode (**)	**SCOPnet**	3.74	---
Declared coefficient of performance or gas usage efficiency or auxiliary energy factor for part load at the given outdoor temperatures T j			
T_j = - 7 ºC	COP_d	N/A	---
T_j = + 2 ºC	COP_d	2.09	---
T_j = + 7 ºC	COP_d	3.37	---
T_j = + 12 ºC	COP_d	5.51	---
T j = bivalent temperature	COP_d	2.09	---
T j = operational limit	COP_d	2.09	---
Air-to-water heat pumps: T j = -15 ºC (if TOL < -20 ºC)	COP_d	N/A	---
Air-to-air heat pumps: operational limit temperature	**TOL**	-10	ºC
Water heating limit temperature	**WTOL**	65	ºC

Energy consumption in modes other than active mode

Off mode	P_{OFF}	0.000	kW
Thermostat-off mode	P_{TO}	0.024	kW
Standby mode	P_{SB}	0.024	kW
Crankcase heater mode	P_{CK}	0.065	kW

Backup heater

Rated heat output (*)	**Psup**	0.0	kW
Type of energy consumed	N/A		

Other elements

Capacity control	Variable		
Water flow rate capacity control	Fixed		
Sound power level (indoor/outdoor)	L_{WA}	0/76.4	dB
Nitrogen oxide emissions	NO_x	0	mg/kWh

Air-to-air heat pumps: declared outdoor air flow rate	---	8000	m^3/h
For water-to-air/brine-to-air heat pumps: nominal brine or water flow rate, outdoor heat exchanger	---	N/A	m^3/h

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesign,h, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).