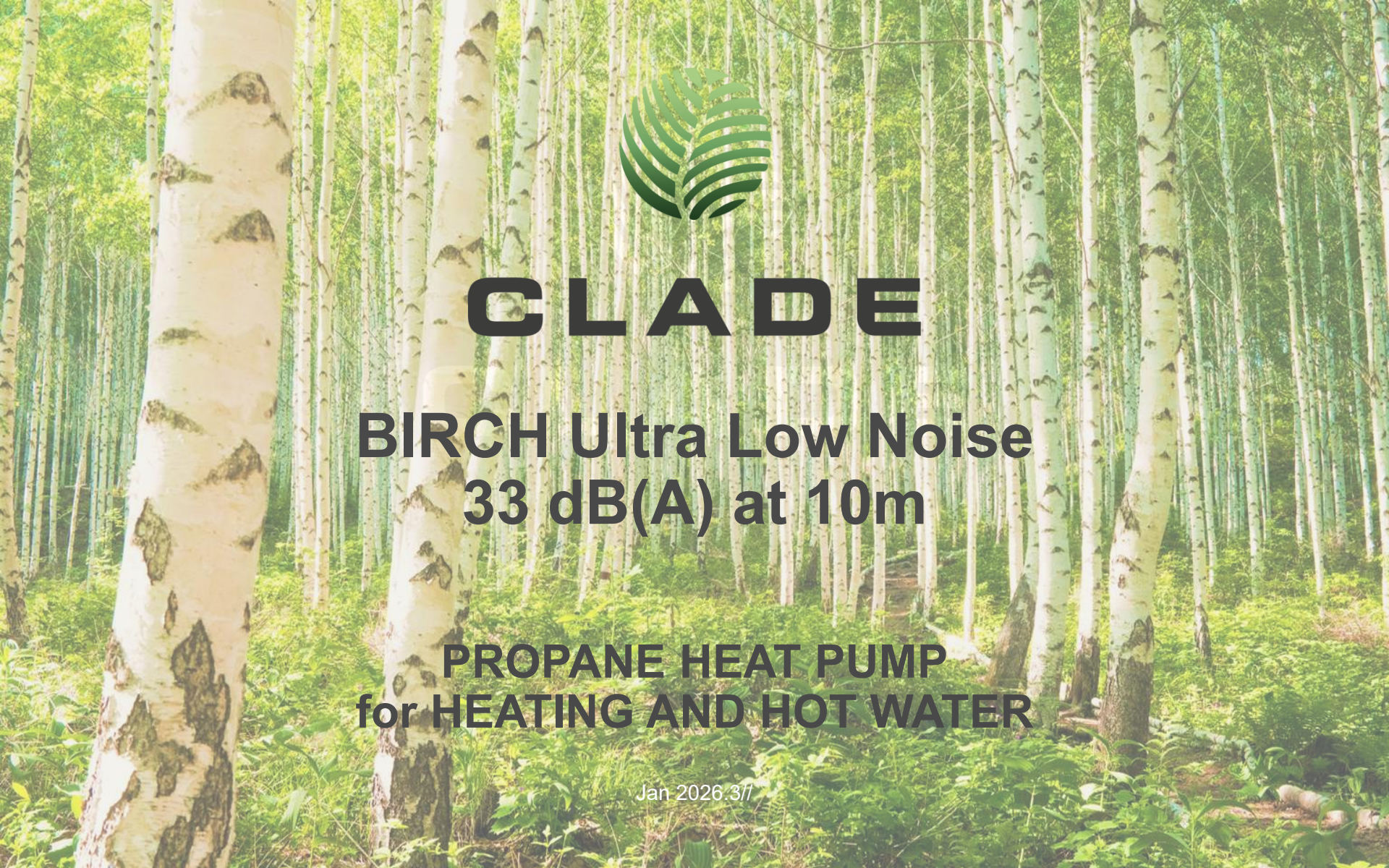


CLADE

BIRCH Ultra Low Noise
33 dB(A) at 10m

PROPANE HEAT PUMP
for HEATING AND HOT WATER

Jan 2026.3//

BIRCH ULN //

DESIGNED & MADE IN THE UK

Clade Birch Ultra Low Noise is the next-generation evolution of Birch, engineered to be **significantly quieter** and **easy to maintain** while delivering dependable low-carbon heating performance.

Using **natural R290 refrigerant**, it provides high efficiency and future-ready compliance with ultra-low environmental impact. Full **PLC control** enables precise operation, remote monitoring, and seamless integration with building systems.

Manufactured in the UK and fully supported by UK engineers, Birch ULN combines serviceability with a robust, weather-resistant housing that with its **no ATEX zone** is easy to lift and install.

Model	-5°C capacity (W45)	+7°C capacity (W45)
Birch ULN 120/90	90 KW	120 KW

Inverter control optimises part-load performance and acoustic comfort, while integrated leak detection enhances safety.

A PIC valve provides accurate LTHW flow and temperature control, ensuring reliable operation across diverse commercial and industrial applications with extended lifecycle value for asset owners alike.

- **Low noise model is 33dB(A) at 10m**
- SCOP - Achieves a high Seasonal Coefficient of Performance of 3.56
- Full performance from -15°C to +40°C ambient temperature
- Maximum flow temperature 80°C
- Future proof refrigerant which is non-toxic with a GWP of 3
- No ATEX zone – full compliance without the hassle
- Leak detection and vent fan included
- Inverter controlled compressor and fans for maximum efficiency
- PIC Valve for LTHW flow rate control included
- Electronic expansion valve ensures accurate control of refrigerant
- Low fan height for easy maintenance
- Full Siemens PLC control – grid flex ready

R290 - PROPANE

Clade is a leading manufacturer of r290 propane heat pumps being one of the first to bring a large capacity heat pump to market. We continue to innovate with this exciting refrigerant.

R290 propane is an increasingly popular refrigerant for heat pumps due to its excellent thermodynamic properties, environmental benefits, and efficiency.

As a natural hydrocarbon, R290 has an ultra-low Global Warming Potential (GWP) of just 0.02, making it a sustainable alternative to synthetic refrigerants with high GWP values.

Its high latent heat and superior thermal conductivity enable efficient heat transfer, enhancing the energy efficiency of heat pump systems. R290 operates effectively across a wide range of temperatures, making it suitable for both heating and cooling applications.

While its flammability require safety consideration, modern system designs and proper handling mitigate these risks. Overall, R290 propane represents a future-proof choice for heat pumps, balancing performance, cost-effectiveness, and sustainability in decarbonizing heating solutions.

NO ATEX ZONE

The Clade Birch ULN has been designed to have no ATEX zone.

Our engineered approach has been verified by experts.

This gives a great deal of flexibility for positioning the heat pump in the optimal position for air flow and visual impact.

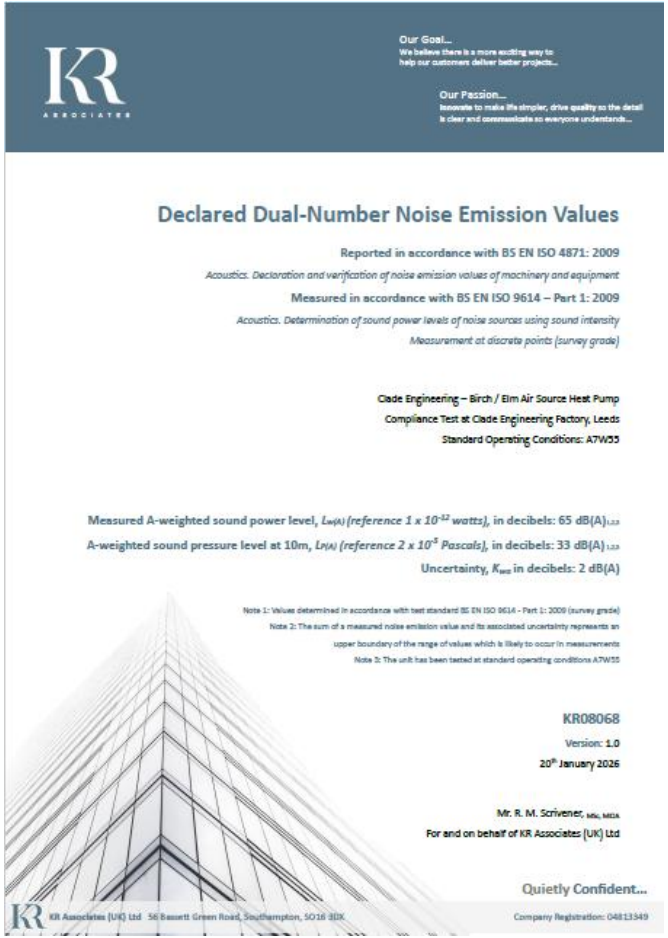
CLADE

MARKET LEADING ACOUSTIC PERFORMANCE //

A-weighted **sound power level 65 dB(A)**

A-weighted **sound pressure level at 10m 33 dB(A)**

***Independently measured and certified** by a leading industry acoustic expert.*



KR ASSOCIATES

Our Goal...
We believe there is a more exciting way to help our customers deliver better projects...

Our Passion...
Innovate to make life simpler, drive quality so the detail is clear and communicate so everyone understands...

Declared Dual-Number Noise Emission Values

Reported in accordance with BS EN ISO 4871: 2009
Acoustics. Declaration and verification of noise emission values of machinery and equipment
Measured in accordance with BS EN ISO 9614 – Part 1: 2009
Acoustics. Determination of sound power levels of noise sources using sound intensity
Measurement at discrete points (survey grade)

Clade Engineering – Birch / Elm Air Source Heat Pump
Compliance Test at Clade Engineering Factory, Leeds
Standard Operating Conditions: A7W55

Measured A-weighted sound power level, $L_{w(A)}$ *(reference 1 x 10^{-12} watts)*, in decibels: 65 dB(A)[1,2,3]
A-weighted sound pressure level at 10m, $L_{p(A)}$ *(reference 2 x 10^{-5} Pascals)*, in decibels: 33 dB(A)[1,2,3]
Uncertainty, K_{wa} in decibels: 2 dB(A)

Note 1: Values determined in accordance with test standard BS EN ISO 9614 - Part 1: 2009 (survey grade)
Note 2: The sum of a measured noise emission value and its associated uncertainty represents an upper boundary of the range of values which is likely to occur in measurements
Note 3: The unit has been tested at standard operating conditions A7W55

KR08068
Version: 1.0
20th January 2026

Mr. R. M. Scrivener, MSc, MCIA
For and on behalf of KR Associates (UK) Ltd

Quietly Confident...

KR Associates (UK) Ltd 56 Bassett Green Road, Southampton, SO16 3DX Company Registration: 04813349

1. Values determined in accordance with test standard BS EN ISO 9614 - Part 1: 2009 (survey grade)
2. The sum of a measured noise emission value and its associated uncertainty represents an upper boundary of the range of values which is likely to occur in measurements
3. The unit has been tested at standard operating conditions A7W55
4. This data is not site specific.
5. Uncertainty, *Kwa* in decibels: 2 dB(A)

SUPERB MAINTENANCE ACCESS //

Components arranged for safe and easy access

LTHW connections out of the way of access.

R290 refrigerant with 10-15°C differential.

Fan deck at easily accessible height of 1400mm

All components are accessible from the front with UK stock of spares.

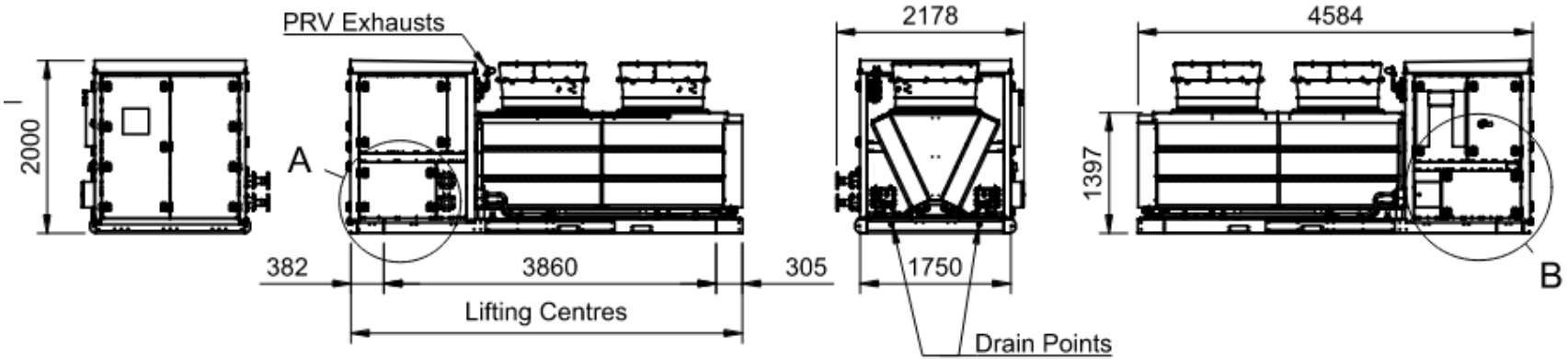
Split height compressor housing

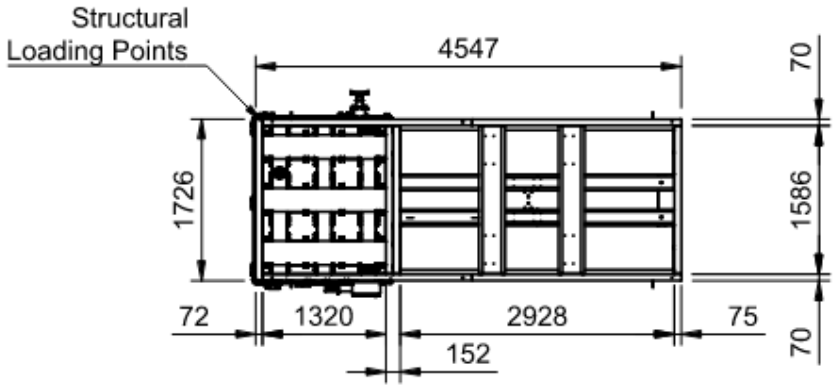
Compressor on sliding mounts

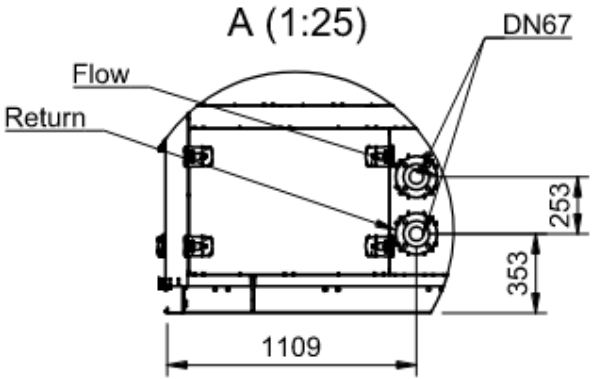
Lift off & hinged panels with handles to maximise working space

CLADE

DIMENSIONAL INFORMATION //





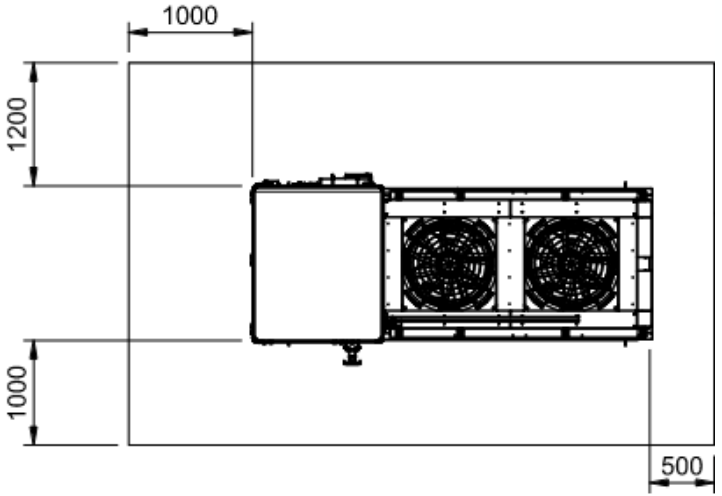


TECHNICAL SPECIFICATION //

Birch Range		Birch 120/75kW
REFRIGERATION SIDE		
Compressor Type	-	Reciprocating
Compressor Qty	Pcs.	1
Refrigerant	-	Propane (R290)
Refrigerant Circuits	Pcs.	1
Variable speed drive (VSD)	Pcs.	1
Refrigerant charge (CO2)	kg	9
No. evaporators	Pcs.	2
Evaporators Type	-	V-block
Fin Material	-	AL/MG
Defrost Type	-	Cool Gas
Defrost medium	-	R290
Defrost design/condition	-	> +8°C ambient Off Cycle / < +8°C ambient Cool Gas
Electrical supply	-	3~ 400V 50 HZ

WATER SIDE		
Type of internal exchanger		Stainless steel plate heat exchanger
Exchanger Water content	l	13.5
Connections waterside Flow/Return	DN	67mm Copper
Connections waterside Pressure Rating	PN	6
Waterside Burst Disk (supplied by installer)	PN	6
Control Methodology		PICV
Clearances		

There is no requirement for an ATEX zone – certified as compliant.



CONTROL OPTIONS //

Capped Capacity Control

There are two options for output capacity available from the Clade controls.

1. Efficiency mode: Capped at -5°C – the unit will only deliver heat up to the -5°C ambient rated output.
2. Power mode: Capped at +7°C – the unit will deliver heat up to the maximum rating at +7°C ambient temperature.

See capacity tables for details

Pressure independent control valve

A Pressure Independent Control Valve (PICV) controls and regulates the flow of water in a hydronic system while maintaining a set flow rate even when the system pressure fluctuates. It combines the functions of a differential pressure controller and a control valve into a single unit. This allows for automatic balancing and precise control of flow of water over the internal heat exchangers which is matched to the compressor speed in order to maintain optimal efficiency and temperature output.

By combining variable water flow (PICV) and variable refrigerant flow (inverter driven compressor) Clade heat pumps are able to maximise efficiency over a wide range of operating conditions.

All Birch 2 R290 heat pump systems are equipped with a Pressure Independent Control Valve in each module and do not include an internal circulating pump. The pump must be specified by the system designer to provide sufficient flow at full and minimum load conditions.

CLADE

HEAT PUMP PERFORMANCE BIRCH ULN POWER MODE //

POWER MODE (+7°C CAPACITY CONTROL)

Model name	Water Temp (°C)	SCOP	-10°C External			-5°C External			0°C External			5°C External			7°C External			10°C External			15°C External		
			QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP
BIRCH 2 120/90 ULN	80/70	2.05	63.14	35.67	1.77	76.58	40.42	1.89	87.36	43.83	1.99	100.41	47.62	2.11	104.98	48.84	2.15	104.98	47.38	2.22	104.98	44.96	2.33
	75/65	2.23	64.47	33.81	1.91	78.38	38.25	2.05	89.41	41.38	2.16	102.87	44.89	2.29	107.52	46.01	2.34	107.52	44.60	2.41	107.52	42.28	2.54
	70/60	2.41	65.81	32.08	2.05	80.18	36.21	2.21	91.44	39.08	2.34	105.30	42.33	2.49	110.03	43.34	2.54	110.03	41.99	2.62	110.03	39.76	2.77
	65/55	2.61	67.18	30.48	2.20	81.98	34.31	2.39	93.47	36.93	2.53	107.70	39.92	2.70	112.50	40.84	2.75	112.50	39.54	2.85	112.50	37.38	3.01
	60/50	2.83	68.55	28.99	2.37	83.78	32.52	2.58	95.47	34.92	2.73	110.08	37.66	2.92	114.94	38.48	2.99	114.94	37.22	3.09	114.94	35.12	3.27
	55/45	3.06	69.93	27.59	2.53	85.56	30.85	2.77	97.46	33.02	2.95	112.42	35.53	3.16	117.35	36.27	3.24	117.35	35.04	3.35	117.35	32.99	3.56
	50/40	3.30	71.30	26.28	2.71	87.32	29.28	2.98	99.42	31.24	3.18	114.73	33.52	3.42	119.71	34.18	3.50	119.71	32.97	3.63	119.71	30.97	3.87
	45/35	3.56	72.66	25.06	2.90	89.07	27.79	3.20	101.35	29.56	3.43	116.99	31.62	3.70	122.03	32.21	3.79	122.03	31.02	3.93	122.03	29.06	4.20
	35/25	4.14	75.34	22.80	3.30	92.46	25.05	3.69	105.11	26.46	3.97	121.38	28.11	4.32	126.53	28.57	4.43	126.53	27.42	4.61	126.53	25.51	4.96
	30/20	4.46	76.63	21.76	3.52	94.10	23.78	3.96	106.92	25.03	4.27	123.50	26.49	4.66	128.70	26.89	4.79	128.70	25.75	5.00	128.70	23.86	5.39
	25/15	4.80	77.89	20.75	3.75	95.70	22.57	4.24	108.67	23.66	4.59	125.55	24.95	5.03	130.80	25.29	5.17	130.80	24.16	5.42	130.80	22.29	5.87

EFFICIENCY MODE (-5°C CAPACITY CONTROL)

Model name	Water Temp (°C)	SCOP	-10°C External			-5°C External			0°C External			5°C External			7°C External			10°C External			15°C External		
			QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP
BIRCH 2 120/90 ULN	80/70	2.05	63.14	35.67	1.77	76.58	40.42	1.89	76.58	38.58	1.98	76.58	36.39	2.10	76.58	35.64	2.15	76.58	34.47	2.22	76.58	32.55	2.35
	75/65	2.22	64.47	33.81	1.91	78.38	38.25	2.05	78.38	36.45	2.15	78.38	34.29	2.29	78.38	33.57	2.34	78.38	32.44	2.42	78.38	30.59	2.56
	70/60	2.41	65.81	32.08	2.05	80.18	36.21	2.21	80.18	34.44	2.33	80.18	32.33	2.48	80.18	31.62	2.54	80.18	30.53	2.63	80.18	28.73	2.79
	65/55	2.61	67.18	30.48	2.20	81.98	34.31	2.39	81.98	32.57	2.52	81.98	30.48	2.69	81.98	29.79	2.75	81.98	28.73	2.85	81.98	26.98	3.04
	60/50	2.82	68.55	28.99	2.37	83.78	32.52	2.58	83.78	30.80	2.72	83.78	28.73	2.92	83.78	28.06	2.99	83.78	27.03	3.10	83.78	25.32	3.31
	55/45	3.05	69.93	27.59	2.53	85.56	30.85	2.77	85.56	29.14	2.94	85.56	27.09	3.16	85.56	26.43	3.24	85.56	25.42	3.37	85.56	23.75	3.60
	50/40	3.30	71.30	26.28	2.71	87.32	29.28	2.98	87.32	27.57	3.17	87.32	25.53	3.42	87.32	24.88	3.51	87.32	23.89	3.65	87.32	22.26	3.92
	45/35	3.56	72.66	25.06	2.90	89.07	27.79	3.20	89.07	26.09	3.41	89.07	24.05	3.70	89.07	23.42	3.80	89.07	22.44	3.97	89.07	20.83	4.28
	35/25	4.15	75.34	22.80	3.30	92.46	25.05	3.69	92.46	23.35	3.96	92.46	21.31	4.34	92.46	20.69	4.47	92.46	19.74	4.68	92.46	18.18	5.09
	30/20	4.48	76.63	21.76	3.52	94.10	23.78	3.96	94.10	22.07	4.26	94.10	20.04	4.70	94.10	19.42	4.85	94.10	18.48	5.09	94.10	16.94	5.56
	25/15	4.84	77.89	20.75	3.75	95.70	22.57	4.24	95.70	20.85	4.59	95.70	18.81	5.09	95.70	18.20	5.26	95.70	17.27	5.54	95.70	15.75	6.08

ABOUT THIS INFORMATION //

Performance may vary based on climate conditions, installation quality, and specific usage patterns. Actual energy savings may differ from estimates.

Professional installation is required to ensure optimal performance and compliance with local building codes. Improper installation will void the warranty.

Regular maintenance is necessary to maintain efficiency and performance. Failure to perform recommended maintenance may reduce system lifespan and efficiency.

Efficiency ratings (COP) are based on standard testing conditions and control patterns. Actual efficiency may vary depending on operational conditions and geographic location. COP are instantaneous figures not averaged over any period of time which may include defrost and other system variables.

Heat pumps are designed for specific use. Using the product for unintended purposes may result in suboptimal performance or damage.

Noise levels produced by the heat pump may vary based on the installation environment and operating conditions. Sound pressure figures are for free field without the specifics of the site application.

Please refer to the user manual and installation guide for detailed information on operation, maintenance, and safety instructions.

Clade continually innovate to improve our products, the information in this document are valid (excepting typographic errors) at the time of publication. Availability, specification and performance are subject to change from time to time and without warning.

Any technical advice provided is for informational purposes only, unless specifically covered by a purchase order, and is based on our current understanding and available information. While we strive to ensure the accuracy and reliability of the information provided, it is not intended to be a substitute for professional advice or services tailored to specific circumstances.

By utilising this advice, you acknowledge that it is provided "as is" without any warranties or guarantees, express or implied, regarding its completeness, accuracy, reliability, suitability, or availability.

We strongly recommend consulting with a qualified professional before implementing any advice or making any decisions based on the information provided.

In no event shall Clade or its representatives be liable for any direct, indirect, incidental, special, or consequential damages, including but not limited to loss of profits, data, or other intangible losses, arising out of or in connection with the use of, or reliance on, the technical advice provided.

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