



## Danfoss Heat Pump DHP-A Opti

Air/water heat pump with optimized speed control to increase savings.



Danfoss DHP-A Opti is an air/water heat pump that uses new innovative technology to operate at the highest possible annual efficiency, meaning you can get 75% of your energy consumption for free – using renewable energy stored in the outdoor air.

The new Opti technology incorporates an intelligent control system that via speed controlled circulation pumps ensures that the performance is always adjusted to the prevailing requirements and conditions of the heating system. This makes the heat pump always work under the most ideal conditions available, guaranteeing maximum efficiency, second by second, hour by hour.

The integrated hot water tank incorporates our patented TWS\* technology, producing hot water faster and at higher temperatures than with traditional technology.

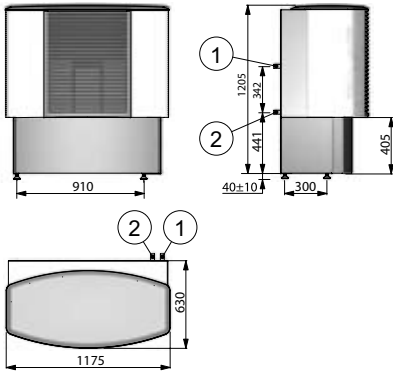
This heat pump operates at a low sound level and it can be controlled and monitored via the Internet.

\* Tap Water Stratificator, our patented technology developed to stratify hot water in a tank to ensure that heat is used optimally.

# DANFOSS DHP-A OPTI

## Connection

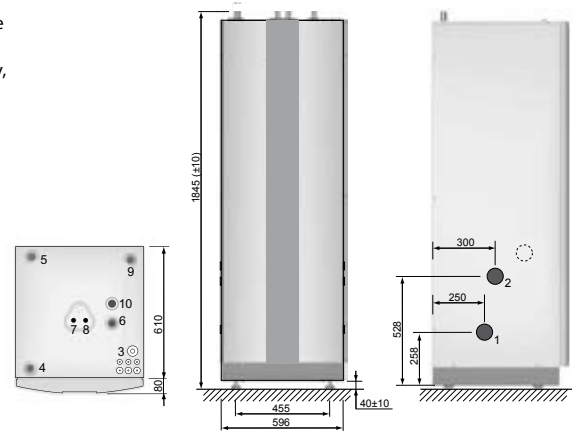
- 1 Brine in, 28 Cu
- 2 Brine out, 28 Cu



## Connection

The brine pipes can be connected on either the left or right-hand sides of the heat pump.

- 1 Lead-in for incoming power supply, sensors and communication cable
- 2 Brine in, 28 Cu
- 3 Brine out, 28 Cu
- 4 Heating system supply line, 22 Cu: 6-10 kW, 28 Cu: 12 kW
- 5 Heating system return line, 22 Cu: 6-10 kW, 28 Cu: 12 kW
- 6 Expansion pipe, 22 Cu
- 7 Hot water pipe, 22 Brass
- 8 Cold water pipe, 22 Brass
- 9 Expansion outlet brine circuit, DN 25 int.
- 10 Temperature and pressure valve (valid only on certain models and markets)



DHP-A Opti			6	8	10	12
<b>Refrigerant</b>	Type		R404A	R404A	R404A	R404A
	Amount	kg	0.95	1.45	1.50	1.60
	Test pressure	MPa	3.2	3.2	3.2	3.2
	Design pressure	MPa	3.1	3.1	3.1	3.1
	<b>Compressor</b>	Type		Scroll	Scroll	Scroll
	Oil		POE	POE	POE	POE
<b>Electrical data</b> 3-N ~50Hz	Main supply	Volt	400	400	400	400
	Total power input <sup>2</sup>	kW	2.0	2,3	3.6	4.4
	Power input pumps/fan <sup>14</sup>	W	0.5	0.7	0.7	0.7
	Auxiliary heater, 5 steps	kW	3/6/9/12/15	3/6/9/12/15	3/6/9/12/15	3/6/9/12/15
	Start current	A	14	25	29	32
	Circuit breaker	A	10 <sup>3</sup> /16 <sup>3</sup> /20 <sup>5</sup> /20 <sup>5</sup> / 25 <sup>7</sup> /25 <sup>14</sup> /30 <sup>15</sup>	10 <sup>3</sup> /16 <sup>3</sup> /20 <sup>5</sup> /20 <sup>5</sup> / 25 <sup>7</sup> /25 <sup>14</sup> /30 <sup>15</sup>	16 <sup>3</sup> /16 <sup>3</sup> /20 <sup>5</sup> /20 <sup>5</sup> / 25 <sup>7</sup> /30 <sup>14</sup> /35 <sup>15</sup>	16 <sup>3</sup> /20 <sup>5</sup> /25 <sup>7</sup> /25 <sup>7</sup> / 25 <sup>7</sup> /30 <sup>14</sup> /35 <sup>15</sup>
	<b>Electrical data</b> 1-N ~50Hz	Main supply	Volt	230	230	230
Rated power input <sup>2</sup>		kW	3,3	4,2	5,4	5,7
Rated power pumps/fan <sup>14</sup>		W	0,5	0,7	0,7	0,7
Auxiliary heater, 3 steps		kW	1.5/3/4.5	1.5/3/4.5	1.5/3/4.5	1.5/3/4.5
Start current		A	58	76	97	108
Circuit breaker		A	25 <sup>3</sup> /32 <sup>4</sup> /40 <sup>5</sup>	25 <sup>3</sup> /32 <sup>4</sup> /40 <sup>5</sup>	32 <sup>3</sup> /40 <sup>5</sup> /50 <sup>5</sup>	32 <sup>3</sup> /40 <sup>5</sup> /50 <sup>5</sup>
<b>Performance</b>		COP <sup>1</sup>		3.88	4.06	4.21
	COP <sup>2</sup>		3.4	3.5	3.4	3.5
	Heating capacity <sup>2</sup>	kW	5.90	7.96	9.85	11.3
<b>Nominal flow<sup>8</sup></b>	Cooling circuit	l/s	0.3	0.5	0.6	0.6
	Heating circuit	l/s	0.1	0.2	0.2	0.3
<b>Pressure drop</b>	Condensator	kPa	7	8	9	15
	Evaporator	kPa	21	31	44	17
<b>External available pressure<sup>9</sup></b>	Cooling circuit	kPa	88	74	56	98
	Heating circuit	kPa	103	102	101	93
<b>Lowest outdoor temperature allowed for compressor start</b>		°C	-20	-20	-20	-20
<b>Max/min temperature</b>	Cooling circuit	°C	20/-25	20/-25	20/-25	20/-25
	Heating circuit	°C	55/20	55/20	55/20	55/20
<b>Pressure switches</b>	Low pressure	MPa	0.08	0.08	0.08	0.08
	Operating	MPa	2.65/2.85	2.65/2.85	2.65/2.85	2.65/2.85
	High pressure	MPa	3.10	3.10	3.10	3.10
<b>Water volume</b>	Condensator	l	1.25	2.17	2.74	2.74
	Evaporator	l	1.03	1.25	1.25	1.60
<b>Fan speed outdoor unit, low/high</b>	rpm		470/660	470/660	460/820	460/820
<b>Air flow</b>	m <sup>3</sup> /h		2500/3200	2500/3200	2500/3900	2500/3900
<b>Sound power level<sup>10</sup></b>	dB(A)		53/63	53/63	52/68	52/68
<b>Fan power input</b>	W		110/150	110/150	140/185	140/185
<b>Sound pressure level away from outdoor unit<sup>11</sup></b>	1 m <sup>13</sup>	dB(A)	45/55	45/55	44/60	44/60
	8 m <sup>13</sup>	dB(A)	27/37	27/37	26/42	26/42
	16 m <sup>13</sup>	dB(A)	21/31	21/31	20/36	20/36
<b>Anti freeze media<sup>12</sup></b>			Ethylene glycol	Ethylene glycol	Ethylene glycol	Ethylene glycol
<b>Water heater volume</b>	l		180	180	180	180
<b>Weight, DHP-A / outdoor unit</b>	kg		260/94	260/94	260/94	268/94
<b>Weight, DHP-AL / DWH-A</b>	kg		154/120	154/120	154/120	162/120

The measurements are performed on a limited number of heat pumps which can cause variations in the results. Tolerances in the measuring methods can also cause variations.

- 4) Heat pump with 6 kW auxiliary heater (1-N 3 kW).
- 5) Heat pump with 9 kW auxiliary heater (1-N 4.5 kW).
- 6) 12 kW auxiliary heater (compressor off).
- 7) 15 kW auxiliary heater (compressor off).
- 8) Nominal flow: heating circuit Δ10K, cooling circuit Δ3K.
- 9) Pressure drop that must not be exceeded outside the heat pump without the nominal flow being reduced.

- 10) Sound power level (outdoor unit) measured according to EN ISO 3741.
- 11) Sound pressure level calculated according to EN ISO 11203.
- 12) For DHP-A, -AL models, do not use propylene glycol or ethanol.
- 13) Calculated from sound power level with the assumption of a semispherical propagation from a point source.
- 14) 12 kW auxiliary heater (compressor allowed).
- 15) 15 kW auxiliary heater (compressor allowed).