

Quotation



2023-04-04

Boosting the energy transition

GT Energy
green technology

Software version: 2023.03.02-1762

Customer

Supplier
GT Energy, s.r.o.
Richard Beber

beber@gt-energy.cz

Your inquiry:

Valued customer,

Thank you for your request for quotation. We would like to offer you an industrial heat pump solution as described below:

Item	Qty	Type	Product code	Price
Item 1.1	1 pcs	Heat pump P220 SU HC+ R134a	CHP22001HP	
Item 1.2		Refrigerant alternative R134a		Incl. Item 1.1
Item 1.3		Power control type Master: this heat pump will control the power of other slave heat pumps	MASTER	Incl. Item 1.1
Item 1.4	1 pcs	Packaging Plastic wrapping	CHWRAP300	Incl. Item 1.1
Item 2	1 pcs	Fieldbus connection Modbus RTU		

Total price: EUR

Prices VAT 0 %

Technical details are attached to this quotation.

Oilon Oy
Street address:
Metsä-Pietilänkatu 1
Postal code: 15800
City: Lahti
Country: Finland
Phone: +358 3 85 761
E-mail: info@oilon.com
Business ID: FI27344313

Oilon US Inc.
Street address:
91 Genesis Parkway
31799(mail), 31792(visitors)
City: Thomasville, Georgia
Country: United States
Phone: +1 229 236 6546
E-mail: info@oilon.com
Business ID:

Oilon Brasil Energia Ltda.
Street address:
Rua José Maria Barbosa
31. Salas 181-182, Jd. Portal da Colina
Postal code: 18047-380
City: Sorocaba , São Paulo
Country: Brasil
Phone: +55 15 3228 4600
E-mail: southamerica@oilon.com
Business ID:14.565.710/0001-73

Oilon Burners (Wuxi) Co. Ltd.
Street address:
No. 111-3, Xi Mei Road,
Wuxi, Wuxi development zone
Postal code: 214142
City: Wuxi Jiangsu Province
Country: China
Phone: +86 510 8534 2010
E-mail: info@oilon.com
Business ID:

TERMS OF DELIVERY

FCA Lahti
Incoterms 2020

TERMS OF AGREEMENT

1. This quotation with enclosures
2. Orgalime S 2012

DELIVERY TIME

TERMS OF PAYMENT

30 % down payment, 70 % before delivery

DOCUMENTATION

1 set in electronic format

WARRANTY TERMS AND CONDITIONS

1. Warranty provider

Oilon Oy
Metsä-Pietilänkatu 1, 15801 Lahti, Finland

2. Scope of warranty

The warranty is provided for ChillHeat heat pumps manufactured by Oilon (the "Product"). Subject to the terms and conditions of this limited warranty, Oilon warrants that the product shall be free from defects in materials and workmanship, under normal conditions of use. The warranty is valid in Europe.

3. Warranty Period

The warranty period is one (1) year and begins from the date of product installation. In any case, the warranty will expire after 15 months from the date of shipment from the manufacturer. Special warranty periods may apply.

4. Conditions of warranty

The warranty applies only if the following conditions have been fulfilled:

1. Installers must have permits in accordance with regulatory requirements.
2. Heat source and heat distribution piping must be vented with special caution. If the circuits utilize a liquid that increases frost resistance, the mixture ratio must be adequate and the liquid must not include extraneous materials.
3. If available, filters for both circuits must be checked and cleaned after commissioning.
4. Electrical connections have to be sufficient, and electrical installation work may only be performed by an installer whose permits are in accordance with regulatory requirements.
5. The commissioning shall be carried out by Oilon or by an installation company designated by Oilon. The commissioning protocol shall be filled out and sent to Oilon within two (2) weeks from commissioning to ensure that the warranty comes into effect.
6. Heat pumps must undergo maintenance work specified by Oilon. Maintenance work shall only be carried out by Oilon or by a certified installer, separately approved by Oilon.

5. Contents of warranty

The warranty provider warrants that the Product is as designed and fit for use for the duration of the warranty period. A defect includes, for example, manufacturing and structural flaws.

The warranty is not applicable in the following events:

1. Defects in the Product are caused by normal wear and tear and defects attributable to external factors, such as fire, flood, lightning strike, power failure, excessive variations in voltage, abnormal temperature conditions (outside the range the Product is designed for) or other similar external cause, misuse or other use in contrary to the written instructions given by Oilon.
2. Operating or maintenance instructions are not observed, changes are made to deliveries or services, parts are replaced or materials are used that are not in accordance with the original product specifications by Oilon.
3. Transport damages and defects caused by negligence or carelessness are not covered by the warranty.
4. If installing the heat pump causes changes in the functionality of the overall system, including heat expansion and sounds caused by it, or if the heat release capacity of the heat distribution system is insufficient under altered heating conditions.
5. If the circumstances in e.g. heat source or heat distribution piping change, and cause the temperature or flow rate to differ significantly from the values given in the contract.
6. In case of damage or reduced performance caused by impurities in the medium of the heat source and heat source piping.

The warranty period for any spare parts delivered to replace defective parts is limited to the remainder of the original warranty period.

6. Warranty Claim Process

The buyer must report the defect to the seller, who contacts the warranty provider. The defect must be reported within one (1) week after it has been detected or should have been detected. When reporting a defect, the buyer must produce a warranty certificate, receipt or other reliable report detailing the place and time of the product purchase. However, such report is not required if the place and time of purchase are documented in a register maintained by the seller or warranty provider.

7. Defect Repair

If a defect is found, the seller files a complaint form and provides it to the warranty provider. The warranty provider will repair the defect within a reasonable time after the seller has delivered the complaint form to the warranty provider and the defect has been found a warranty case.

The warranty provider may supply the buyer with instructions on how to operate when a defect has occurred, in order to secure an expedient reparation.

When evaluating a reasonable time of repair or exchange, a number of factors must be considered, including product properties, defect quality and the buyer's need to receive the product.

8. Compensation

Only direct damage caused by a defect is compensable. The warranty does not cover working and travelling costs or daily benefits arising from the change of a defective part.

The warranty provider is not liable for compensating any indirect damages, such as expenses caused by a possible substitute heating solution, increased electricity consumption, or heating using an electric resistance heater under abnormal conditions.

The maximal indemnification liability of the manufacturer is always limited to the sales price of the delivered product.

Maintenance, when requested due to something other than device failure, will be charged according to common practice.

9. Force Majeure

If the manufacturer is prevented from fulfilling its obligations in accordance with this contract due to a reason that is considered a force majeure event and that is not dependent on the manufacturer, such as war, civil commotion, industrial action, epidemic, fire, natural forces, government actions, events preventing the procurement of raw materials, or an accident in production, warehousing or transport, or any other reason that is comparable to these, the buyer is not entitled to claim for compensation in accordance with this contract or any other indemnity from the warranty provider.

VALIDITY OF THE QUOTATION

This quotation is valid until 2023-05-03.

We hope that the product we have described suits your needs and will lead to further negotiations. We look forward to hearing from you. If you need any further information, please feel free to contact us.

Best regards,
GT Energy, s.r.o.
Richard Beber

beber@gt-energy.cz



NOTES

PERFORMANCE (±5 % ACCURACY)

Type

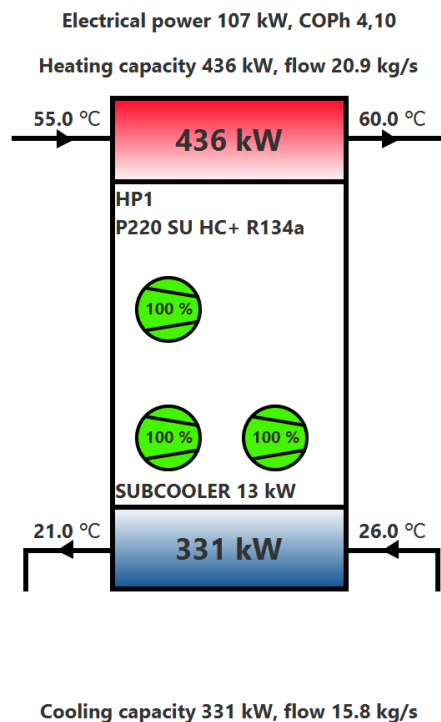
Heat pumps	1
Heating capacity	436 kW
Refrigeration capacity acc. to EN 12900	331 kW
Power consumption	107 kW
COP	4.1

Heat sink (condenser)

Type of heating medium	water
Heat sink inlet temperature	55.0 °C
Heat sink outlet temperature	60.0 °C
Flow	21.2 l/s
Pressure loss in heat exchanger	43 kPa

Heat source (evaporator)

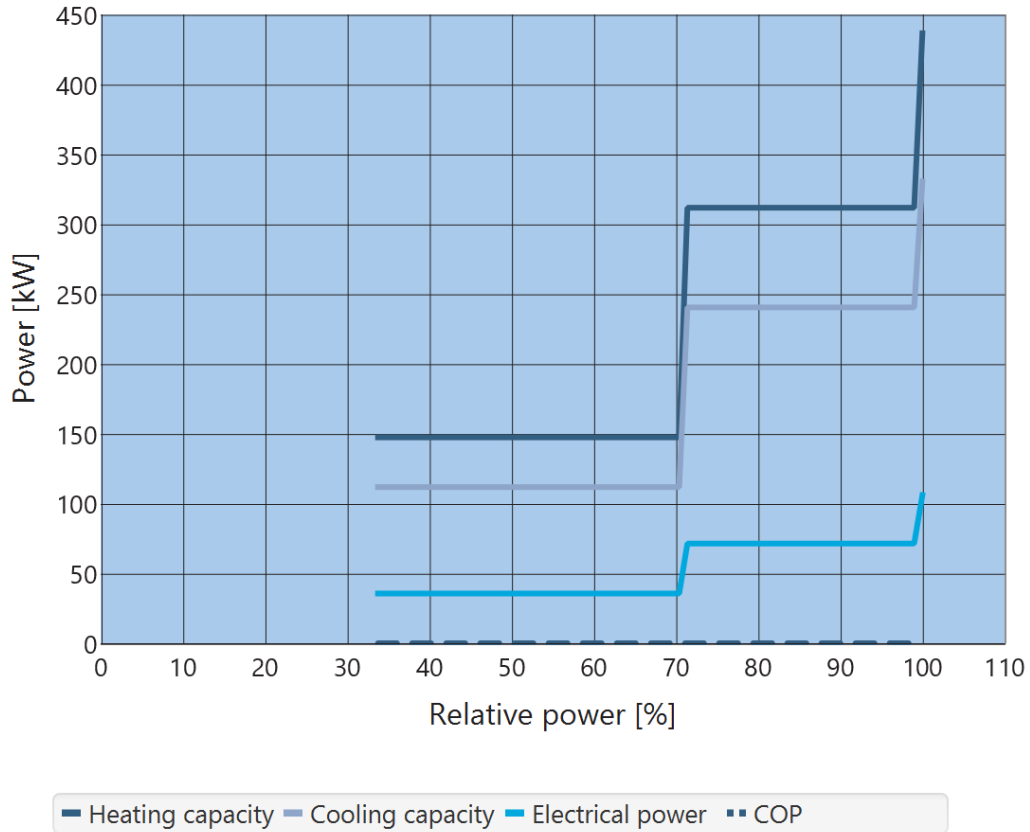
Type of coolant	water
Heat source inlet temperature	26.0 °C
Heat source outlet temperature	21.0 °C
Flow	15.9 l/s
Pressure loss in heat exchanger	13 kPa



PERFORMANCE - HP1 - P220 SU HC+ R134A

CAPACITY CONTROL

Part load performance P220 SU HC+ R134a



CONDENSER

Flow	20.9 kg/s
Pressure drop	23 kPa

SUBCOOLER

Flow	3.9 kg/s
Pressure drop	20 kPa

EVAPORATOR

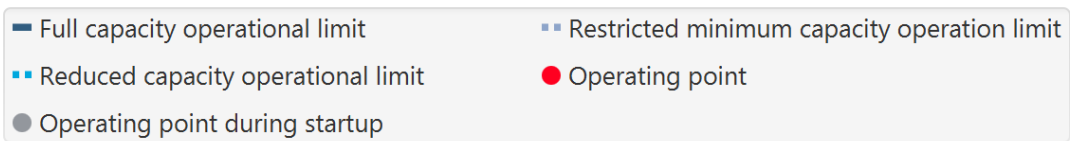
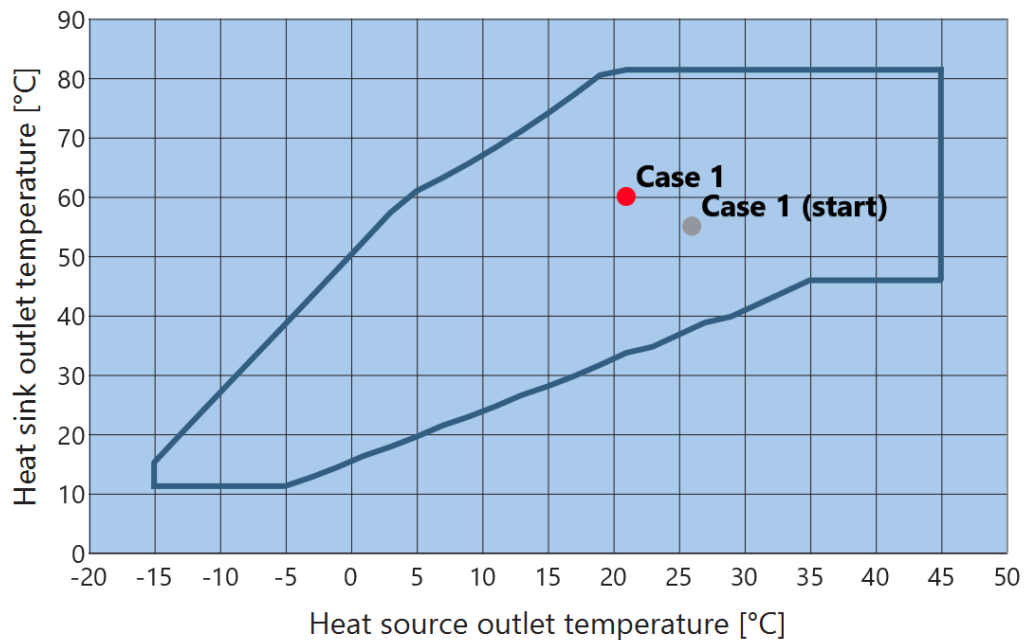
Flow	15.8 kg/s
Pressure drop	13 kPa

OPERATION LIMITS

Maximum allowed heat source (evaporator) inlet temperature	50.0 °C
Maximum allowed heat source (evaporator) outlet temperature	45.0 °C
Minimum allowed heat source (evaporator) inlet temperature	-10.0 °C
Minimum allowed heat source (evaporator) outlet temperature	-15.0 °C

The chart below illustrates the allowed operation limits for the heat pump. The allowed operation limits are dependent on many factors, such as heat pump type, refrigerant, and component selections. Operation outside these limits is not allowed. Operation within the reduced capacity area will lead to a reduction in the performance. Operation in the restricted minimum capacity area is allowed; however, the allowed minimum capacity within this area cannot be determined beforehand. Suitable heat transfer medium with low enough a freezing point must be used as the heat source (evaporator).

Operation limits P220 SU HC+ R134a EXV-L

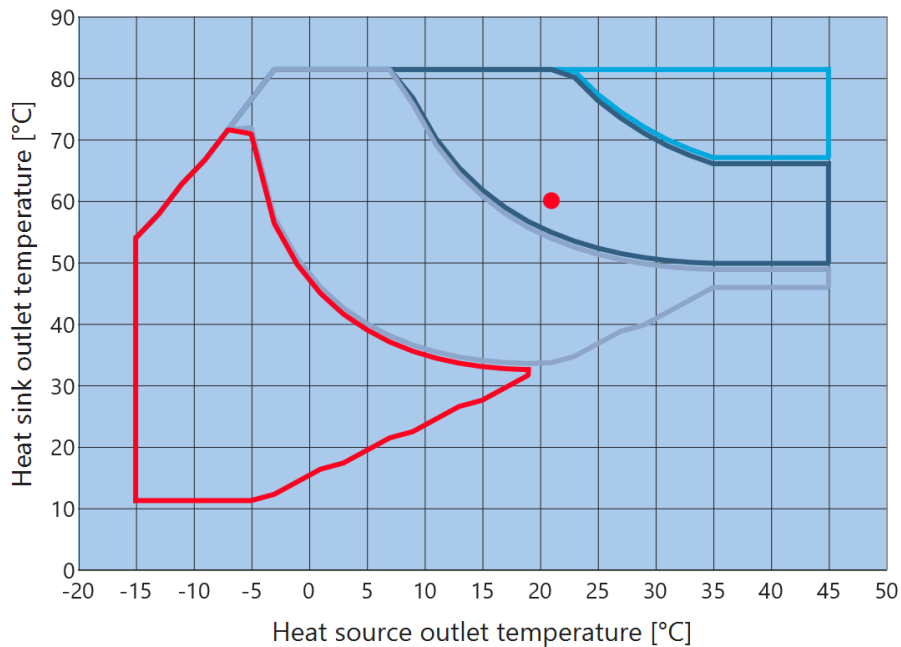


ELECTRICAL DETAILS

Actual power at design point	107 kW
Reactive power at design point	83 kvar
Apparent power at design point	135 kVA
Power factor at design point	0.79
Current at design point	194 A
Starting current at design point	323 A
Current at the most demanding operating point	265 A
Starting current at the most demanding operating point	441 A
Recommended fuse size for a maximum range of operation	3 x 315 A

A smaller fuse size can be selected from the chart below. If a smaller than recommended fuse size is selected, the customer must ensure that the operating conditions stay within the fuse size limits or that the maximum electrical power draw of the heat pump is actively limited. The customer must ensure that the selected fuse complies with local regulations.

Fuse size selection P220 SU HC+ R134a



● Operating point — 3 x 315 A — 3 x 250 A — 3 x 200 A — 3 x 160 A

TECHNICAL DATA - HP1 - P220 SU HC+ R134A

UNIT

Type	P220 SU HC+ R134a
Item number	CHP22001HP
Compressors	3 piston compressors
Refrigerant (amount)	R134a (circa 32.0 + 32.0 kg)
Description	Heat pump with AISI 304/316 brazed plate heat exchangers. Compact and completely factory packaged unit, ready for connection on site, dismantled for transportation.
Amount of liquid connections	6

CONDENSER

Design pressure (liquid side)	16.0 bar
Maximum allowed flow	42.5 kg/s
Liquid channel volume	62.6 l
Plate material	AISI316L
Brazing material	Copper

SUBCOOLER

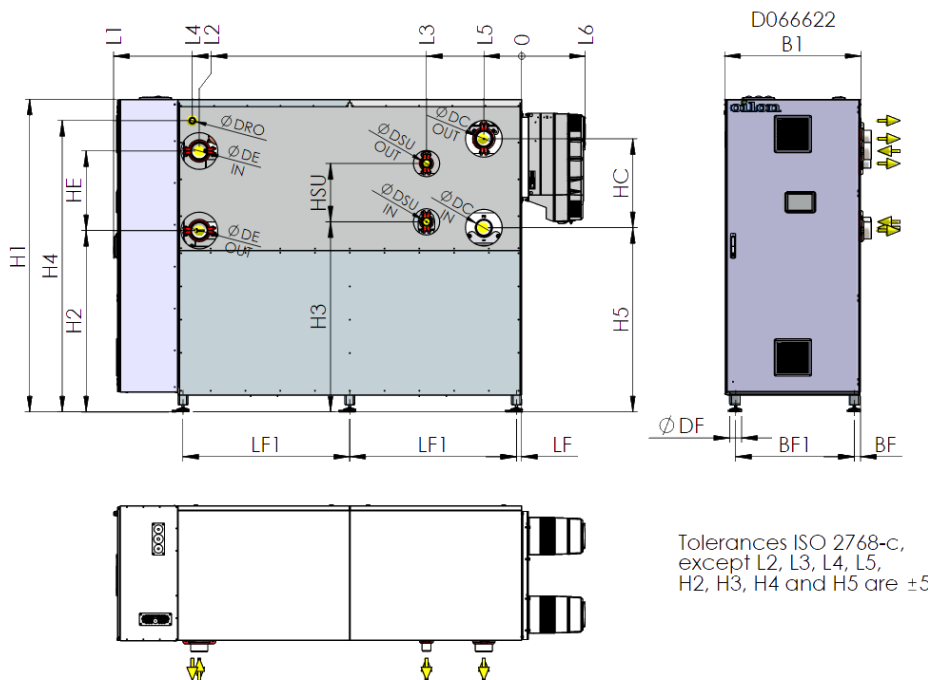
Design pressure (liquid side)	16 bar
Maximum allowed flow	10.6 kg/s
Liquid channel volume	14.0 l
Plate material	AISI316L
Brazing material	Copper

EVAPORATOR

Design pressure (liquid side)	16 bar
Maximum allowed flow	43.0 kg/s
Liquid channel volume	39.2 l
Plate material	AISI316L
Brazing material	Copper

DIMENSIONS

L1	2723 mm
L2	2151 mm
L3	635 mm
L4	2198 mm
L5	252 mm
L6	-
H1	2091 mm
H2	1213 mm
H3	1271 mm
H4	1948 mm
H5	1232 mm
HE	532 mm
HSU	390 mm
HC	595 mm
B1	911 mm
DE	DN100 VICTAULIC (Evaporator inlet/outlet connection)
DSU	DN50 VICTAULIC (Subcooler inlet/outlet connection)
DRO	Cu35 (Safety relief valve blow-out connection)
DC	DN100 VICTAULIC (Condenser inlet/outlet connection)
LF1	1113 mm
LF	35 mm
BF1	792 mm
BF	41 mm
DF	80 mm
Weight	2300 kg



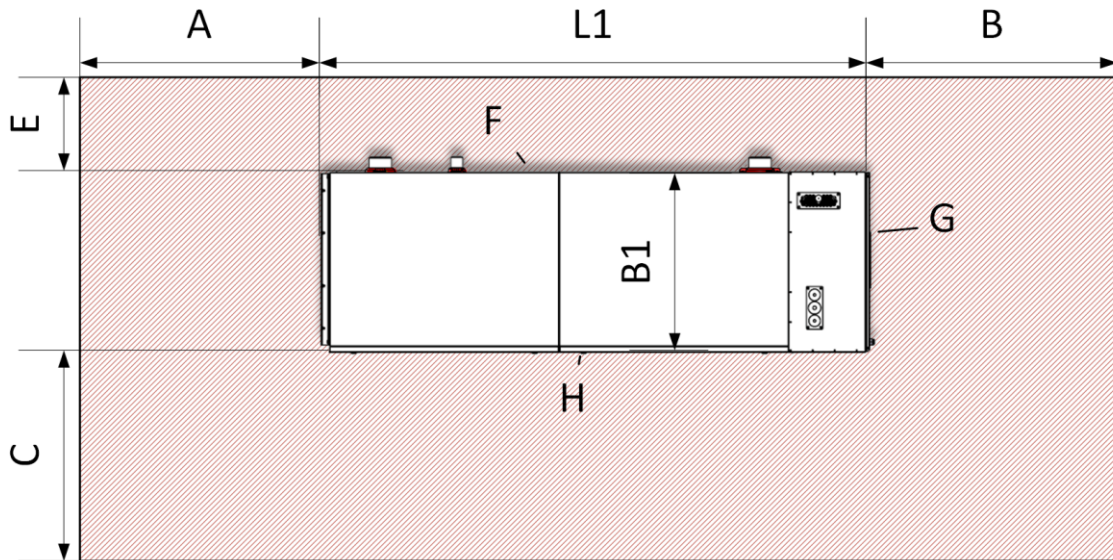
ENCLOSURE FINISHING

Painting
Color

Powder coating
RAL 9006

RECOMMENDED SERVICE SPACE

A	400 mm
B	900 mm
C	800 mm
E	400 mm
L1	2723 mm
L6	-
B1	911 mm
F	Process connections
G	Power panel
H	Service doors

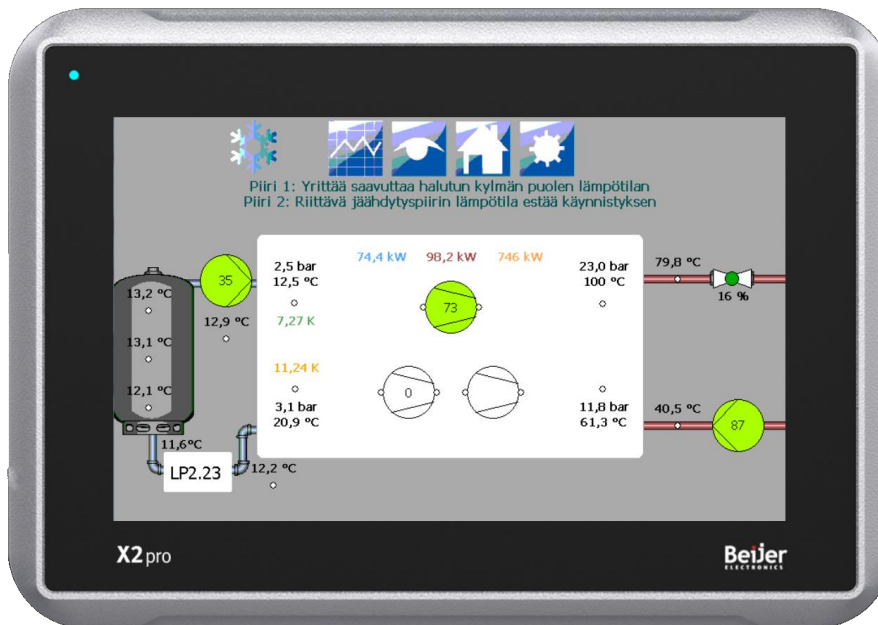


ELECTRICAL DETAILS

Voltage	3~ 400 V / 50 Hz
Degree of protection	IP 44
Switch on mode	Partial Winding
Type of power panel	Power panel with IP 44 protection
Cable entry point	At the top
Minimum short circuit withstand ratings at 400 V voltage	
Nominal current of the switchboard	400 A
Rated short-time withstand current (rms value for the short circuit current)	12500 A
Rated peak withstand current (peak value)	25000 A

CONTROL UNIT

Fixed control panel	Industrial touch panel
Size	7"
Customizable	Yes
Item number	37286066
Controller communication	Modbus RTU (Profibus, profinet & bacnet available as an option)
Display language	English, Finnish, Swedish, Chinese, Russian, Polish, German, Spanish, Portuguese, Lithuanian, Dutch, Latvian



SENSORS

Additional temperature sensors	None
Flow switch	Electronic flow switch on cooling side (to be installed by the customer)

CHILLHEAT STANDARD AUTOMATION

Capabilities of the ChillHeat standard automation. The connectivity for the devices listed below is included in the standard automation, but the devices themselves are not. Confirm pricing with Oilon.

Pre-configured inputs

- STOP
- SETPOINT
- TE00
- L1-L2-L3/kWh
- FIR11/FIR21

Pre-configured outputs

- READY
- RUN
- ALARM
- P11-RUN
- P11-SPEED
- P21-RUN
- P21-SPEED

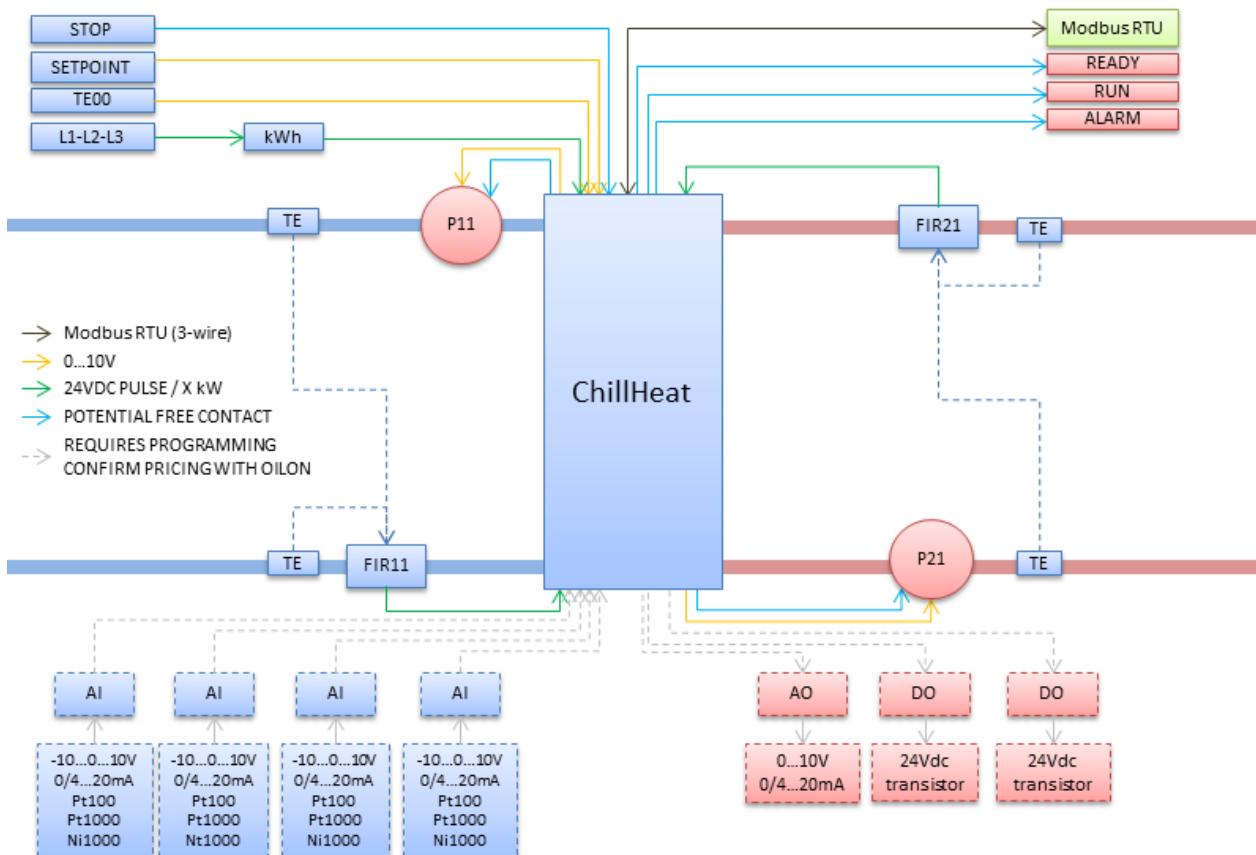
Additional I/O

- 4 x AI
- 1 x AO
- 2 x DO

Check the signal types from the diagram

- Stop signal for the heat pump
- Heating/cooling setpoint signal for the heat pump
- Ambient temperature sensor
- Measurement for consumed electricity
- Measurement for produced heating and cooling power
- Check the signal types from the diagram
- Ready-to-run signal
- Run signal
- Active alarm signal
- Evaporator circulation pump on/off signal
- Evaporator circulation pump speed control
- Condenser circulation pump on/off signal
- Condenser circulation pump speed control
- Available I/O for customer connections. Pricing must be confirmed with Oilon.

- 10 ... 0 ... 10 V, 0/4 ... 20 mA, Pt100, Pt1000, Ni1000
- 0 ... 10 V, 0/4 ... 20 mA
- 24 Vdc transistor (relay not installed)



SAFETY DEVICES

Type	Double safety valve with change over valve
Safety valve(s) acc. to PED	4 out of which 2 active

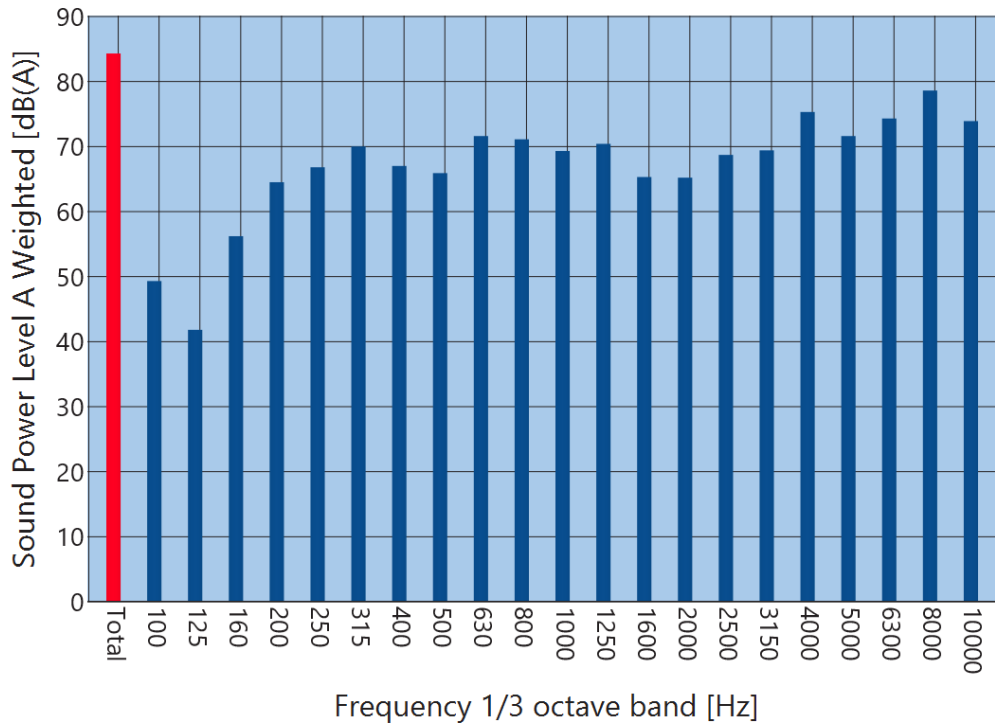
SOUND LEVELS

Sound pressure @ 1m	73.2 dB(A)
Sound power	84.2 dB(A)

The sound levels should be used for informational purposes only. The data is valid in the operating conditions of -10 C Te, 45 C Tc, R134a. In other operating conditions and with other refrigerants, the sound levels vary ± 3 dB(A).

P220 SU HC+ R134a

Sound Power Level 1/3 Octave Bands (-10 C Te, 45 C Tc, R134a)



APPROVAL AND DOCUMENTATION

Approval pressure equipment	Certificate of Conformity acc. to Pressure Equipment Directive (PED) 2014/68/EC modules A2 (P series) and B + C1 (RE and S series). Calculation and manufacturing acc. to EN 378.
Documentation consisting of Language of the documentation	1 set in electronic format, 1 set on paper English

PACKAGING

Type	Plastic wrapping
Heat pump weight	2300 kg
Item number	CHWRAP300



EXCLUSIONS

Exclusions from scope of supply	Balancing valve for the subcooler
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