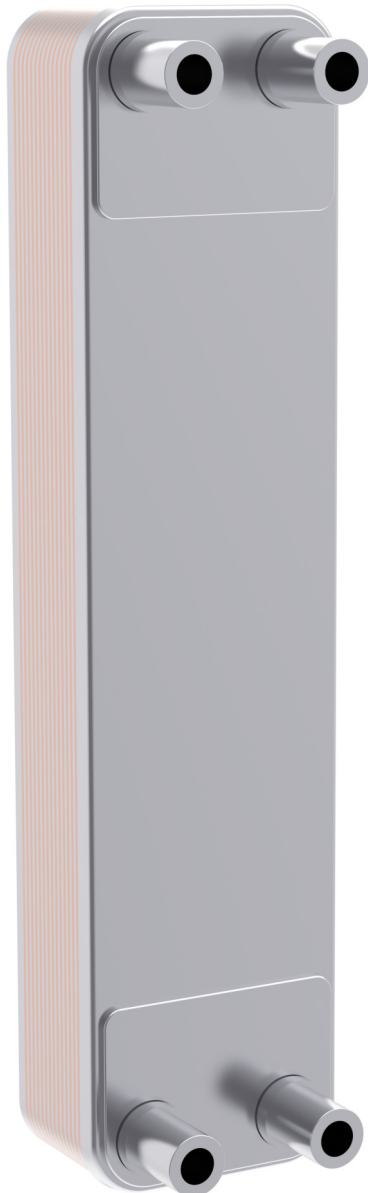


Data Sheet

Micro Plate Heat Exchanger Type **C22 & H22**

For more efficient Chillers & Heat Pumps



20% reduction in refrigerant charge compared with a traditional BPHE, the ideal solution to help you meet the world's climate and energy aspirations.

The C22 & H22 are families of Condensers and Evaporators optimized for high-efficiency chillers and heat pumps.

The heat exchanger features innovative Micro Plate technology that improves heat transfer and reduces the amount of material used.

To meet demands for higher COPs in heat pumps, the evaporator H22(L)-E and the condenser H22(L)-C are designed to work efficiently with close temperature approaches, while a low pressure drop on the brine side reduces the pump power and keeps the overall COP high. H22 can cover a capacity range from 2 to 10kW.

H22(L)-C represent the ideal choice for the Semi Plug-in systems, also operating with flammable refrigerants.

The C22(L)-E and the C22(L)-C are respectively evaporator and condenser designed to work efficiently and increase comfort in modern buildings without increasing the carbon footprint. Helping chillers perform more efficiently achieving higher seasonal efficiency levels, it reduces both energy costs and environmental impact. C22 can cover a capacity range from 3 to 20kW.

The low hold-up volume reduces the system refrigerant charge and offers valuable savings.

Features

- Minimal hold-up volume: Less refrigerant charge
- Reduced pressure drop: For a more efficient system
- Smaller footprint: Enabling more compact system
- Reduced CO₂ footprint: Environmentally friendly with high heat transfer and minimal refrigerant charge

Portfolio overview

C22L-E: Evaporator optimized for R410A in chiller application, from 3 to 20kW.
 C22-E: Evaporator for medium density refrigerants in chiller application, from 3 to 20kW.
 C22L-C: Condenser optimized for high density refrigerants in chiller application, from 3 to 20kW.
 C22-C: Condenser optimized for medium density refrigerants in chiller application, from 3 to 20kW.
 H22L-C: Condenser optimized for high density refrigerants in heat pump application, from 2 to 10kW.
 H22-C: Condenser optimized for medium density refrigerants in heat pump application, from 2 to 10kW.
 H22L-E: Evaporator optimized for R410A in heat pump application, from 2 to 10kW.
 H22-E: Evaporator for medium density refrigerants in heat pump application, from 2 to 10kW.

Table 1: Designation

a Applications C: chiller H: heat pump HDW: heat pump double wall	d Specific duty E= evaporator C= condenser Plate design Omit L: L-type M: M-type H: H-type W: W-type X: Asymmetric Z: Z flow Configuration Omit: single D: Dual circuit U: Mixing chamber	e Distributor version Omit B F Plate stacking sequence Omit: a-b-a... R: b-a-b...
b Platform* 22,30,55,62,118... *heat exchanging surface per plate 1/1000 m ²		f Number of plates** **Rule: -Single: even number -Dual: even number not multiple of 4
c Pressure Service Omit: 30bar L: 45/49bar		

Application

The C22 & H22 are families of Condensers and Evaporators specifically optimized for high-efficiency chillers and heat pumps, dedicated to comfort applications, cooling-industrial process and semi plug-in systems in food retail industry. The evaporators are design to operate also in reversable systems in condenser mode, in co or counter current flow configuration; as well as the condensers are optimized and fully in regard to the defrost operation cycle.

Media

Refrigerants

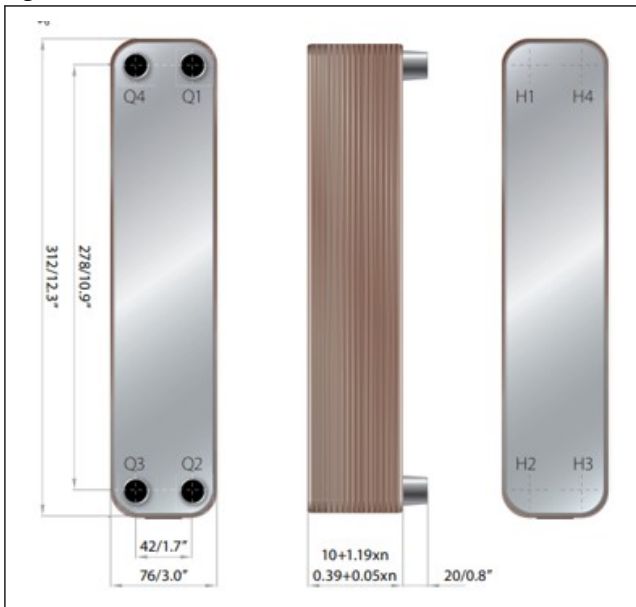
R410A, R407C, R452B, R454B, R290

For other refrigerants please contact your Danfoss Sales representative.

Product specification

Dimensions

Figure 1: Dimensions



A:
 C22-C / C22-E / H22-E / H22-C: $8 + 1.19 \times N$ [$0.31 + 0.047 \times N$]
 C22L-C / C22L-E / H22L-E / H22L-C: $10 + 1.19 \times N$ [$0.39 + 0.047 \times N$]

N: Number of Plate

Operating conditions

Preconditions:
 N = number of plates
 Max number of plates: 60

Pressure and temperature data*:
 Min. working temperature: $-196\text{ }^{\circ}\text{C}$ ($-320\text{ }^{\circ}\text{F}$)
 Max. working temperature: $200\text{ }^{\circ}\text{C}$ ($390\text{ }^{\circ}\text{F}$)

Max. working pressure:
C22-C / C22-E / H22-C / H22-E: 30 bar (435psi)
C22L-C / C22L-E / H22L-E: 45 bar (653psi)
H22L-C: 48 bar (696psi) [UL: 45 bar (653psi)]
 For details, refer to the [Third party approvals](#) chapter.

Weight

C22-C / C22-E / H22-E / H22-C: $0.58 + 0.045 \times N$ [kg] / $1.28 + 0.099 \times N$ [lb]
 C22L-C / C22L-E / H22L-E / H22L-C: $0.77 + 0.045 \times N$ [kg] / $1.70 + 0.099 \times N$ [lb]

N: Number of Plate
 *without connections

Material specification

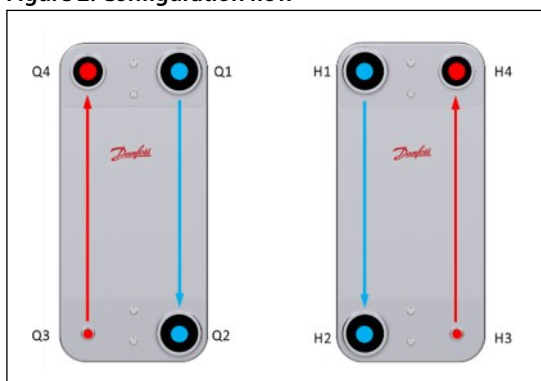
Table 2: Standard materials

Item	Material	Specification
Cover plates	Stainless steel	AISI 304L
Plates	Stainless steel	AISI 316L
Connections	Stainless steel	AISI 304L
Brazing filler	Pure copper	Cu

Other material combinations are available on request. Please contact your Danfoss sales representative for more information.

Configuration flow

Figure 2: Configuration flow



Parallel flow:

Q1 - Q2 [H1 - H2]: brine/secondary side

Q3 - Q4 [H3 - H4]: refrigerant/primary side

Hold up volume

C/H22(L)-C/E

Q1-Q2: $0.21 \times N/2$ [l]

Q3-Q4: $0.21 \times (N-2)/2$ [l]

N: Number of Plate

Ordering

Global or local standard code numbers can be accessed via Store.Danfoss.com on local subsites, with full set of technical data as well as relevant assets such as documentation and drawings. Since the portfolio may contain different types depending on country, this document contains only a summarized list of standard code numbers with a few data relevant for the product selection.

Configuring and calculating products

The C22 & H22 can be easily customized based on the application needs; model size can be evaluated using Hexact software.

For details, product configuration and code creation please contact your Danfoss Sales representative.

Mechanical connections

Table 3: Mechanical connections

Circuits	Connection type options	Connection size option
Q1 - Q2 (water-brine side)	BSP Gas male	1/2, 3/4
	BSP Gas female	1/2
	DIN R male	1/2, 3/4
	NPT	1/2, 3/4
Q3-Q4 (refrigerant side)	Soldering	1/4, 1/2, 5/8, 3/4, 7/8

Accessories and spare parts

MPHE products are not serviceable, i.e. cannot be taken apart and repaired, and there are no spare parts program. As for accessories, stud bolts, feet on front and/or back cover plates for mounting support and handling are available upon request.

Table 4: Stud bolts:

Stud bolt position	Bolt sizes
151mm, middle	M6x20mm

Contact your Danfoss sales representative for further information.

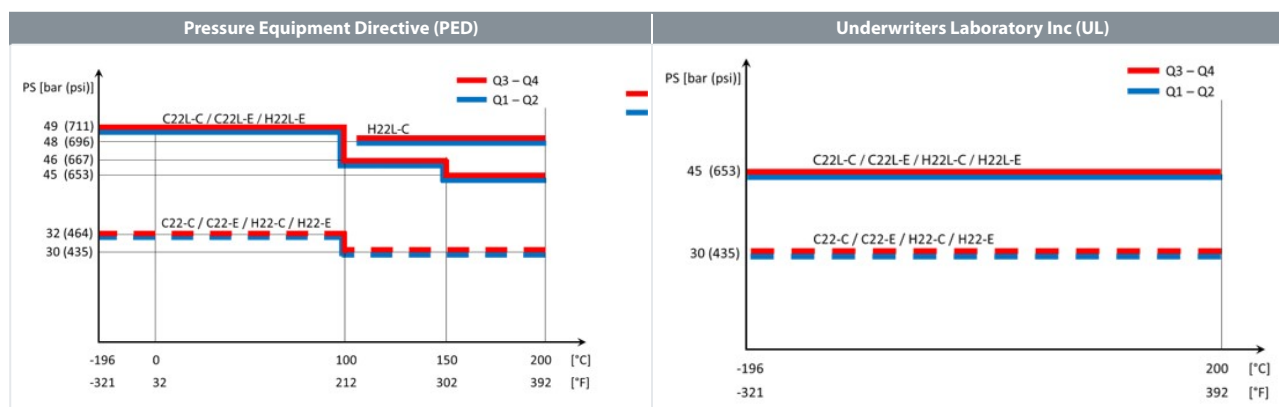
Certificates, declarations, and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

Third party approvals

All MPHE and BPHE are certified to European Pressure Equipment Directive (PED) and are approved by Underwriters Laboratories (UL).



Other certifications are available upon request: Kraia, EAC, UA, AS; for others and more details please contact your local Danfoss representative.

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Hexact for heat exchangers



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