



# Micro Plate heat exchanger

## MPHE C118 / D118/ H118

For more efficient Chillers & Heat Pumps

## Description

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 C118 & H118 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 H118(L)-E and the condenser H118(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. H118 can cover a capacity range from 20 – 150kW.

The C118(L)-E and the C118(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. C118 can cover a capacity range from 40 – 200kW.

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

## Features & benefits

- Minimal hold-up volume: Less refrigerant charge
- Reduced pressure drop: For a more efficient system
- Smaller footprint: Enabling more compact system
- Reduced CO<sub>2</sub> footprint: Environmentally friendly with high heat transfer and minimal refrigerant charge

## Applications

The C118 & H118 are families of Condensers and Evaporators specifically optimized for high-efficiency chillers and heat pumps, dedicated to comfort applications, cooling-industrial process, data centers. The evaporators are designed to operate also in reversible systems in condenser mode, in co or counter current flow configuration; as well as the condensers are optimized and fully in regards to the defrost operation cycle.

## Ordering

### Product code numbers

Global or local standard code numbers can be accessed via [Store.Danfoss.com](https://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 C118 & H118 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.

### Accessories code numbers

#### 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: Stud bolts**

| Stud bolt position                       | Bolt sizes                    |
|------------------------------------------|-------------------------------|
| 230X92mm, middle<br>140 x 100 mm, middle | M8x20mm<br>M8x25mm<br>M8x30mm |

Contact your Danfoss sales representative for further information.

## Overview

### Product portfolio

**C118L-E:** Evaporator optimized for R410A in chiller application, from 40 – 200kW.

**C118-E:** Evaporator for medium density refrigerants in chiller application, from 40 – 200kW.

**C118L-C:** Condenser optimized for high density refrigerants in chiller application, from 40 – 200kW.

**C118-C:** Condenser optimized for medium density refrigerants in chiller application, from 40 – 200kW.

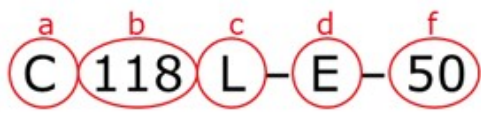
**H118L-C:** Condenser optimized for high density refrigerants in heat pump application, from 20 – 150kW.

**H118-C:** Condenser optimized for medium density refrigerants in heat pump application, from 20 – 150kW.

**H118L-E:** Evaporator optimized for R410A in heat pump application, from 20 – 120kW.

**H118-E:** Evaporator for medium density refrigerants in heat pump application, from 20 – 120kW.

**Table: Designation**

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

## Functions

### Operation

#### Preconditions:

N = number of plates

Max number of plates: 200

## Media

### Refrigerants

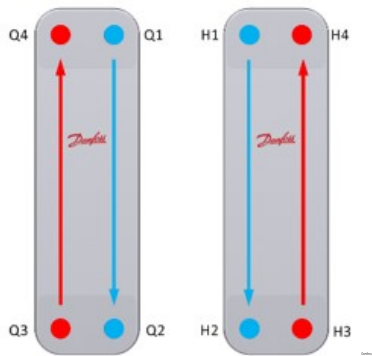
R410A, R407C, R452B, R454B, R290

For other refrigerants please contact your Danfoss Sales representative.

## Product details

### General data

#### Configuration flow



#### Parallel flow:

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

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

#### Hold up volume

##### C/H118(L)-C/E

Q1 – Q2:  $0.151 \times N/2$  [l]

Q3 – Q4:  $0.151 \times (N-2)/2$  [l]

##### H118(L)-C

Q1 – Q2:  $0.13 \times N/2$  [l]

Q3 – Q4:  $0.13 \times (N-2)/2$  [l]

N: Number of Plate

## Materials

Table: 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.

## Pressure and temperature data

Min. working temperature: -196 °C (-320 °F)

Max. working temperature: 200 °C (390 °F)

#### Max. working pressure:

C118-C / C118-E / H118-C / H118-E: Max. working pressure: 30 bar (435psi)

C118L-C / C118L-E / H118L-E: Max. working pressure: 45 bar (653psi)

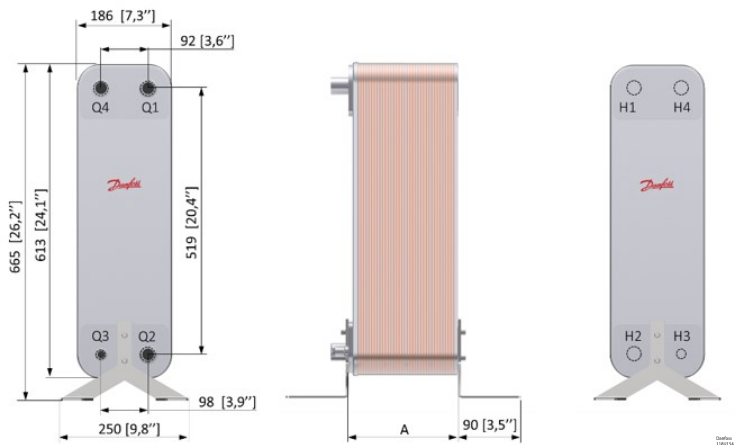
H118L-C: Max. working pressure: 48 bar (696psi) [UL: 45 bar (653psi)]

#### Note:

For details, refer to the [third party approvals](#) chapter.



Dimensions



**A:**  
C118-C / C118-E / H118-E: 11.5 + 1.74 x N [0.45 + 0.069 x N]  
C118L-C / C118L-E / H118L-E: 15.5 + 1.74 x N [0.61 + 0.069 x N]  
H118-C: 11.5 + 1.54 x N [0.45 + 0.061 x N]  
H118L-C: 15.5 + 1.54 x N [0.61 + 0.061 x N]  
N: Number of Plate

**Weight\***  
C118-C / C118-E / H118-E: 5.95 + 0.26 x N [kg] / 13.12 + 0.573 x N [lb]  
C118L-C / C118L-E / H118L-E: 7.94 + 0.26 x N [kg] / 17.50 + 0.573 x N [lb]  
H118-C: 5.94 + 0.26 x N [kg] / 13.09 + 0.573 x N [lb]  
H118L-C: 7.93 + 0.26 x N [kg] / 17.48 + 0.573 x N [lb]

N: Number of Plate  
\*Without connections

Connections

Mechanical connections

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

## 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.

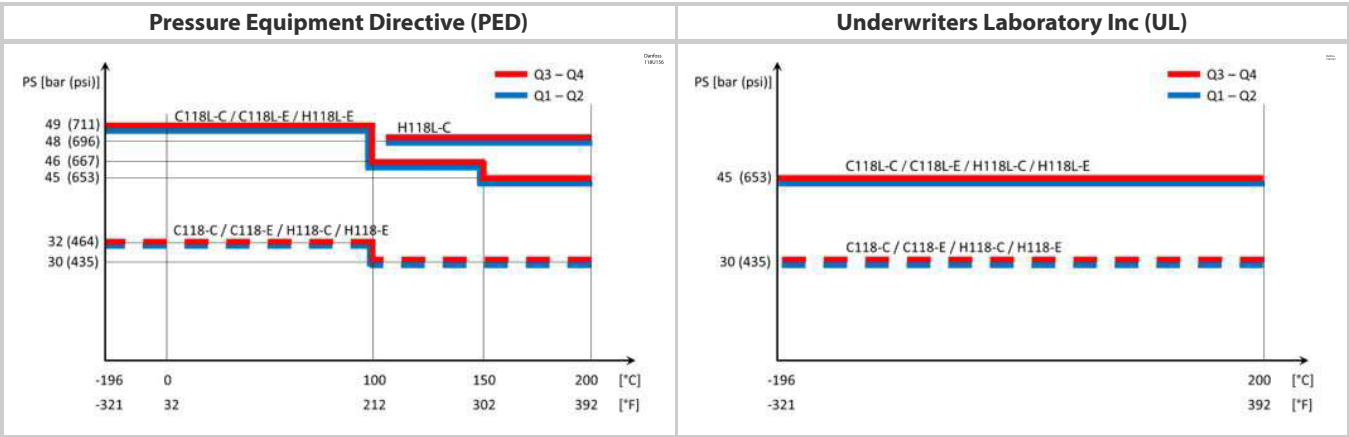
When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

| Approval type                 | Title                                                           | Certification body                  | Approval topic |
|-------------------------------|-----------------------------------------------------------------|-------------------------------------|----------------|
| Manufacturer's Declaration    | <a href="#">Danfoss UK-ROHS-MOD-202304-01.01</a>                | Danfoss                             | UK RoHS        |
| Manufacturer's Declaration    | <a href="#">Danfoss MD EU-ROHS-MD-202404-01.01</a>              | Danfoss                             | EU RoHS        |
| Manufacturer's Declaration    | <a href="#">Danfoss MD EU-RoHS-DoC-202309-01.01</a>             | Danfoss                             | EU RoHS        |
| UA Declaration                | <a href="#">Danfoss UA 2023-01-10 Heat Exchangers PL24 PL31</a> | Danfoss                             | Pressure, PED  |
| Manufacturer's Declaration    | <a href="#">Danfoss MD BPHE-RoHS-DOC-201601</a>                 | Danfoss                             | China RoHS     |
| Pressure Safety Certificate   | <a href="#">BV CE-0062-PED-H-DAF 001-24-DNK</a>                 | BV - Bureau Veritas                 | Pressure, PED  |
| Mechanical Safety Certificate | <a href="#">UL SA13363</a>                                      | UL - Underwriters Laboratories inc. |                |
| Export Control Declaration    | <a href="#">Micro Plate Heat Exchangers - Not dual use</a>      | Danfoss                             |                |
| EU Declaration                | <a href="#">Danfoss EU BF202407en-0001.01</a>                   | Danfoss                             | Pressure, PED  |
| Manufacturer's Declaration    | <a href="#">Danfoss MD UK-ROHS-MOD-202304-02.01</a>             | Danfoss                             | UK RoHS        |
| Pressure Safety Certificate   | <a href="#">LLC CDC EURO TYSK UA.TR.089.0330.04.23</a>          | LLC CDC EURO TYSK - Ukraine         | Pressure, PED  |
| EU Declaration                | <a href="#">Danfoss EU BF202604en-0002.02</a>                   | Danfoss                             | Pressure, PED  |
| Pressure Safety Certificate   | <a href="#">BV CE-0062-PED-H-DMC 001-23-CHN-Rev.C</a>           | BV - Bureau Veritas                 | Pressure, PED  |



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.

## Contact details

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Danfoss offers a wide range of support along with our products, including digital information, software, mobile apps and expert guidance. See the possibilities below.



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