Data sheet



Micro Plate heat exchanger

MPHE C12L-EZ

For more efficient Cooling & Heating systems

Description

40% heat transfer increase compared to traditional fishbone design.

The C12L-EZ is an economizer optimized for R410A for use in VRF, heat pump and bus A/C etc., and also can be used as evaporator for chiller with a capacity under 5.5KW. Inspired by fish scales, Z-pattern channel plate technology pushes the performance of heat exchangers to the limits by fully mixing the liquid and gas refrigerant through a "zigzag" flow, which increases the heat transfer coefficient by 40% compared with traditional fishbone design at the same evaporating temperature.

At the same time, inheriting from the dimple features, C12L-EZ reducesthe amount of material used. To meet demands for higher seasonal efficiency, the C12L-EZ is designed to work efficiently and increase comfort in modern buildings without increasing the carbon footprint.

Helping A/C units perform more efficiently, it reduces both energy costs and environmental impact. The low hold-up volume reduces the system refrigerant charge and offers valuable savings.

Features & benefits

- Improved heat transfer - equals higher efficiency chillers
- Minimal hold-up volume - equals less refrigerant charge
- Smaller footprint - enables more compact size
- High heat transfer and minimal refrigerant charge - equals a reduced CO_2 footprint

Applications

The C12L-EZ is an economizer optimized for VRF system in R410A; it can be applied also as evaporator in high density refrigerants.
The "-R" version is an evaporator for application where its' required a low water pressured drop secondary side

Ordering

Product code numbers

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.

Configuring and calculating products
C12(L)-EZ(-R) 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
40 mm, middle	M6 x 20

Contact your Danfoss sales representative for further information.

Overview

Product portfolio

- C12L-EZ: High efficiency economizer and evaporator optimized for R410A
- C12L-EZ-R: Evaporator with extremely low pressure drop secondary side

Table: Designation



a **Applications** **C:** chiller **D:** universal **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 m²		
c **Pressure Service** Omit: 30bar **L:** 45/49bar		**f** **Number of plates**** **Rule: -Single: even number -Dual: even number not multiple of 4

Functions

Operation

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

Media

Refrigerants

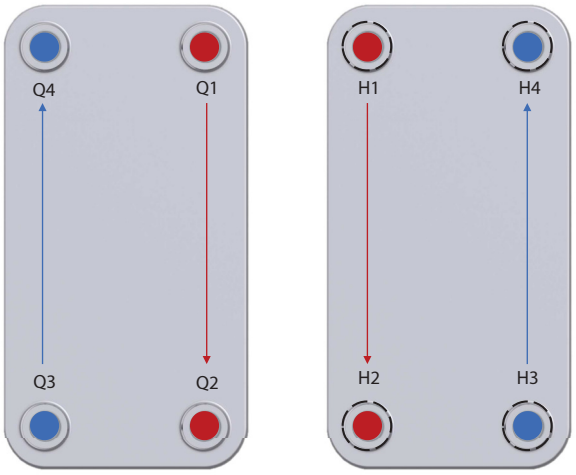
R410A, R452B, R454B, R407C

For other refrigerants please contact your Danfoss Sales representative.

Product details

General data

Figure: Configuration flow



Parallel flow:
Q1 – Q2 [H1 – H2]: brine/secondary side
Q3 – Q4 [H3 – H4]: refrigerant/primary side

Hold up volume
C12L-EZ:
Q1 – Q2: 8.39xN/2 [ml]
Q3 – Q4: 9.25x(N-2)/2 [ml]
C12L-EZ-R:
Q1 – Q2: 9.25xN/2 [ml]
Q3 – Q4: 8.39x(N-2)/2 [ml]
N: Number of Plate

Materials

Table: Standard materials

Item	Material	Specification
Cover plates	Stainless steel	AISI 304L
Plates	Stainless steel	AISI 316L / AISI 304L
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.

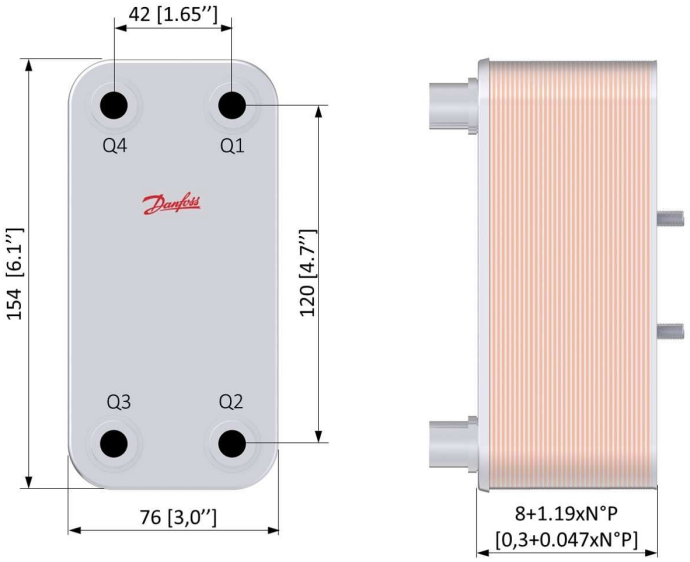
Pressure and temperature data

Min. working temperature: -196 °C (-320 °F)
Max. working temperature: 200 °C (390 °F)
Max. working pressure: 49 bar (711psi) refrigerant side

Note:

For details, refer to the topic. Third party approvals

Dimensions



Weight*
C12L-EZ(-R): 0.28+0.023xN [kg] / 0.617+0.051xN [lb]
N: Number of Plate
*Excluding connections and accessories

Connections

Table: Mechanical connections

Circuits	Connection type options	Connection size option [in]
Q1 – Q2 (water-brine side) Q3 – Q4 (Refrigerant side)	BSP Gas male	½, ¾
	BSP Gas female	½
	DIN R male	½, ¾
	NPT	½, ¾
	Soldering	¼, ⅜, ½, ⅝, ¾

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
Export Control Declaration	Micro Plate Heat Exchangers - Not dual use	Danfoss	
Mechanical Safety Certificate	UL SA13363	UL - Underwriters Laboratories inc.	
Manufacturer's Declaration	Danfoss MD UK-ROHS-MOD-202304-02.01	Danfoss	UK RoHS
UA Declaration	Danfoss UA 2023-01-10 Heat Exchangers PL24 PL31	Danfoss	Pressure, PED
Manufacturer's Declaration	Danfoss MD BPHE-RoHS-DOC-201601	Danfoss	China RoHS
Manufacturer's Declaration	Danfoss MD EU-RoHS-DoC-202309-01.01	Danfoss	EU RoHS
Pressure Safety Certificate	LLC CDC EURO TYSK UA.TR.089.0330.04.23	LLC CDC EURO TYSK - Ukraine	Pressure, PED

Third party approvals
The list contains all approvals registered for this product type. Individual code numbers may have some or all of these approvals, some local approvals may not be in the list, and approvals change over time. Check status on www.danfoss.com or contact your local Danfoss representative if in doubt.

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

Contact details

Online support

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