

Data Sheet

Micro Plate Heat Exchanger Type **C12L-EZ**

For more efficient Cooling & Heating systems

**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 reduces the 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:

- 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 CO₂ footprint

Portfolio overview

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

Table 1: Designation

<div> <div>a</div> <div>b</div> <div>d</div> <div>e</div> <div>f</div> </div> <div> <div>C</div> <div>12</div> <div>-</div> <div>EZ</div> <div>-</div> <div>R</div> <div>-</div> <div>22</div> </div>			<div> <div>a</div> <div>b</div> <div>c</div> <div>d</div> <div>e</div> <div>f</div> </div> <div> <div>C</div> <div>212</div> <div>L</div> <div>-</div> <div>EZD</div> <div>-</div> <div>F</div> <div>-</div> <div>150</div> </div>		
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 m ²					
c Pressure Service Omit: 30bar L: 45/49bar				f Number of plates** **Rule: -Single: even number -Dual: even number not multiple of 4	

Application

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

Media

Refrigerants

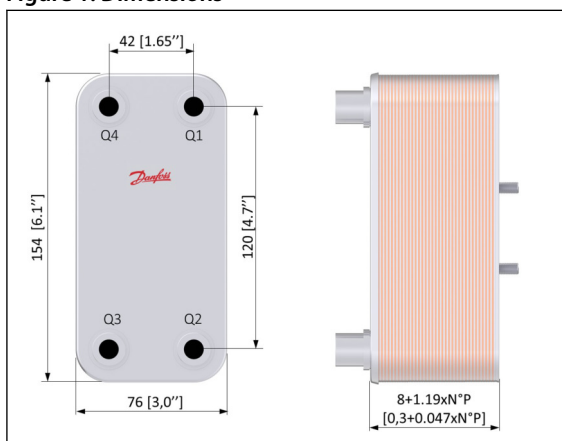
R410A, R452B, R454B, R407C

For other refrigerants please contact your Danfoss Sales representative.

Product specification

Dimensions

Figure 1: Dimensions



Operating conditions

Preconditions:

N = number of plates

Max number of plates: 60

Pressure and temperature data*:

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

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

Max. working pressure: 49 bar (711 psi) refrigerant side

*For details, refer to the topic. **Third party approvals**

Weight*

C12L-EZ(-R): $0.28+0.023 \times N$ [kg] / $0.617+0.051 \times N$ [lb]

N: Number of Plate

*Excluding connections and accessories

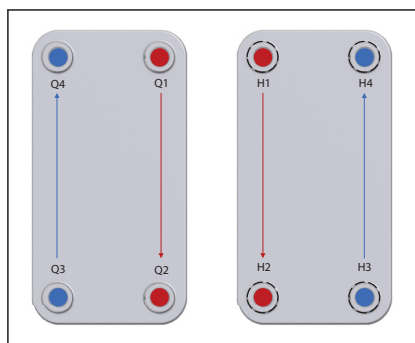
Material specification

Table 2: 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.

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: $8.39 \times N / 2$ [ml]

Q3-Q4: $9.25 \times (N-2) / 2$ [ml]

C12L-EZ-R:

Q1-Q2: $9.25 \times N / 2$ [ml]

Q3-Q4: $8.39 \times (N-2) / 2$ [ml]

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.

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.

Mechanical connections

Circuits	Connection type options	Connection size option [in.]
Q1 - Q2 (water-brine side) & Q3-Q4(Refrigerant 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
	Soldering	1/4, 3/8, 1/2, 5/8, 3/4

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 3: Stud bolts:

Stud bolt position	Bolt sizes
40 mm, middle	M6 x 20

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

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

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