

## Data sheet

# Micro plate heat exchanger (MPHE): XB12

### Description



Micro Plate Heat Exchangers - a revolutionary technology from Danfoss. Characterized by their unique plate pattern, MPHEs enable heat to be transferred more efficient than any previous model of heat exchangers.

### Benefits:

- Energy and cost savings
- Better heat transfer
- Lower pressure loss
- More flexible design
- Longer life time

more on:  
[districtenergy.danfoss.com](http://districtenergy.danfoss.com) (MPHE)

XB 12 is copper brazed heat exchanger, designed and configured for District Heating, District Cooling and other Heating applications. Heat exchanger XB12 will be available in plate corrugation H, M and L. It will be available in 1-pass (with 4 connections) and 2-pass version (with 6 connections). Heat exchangers can be dimensioned in Danfoss calculation software "Hexact" which can be downloaded from [hexact.danfoss.com](http://hexact.danfoss.com).

### Approval:

Pressure Equipment Directive (PED) 97/23/EC.

### Ordering

#### 1-pass heat exchanger **XB12** with G 1 ¼" connection size <sup>1)</sup>

| Picture | No. of plates, n | Connection    | XB 12H-1 | XB 12M-1 | XB 12L-1 |
|---------|------------------|---------------|----------|----------|----------|
|         |                  |               | Code No. |          |          |
|         | 10               | Thread G 1 ¼" | 004H7555 | 004H7540 | 004H7525 |
|         | 16               |               | 004H7556 | 004H7541 | 004H7526 |
|         | 20               |               | 004H7557 | 004H7542 | 004H7527 |
|         | 26               |               | 004H7558 | 004H7543 | 004H7528 |
|         | 30               |               | 004H7559 | 004H7544 | 004H7529 |
|         | 36               |               | 004H7560 | 004H7545 | 004H7530 |
|         | 40               |               | 004H7561 | 004H7546 | 004H7531 |
|         | 50               |               | 004H7562 | 004H7547 | 004H7532 |
|         | 60               |               | 004H7563 | 004H7548 | 004H7533 |
|         | 70               |               | 004H7564 | 004H7549 | 004H7534 |
|         | 80               |               | 004H7565 | 004H7550 | 004H7535 |
|         | 90               |               | 004H7566 | 004H7551 | 004H7536 |
|         | 100              |               | 004H7567 | 004H7552 | 004H7537 |
|         | 110              |               | 004H7568 | 004H7553 | 004H7538 |
|         | 120              |               | 004H7569 | -        | -        |
| 140     | 004H7570         | -             | -        |          |          |

<sup>1)</sup> Available also with 1 inch connection size. Please contact your Danfoss representative.

#### 2-pass heat exchanger **XB12** with G 1 ¼" connection size <sup>1)</sup>

| Picture | No. of plates <sup>2)</sup> , n | Connection    | XB 12H-1 | XB 12M-1 | XB 12L-1 |
|---------|---------------------------------|---------------|----------|----------|----------|
|         |                                 |               | Code No. |          |          |
|         | 20/20                           | Thread G 1 ¼" | 004H7596 | 004H7584 | 004H7572 |
|         | 26/26                           |               | 004H7597 | 004H7585 | 004H7573 |
|         | 30/30                           |               | 004H7598 | 004H7586 | 004H7574 |
|         | 36/36                           |               | 004H7599 | 004H7587 | 004H7575 |
|         | 40/40                           |               | 004H7600 | 004H7588 | 004H7576 |
|         | 46/46                           |               | 004H7601 | 004H7589 | 004H7577 |
|         | 50/50                           |               | 004H7602 | 004H7590 | 004H7578 |
|         | 56/56                           |               | 004H7603 | 004H7591 | 004H7579 |
|         | 60/60                           |               | 004H7604 | 004H7592 | 004H7580 |
|         | 66/66                           |               | 004H7605 | 004H7593 | 004H7581 |
|         | 70/70                           |               | 004H7606 | 004H7594 | 004H7582 |

<sup>1)</sup> Available also with 1 inch connection size. Please contact your Danfoss representative.

<sup>2)</sup> first pass/second pass

Ordering (continued)

Accessories:  
Insulation for 1-pass

EPP (Expanded Polypropylene) insulation

| No. of plates | Type coverage (plate number) |          |          |
|---------------|------------------------------|----------|----------|
|               | H                            | M        | L        |
| 10            | 004H4201                     | 004H4201 | 004H4201 |
| 16            |                              |          |          |
| 20            |                              |          |          |
| 26            |                              |          |          |
| 30            |                              |          |          |
| 36            |                              |          |          |
| 40            | 004H4202                     | 004H4202 | 004H4202 |
| 50            |                              |          |          |
| 60            |                              |          |          |
| 70            |                              |          |          |
| 80            | 004H4203                     | 004H4203 | 004H4203 |
| 90            |                              |          |          |
| 100           |                              |          |          |
| 110           | 004H4203                     | -        | 1)       |
| 120           |                              |          |          |
| 140           |                              |          |          |
| 140           |                              |          |          |

PU (Polyurethane) insulation

| No. of plates | Type coverage (plate number) |          |          |
|---------------|------------------------------|----------|----------|
|               | H                            | M        | L        |
| 10            | 004H4210                     | 004H4210 | 004H4210 |
| 16            |                              |          |          |
| 20            |                              |          |          |
| 26            |                              |          |          |
| 30            |                              |          |          |
| 36            |                              |          |          |
| 40            | 004H4211                     | 004H4211 | 004H4211 |
| 50            |                              |          |          |
| 60            |                              |          |          |
| 70            |                              |          |          |
| 80            | 004H4212                     | 004H4212 | 004H4212 |
| 90            |                              |          |          |
| 100           |                              |          |          |
| 110           | 004H4212                     | -        | 004H4213 |
| 120           |                              |          |          |
| 140           |                              |          |          |
| 140           |                              |          |          |

1) EPP insulation is not available please order PU insulation for this size.

Accessories:  
Insulation for 2-pass

EPP (Expanded Polypropylene) insulation

| No. of plates | Type coverage (plate number) |          |          |
|---------------|------------------------------|----------|----------|
|               | H                            | M        | L        |
| 20/20         | 004H4201                     | 004H4201 | 004H4202 |
| 26/26         |                              |          |          |
| 30/30         |                              |          |          |
| 36/36         | 004H4202                     | 004H4202 | 004H4203 |
| 40/40         |                              |          |          |
| 46/46         |                              |          |          |
| 50/50         |                              |          |          |
| 56/56         | 004H4203                     | 004H4203 | 1)       |
| 60/60         |                              |          |          |
| 66/66         |                              |          |          |
| 70/70         | 1)                           | 1)       | 1)       |

PU (Polyurethane) insulation

| No. of plates | Type coverage (plate number) |          |          |
|---------------|------------------------------|----------|----------|
|               | H                            | M        | L        |
| 20/20         | 004H4210                     | 004H4210 | 004H4211 |
| 26/26         |                              |          |          |
| 30/30         |                              |          |          |
| 36/36         | 004H4211                     | 004H4211 | 004H4212 |
| 40/40         |                              |          |          |
| 46/46         |                              |          |          |
| 50/50         |                              |          |          |
| 56/56         | 004H4212                     | 004H4212 | 004H4213 |
| 60/60         |                              |          |          |
| 66/66         |                              |          |          |
| 70/70         | 004H4213                     | 004H4214 | 004H4214 |

1) EPP insulation is not available please order PU insulation for this size.

Accessories-Tailpieces

| Picture | Description         | Connection          | Code No. <sup>1)</sup> |
|---------|---------------------|---------------------|------------------------|
|         | Solder tailpieces   | G 1 1/4" / 28 mm    | 004B1358               |
|         |                     | G 1" / 22 mm        | 004B2906               |
|         |                     | G 1" / 18 mm        | 004B2905               |
|         |                     | G 1" / 15 mm        | 004B2904               |
|         | Weld-on tailpieces  | G 1" / DN 20        | 003H6909               |
|         |                     | G 1" / DN 25        | 004B2903               |
|         |                     | G 1 1/4" / DN 25    | 003H6910               |
|         | Threaded tailpieces | G 1 1/4" / DN 32    | 004B1343               |
|         |                     | G 1 1/4" / G 1"     | 004H4205               |
|         |                     | G 1 1/4" / G 1 1/2" | 004H4206               |
|         |                     | G 1" / G 3/4"       | 004B2913               |

1) One set contains 2 tailpieces with union nuts and gaskets

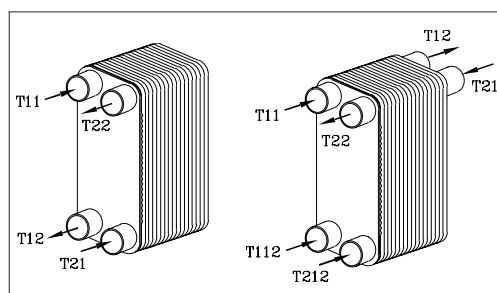
Accessories-Bracket<sup>1)</sup>

| Picture | Connection      | Code No. |
|---------|-----------------|----------|
|         | Thread G 1 1/4" | 004H4200 |
|         | Thread G 1"     | 004B2919 |

1) Bracket set consist of bracket and 2 seeger rings

Design and function

- T11 - Primary side in
- T12 - Primary side out
- T112 - Primary side second inlet (2-pass)
- T21 - Secondary side in
- T22 - Secondary side out
- T212 - Secondary side second inlet (2-pass)



Danfoss 2 pass heat exchangers are made with 6 connections, as they are primarily used to heat tap water. There is one additional connection to allow circulation of hot water and one connection to connect and extract heat from return water from heating heat exchanger. Connections T112 and T212 can be blocked if they are not used.

Technical data

| Type                    |     | XB 12L-1   | XB 12M-1 | XB 12H-1 |
|-------------------------|-----|--|----------|----------|
| Max. working pressure   | bar | 25   |          |          |
| Min. / Max. temperature | °C  | -10 / 180  |          |          |
| Flow medium             |     | DH: Circulation water / glycolic water up to 50%<br>DC: ethylene-, propylene-glycolic water, ethanol-water solutions and other suitable heat transfer media. (Please contact your Danfoss representative). |          |          |
| Volume/channel          | Ltr | 0,042  | 0,032    | 0,027    |
| Connection type         |     | Cylindrical external thread acc. to DIN ISO 228/1  |          |          |
| Connection size         |     | G 1 ¼" or G 1"   |          |          |
| Weight                  | kg  | 1-pass: G 1 ¼" / G 1" connection: 1,53+0,076*n / 1,36+0,076*n<br>2-pass: G 1 ¼" / G 1" connection: 1,77+0,076*n / 1,52+0,076*n   |          |          |
| <b>Materials</b>        |     |  |          |          |
| Plate                   |     | Stainless steel, EN 1.4404 (AISI 316L)   |          |          |
| Brazing                 |     | Copper   |          |          |

Insulation

| Type                |                 | PU (Polyurethane) | EPP (Expanded Polypropylene) |
|---------------------|-----------------|-------------------|------------------------------|
| Heatconductivity, λ | W/mK            | 0,035             | 0,038                        |
| Max temperature     | Permanent       | 130               | 110                          |
|                     | Short term peak | 160               |                              |
| Wall thickness      | mm              | 20                | 30                           |

Dimensions <sup>1)</sup>

| Type | Connection           |                    |
|------|----------------------|--------------------|
|      | G 1 ¼" <sup>1)</sup> | G 1" <sup>1)</sup> |
| A    | 289                  |                    |
| B    | 118                  |                    |
| C    | 234                  | 235                |
| D    | 63                   | 65                 |
| F    | 25                   | 20                 |

| Type   | E (mm)                           |
|--------|----------------------------------|
| XB 12L | $n \times 1,75 + 10 (+0,5/-3\%)$ |
| XB 12M | $n \times 1,40 + 10 (+0,5/-3\%)$ |
| XB 12H | $n \times 1,2 + 10 (+0,5/-3\%)$  |

*n* = number of plates  
<sup>1)</sup> Cylindrical external thread acc. to DIN ISO 228/1

| Type | Insulation |     |     | Code No. |          |
|------|------------|-----|-----|----------|----------|
|      | A          | B   | E   |          |          |
| EPP  | 352        | 185 | 130 | 004H4201 |          |
|      |            |     | 180 | 004H4202 |          |
|      |            |     | 235 | 004H4203 |          |
| PU   | 336        | 176 | 135 | 004H4210 |          |
|      |            |     | 184 | 197      | 004H4211 |
|      |            |     | 185 | 257      | 004H4212 |
|      |            |     | 188 | 282      | 004H4213 |
|      |            |     | 200 | 337      | 004H4214 |

<sup>1)</sup> Dimensions can be as well extract from Danfoss calculation software "Hexact" which can be downloaded from hexact.danfoss.com.

Dimensions (continuous)

### Mounting bracket

Thread G 1 ¼"    **004H4200**

Thread G 1"    **004B2919**

### Tailpieces

| Picture | Description         | Connection      | Code No.        | a         | b    | SW <sup>1)</sup> |
|---------|---------------------|-----------------|-----------------|-----------|------|------------------|
|         |                     |                 |                 | mm        |      |                  |
|         | Solder tailpieces   | G 1 ¼" / 28 mm  | <b>004B1358</b> | 25,4 / 28 | 33   | 46               |
|         |                     | G 1" / 22 mm    | <b>004B2906</b> | 25,6      | 35   | 37               |
|         |                     | G 1" / 18 mm    | <b>004B2905</b> | 20        | 35   | 37               |
|         |                     | G 1" / 15 mm    | <b>004B2904</b> | 20        | 35   | 37               |
|         | Weld-on tailpieces  | G 1" / DN 20    | <b>003H6909</b> | 26        | 49,5 | 41               |
|         |                     | G 1" / DN 25    | <b>004B2903</b> | 33,5      | 40   | 37               |
|         |                     | G 1 ¼" / DN 25  | <b>003H6910</b> | 33        | 49,5 | 50               |
|         |                     | G 1 ¼" / DN 32  | <b>004B1343</b> | 42,4      | 45   | 46               |
|         | Threaded tailpieces | G 1 ¼" / G 1"   | <b>004H4205</b> | 1"        | 40   | 46               |
|         |                     | G 1 ¼" / G 1 ½" | <b>004H4206</b> | 1 ½"      | 60   | 46               |
|         |                     | G 1" / G ¾"     | <b>004B2913</b> | ¾"        | 35   | 37               |

<sup>1)</sup> Union nut, width across flats