

Danfoss Optyma™ condensing units for Europe

## Match your application needs – every time

With the Danfoss Optyma™ outdoor and indoor condensing units for Europe, with MBP and LBP refrigeration, there is a solution for your exact application needs. Featuring multiple lower-GWP refrigerants, high energy performance ratios and trouble-free installation, they help reduce running costs and increase cooling quality for the safer protection of perishables.

**Make the optimal choice from our extensive range of outdoor and indoor condensing units.**

### Optimal Efficiency

for high cooling quality while reducing system's life-cycle costs and downtime



# Danfoss Optyma™ bare/indoor condensing units

**Robust, efficient and reliable condensing units, saving on service and maintenance costs and reducing energy consumption.**



## Benefits for the contractor

- Broad working envelope
- Multi lower-GWP refrigerants
- Larger units with microchannel condenser reducing the refrigerant charge and smaller units with fine & tube condenser
- Likely the most reliable hermetic reciprocating compressor on the market
- Economical EUR/kW value



## Benefits for the end-user

- Reliable solution
- Low energy consumption under changing working conditions
- Easy & simple condenser maintenance

### Optyma™, Light Commercial up to ~1.5 kW

Complete line featuring a higher efficiency and a reduced footprint, also available with R290, making it the perfect choice for a greener installation. This solution is ideal for OEMs or end-users looking for compact products to fit in small systems, and optimal cooling performance and capacity.



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### Optyma™, Commercial from ~1.5 kW and up

Highly efficient new line with microchannel condenser, multiple lower-GWP refrigerants, and working up to 46°C. Easy to install and service. Quieter by up to 3 dB(A) thanks to 6-pole fan motor instead of 4-pole fan.



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## MBP and LBP applications



- ✓ Industrial processes
- ✓ Milk cooling
- ✓ Cold rooms in fisheries, florists, etc.
- ✓ Commercial fridge and freezers, display cases, bottle coolers, serving tables

## Designation

**OP - LCQN 048 MT A02 E**

1 2 3 4 5 6 7 8

OP = Optyma

<b>1</b>	<b>Application:</b> M = MBP ; L = LBP
<b>2</b>	<b>Platform:</b> C: Air-cooled condensing unit with single fan G: Air-cooled condensing unit with dual fan
<b>3</b>	<b>Refrigerant:</b> R: R134a, R513A, R404A/R507, R407C, R407A, R407F, R448A, R449A, R452A G: R134a, R513A H: R404A/R507 Q: R452A, R404A/R507 N: R290
<b>4</b>	<b>Condenser design:</b> C: Fin & Tube condenser, ambient temperature up to 43°C N: Microchannel condenser, ambient temperature up to 46°C

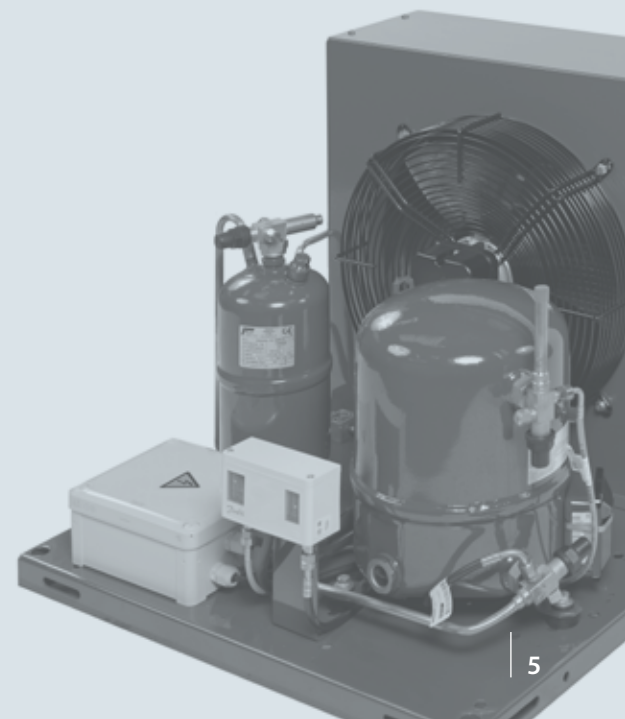
## Feature overview:

	Light Commercial			Light Commercial R290			Commercial
	A00	A01	A04	A09	A10	A11	A02
<b>Ambient temperature</b>	Up to 43°C			Up to 43°C			Up to 46°C
<b>Hermetic reciprocating compressor</b>	MPT, MLY, NL, SC, GS, FR, TL, NF			NLY, NBC, NPT, NS, NX			MTZ, NTZ
<b>Unit base</b>	Rails or base plate						Base plate
<b>Condenser type</b>	Fin & Tube (painted)						Microchannel
<b>Fan</b>	AC/EC	AC/EC	AC/EC	EC	EC	EC	AC 6 pole
<b>Bracket &amp; tube for pressostat mounting</b>	-	yes	yes	yes	-	-	-
<b>Dual KP pressure switch</b>	-	-	yes	-	-	-	yes
<b>Schrader valve</b>	-	-	-	yes	yes	yes	-
<b>Wired electrical box</b>	yes	yes	yes	yes	yes	yes	yes
<b>Mini HP/LP pressostat</b>	-	-	-	-	yes	-	-
<b>Power cord</b>	-	-	yes	-	yes	-	-
<b>Receiver</b>	-	yes	yes	-	Combo drier + receiver	-	yes
<b>Net weight in kg</b>	<b>14 chassis:</b> Lighter: 14 Bigger: 42			<b>4 chassis:</b> Lighter: 14 Bigger: 41			<b>5 chassis:</b> Lighter single fan: 62 Bigger single fan: 158 Lighter dual fan: 134 Bigger dual fan: 212
<b>Dimensions in mm (height x width x depth)</b>	<b>14 chassis:</b> Smaller: 205 x 289 x 424 Larger: 350 x 445 x 613			<b>4 chassis:</b> Smaller: 226 x 286 x 513 Larger: 350 x 442 x 480			<b>5 chassis:</b> Smaller single fan: 545 x 630 x 650 Larger single fan: 836.5 x 1200 x 800 Smaller dual fan: 693.5 x 1500 x 870 Larger dual fan: 836.5 x 1500 x 870

## Overview by range and refrigerant:

Min / Max cooling capacity (kW)	Light Commercial	Commercial
<b>Medium temperature (MBP)</b>		
R290	0.2 - 1.4	
R448A		2 - 20.5
R449A		2 - 20.5
R134a	0.1 - 1.6	1.3 - 13.1
R452A		2.2 - 20.6
R407A		1.9 - 19.1
R407C		1.8 - 19.1
R407F		2 - 20.1
R404A/507	0.3 - 17	2.2 - 21.7
<b>Low temperature (LBP)</b>		
R290	0.1 - 0.7	
R452A	0.1 - 0.3	0.8 - 6.1
R404A/507	0.1 - 0.9	0.9 - 6.6

<b>5</b>	<b>Compressor displacement:</b> Example 048 = 48 cm <sup>3</sup>
<b>6</b>	<b>Reciprocating compressor platform:</b> FR = FR      NF = NF SC = SC      GS = GS NX = NX      NB = NBC NS = NS      NY = NLY NP = NPT      MP = MPT MY = MLY      MX = MX NT = NTZ      MT = MTZ TL = TL      NL = NL
<b>7</b>	<b>Version:</b> A00, A01, A02, A04, A09, A10, A11. See table above for features within each version.
<b>8</b>	<b>Electrical code:</b> A: Compressor 230V/1P/50-60Hz, fan 230V/1P/50-60Hz G: Compressor 230V/1P/50Hz, fan 230V/1P/50Hz E: Compressor 400V/3P/50Hz, fan 230V/1P/50Hz



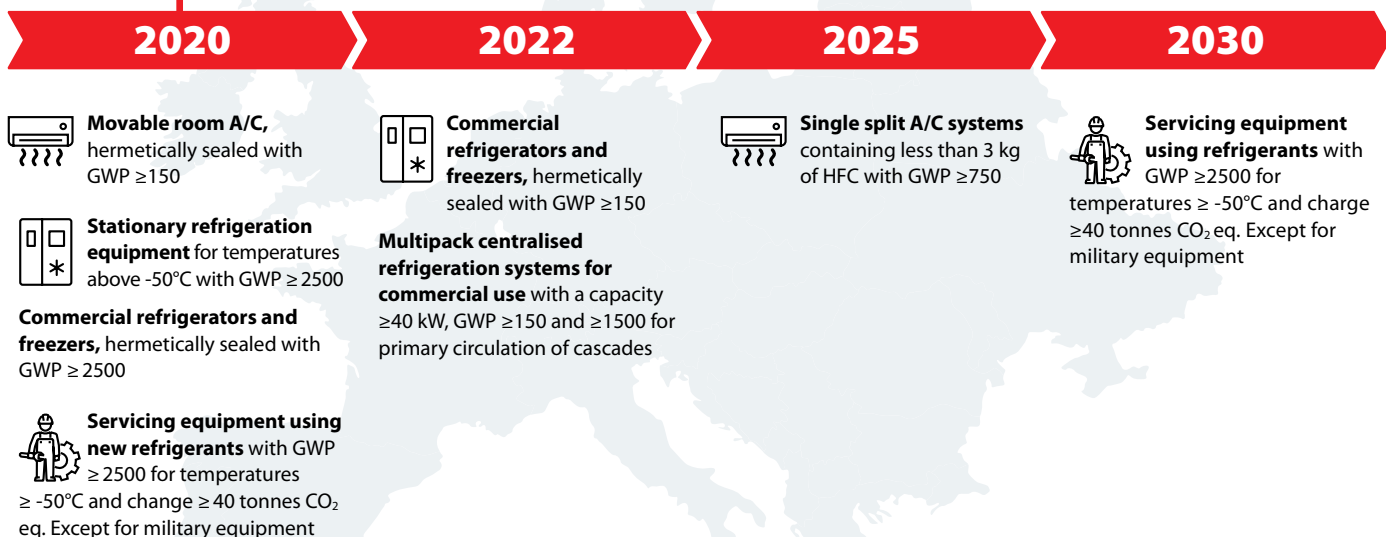
# Reduce direct and indirect emissions

By choosing lower GWP refrigerants and highly efficient condensing units, installers make the choice of creating a sustainable cooling industry. See the regulations impacting the condensing units in Europe and make the right choice with Danfoss solutions.



## F-Gas affected applications and timeline

The F-Gas regulation puts in place HFC phase down on high GWP (Global Warming Potential) refrigerants.



## EcoDesign affected applications

From the 1st July 2018, only condensing units that achieve certain energy performance ratings can get the CE marking and be sold in the EU territories.

ENTR Lot 1 **2015/1095 and 2015/1094** for Professional Refrigeration:



### IMPACTED APPLICATIONS

- Condensing units
- Professional refrigerated storage cabinets
- Blast cabinets
- Process chillers



### SEASONAL ENERGY PERFORMANCE RATIO (SEPR)

SEPR value for:

- Low temperatures: above 2 kW
- Medium temperatures: above 5 kW
- Below these limits: COP

## Minimum Energy Performance Standards for condensing units

Medium temperatures (-10°C) / kW*	Temperature Ranges			
	0.2-1	1-5	5-20	20-50
COP	1.4	1.6		
SEPR**			2.55	2.65

Low temperatures (-35°C) / kW*	Temperature Ranges			
	0.1-0.4	0.4-2	2-8	8-20
COP	0.8	0.95		
SEPR**			1.6	1.7

\* Rated capacity at full load with ambient temperature set at 32°C (Standards: EN13215 and 13771-2).

\*\* The Seasonal Energy Performance Ratio provides cooling performances at standard rating conditions. It is representative of the variations in load and ambient temperatures throughout the year, and calculated as the ratio between annual cooling demand and annual electricity consumption (Standards: EN13215 and 13771-2 and EcoDesign Directive 2009/125/EC).

# Optyma™ Slim Pack

## Light on refrigerant, heavy on efficiency

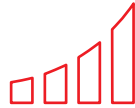
**2.9 kg**  
Less refrigerant on bigger sizes for more savings

Get it all with Optyma™ **Slim Pack**. It combines quiet operation and more value for money with an energy-efficient and compact solution.



### Quick and safe installation and service

Enjoy fast and easy installation with the main switch, service valves, and quick connections. Additionally, the easy-to-clean Microchannel condenser saves you time and effort on servicing.



### High SEPR

All models in the range are highly efficient and well above EcoDesign 2018 thresholds, contributing to a reduction in energy costs.



### Suitable for residential areas

It operates up to 7 dB(A) lower than other packaged units of the same capacity and the fan-speed controller further reduces the sound level by up to 4 dB(A).



### Optimized footprint for floor and wall mounting

Thanks to its slim design and low weight, it is easy to transport and handle during installation – particularly for wall mounting.

### W09 FEATURES

- Preset fan-speed controller for quieter operation
- Main switch for faster stand-alone installation and start-up, and safer maintenance



## Standard range (W05) and upgraded range (W09)

**Micro-channel heat exchanger is light and easy to clean**

**Resistance to corrosion of the heat exchanger and housing prolongs the lifetime of the unit**

**W09 version: Main switch for faster standalone installation and start up, and safer maintenance**

**Quick connections accelerate installation: just mount, braze, and plug**

**Accessible fan and condenser for easy maintenance**

**W09 version: XGE fan speed controller for quieter & smoother operation**

**Filter drier and sight glass protect the unit from moisture, acids, and solid particles. Flare connections simplify maintenance**

**Accessible service ports on service valves (suction and liquid)**

**Thanks to the schrader valve the unit is compatible with various fan control devices**

**Dual KP17WB pressure control for enhanced safety**

**Receiver with shut-off valve makes servicing easier**

**Crankcase heater protects the compressor when operating under cold weather conditions**

## High SEPR/COP cuts energy costs

E.g. in a cold room where fruit & vegetables are stored and with 2.7 kW of cooling capacity.

### Optyma™ Slim Pack MBP unit vs equivalent unit in the market\*

Cooling cap.: 2.7 kW  
Refrigerant: R134a



UNIT	Danfoss	Market
COP	2.18	1.70
USAGE	~ 8 245 kWh	~ 10 636 kWh

## Annual energy consumption saved: 2 391 kWh

Savings based on cost of energy:

FRANCE: 0.11€ / 1 KWH = 2 391 x 0.11 = 263€  
UK: 0.15€ / 1 KWH = 2 391 x 0.15 = 359€  
GERMANY: 0.20€ / 1 KWH = 2 391 x 0.20 = 478€

**478€** annual electricity savings made by your customer in Germany

\* Source: Danfoss

# Optyma™, Light Commercial – up to ~1.5 kW

Refrigerants with a GWP level below 2500    Refrigerants with a GWP level above 2500

## R134a – MBP

Model	Version	Phase	Code no.	Cooling capacity in kW at evaporating temp. -10°C	Rated COP
OP-MCGC003	A00	1	114X0104	0.13	1.08
	A01	1	114X0105		
	A04	1	114X0107		
OP-MCGC004	A00	1	114X0108	0.15	1
	A01	1	114X0109		
	A04	1	114X0111		
OP-MCGC005	A00	1	114X0112	0.18	1.11
	A01	1	114X0113		
	A04	1	114X0115		
OP-MCGC006	A00	1	114X0200	0.28	1.51
	A01	1	114X0201		
	A04	1	114X0203		
OP-MCGC006	A00	1	114X0228	0.29	1.49
OP-MCGC007	A00	1	114X0216	0.30	1.43
	A01	1	114X0217		
OP-MCGC008	A00	1	114X0224	0.35	1.45
	A01	1	114X0225		
	A04	1	114X0227		
OP-MCGC007	A00	1	114X0244	0.35	1.48
OP-MCGC008	A00	1	114X0204	0.39	1.56
	A01	1	114X0205		
OP-MCGC010	A04	1	114X0223	0.41	1.41
OP-MCGC008	A00	1	114X0352	0.41	1.48
OP-MCGC011	A00	1	114X0336	0.46	1.41
	A01	1	114X0337		
	A04	1	114X0339		
OP-MCGC012	A00	1	114X0340	0.52	1.41
	A01	1	114X0341		
OP-MCGC015	A00	1	114X0448	0.65	1.45
	A01	1	114X0449		
	A04	1	114X0451		
OP-MCGC021	A00	1	114X0568	0.88	1.41
OP-MCGC021	A00	1	114X0564	0.86	1.41
	A01	1	114X0565		
	A04	1	114X0567		
OP-MCGC026	A01	1	114X0773	1.32	1.77
OP-MCGC034	A01	1	114X0781	1.65	1.73

## R404A – MBP

Model	Version	Phase	Code no.	Cooling capacity in kW at evaporating temp. -10°C	Rated COP
OP-MCHC004	A00	1	114X0301	0.32	1.60
	A01	1	114X0302		
	A04	1	114X0303		
OP-MCHC006	A00	1	114X2316	0.50	1.41
	A01	1	114X2317		
	A04	1	114X2319		
OP-MCHC007	A00	1	114X2424	0.66	1.55
	A01	1	114X2425		
	A04	1	114X2427		
OP-MCHC010	A00	1	114X0403	0.85	1.74
	A01	1	114X0404		
	A04	1	114X0405		
OP-MCHC013	A00	1	114X0406	1.00	1.70
	A01	1	114X0407		
OP-MCHC015	A01	1	114X0408	1.27	1.60
	A04	1	114X2651		
OP-MCHC018	A01	1	114X2649	1.45	1.76
	A04	1	114X0702		
OP-MCHC021	A01	1	114X0703	1.72	1.74
	A04	1	114X2765		
	A01	1	114X2767		
	A04	1	114X2767		

## R404A – LBP

Model	Version	Phase	Code no.	Cooling capacity in kW at evaporating temp. -35°C	Rated COP
OP-LCHC004	A00	1	114X1208	0.09	0.80
	A01	1	114X1209		
	A04	1	114X1211		
OP-LCQC004	A01	1	114X1221	0.12	0.89
OP-LCHC006	A00	1	114X1216	0.15	0.80
	A01	1	114X1217		
	A04	1	114X1219		
OP-LCQC006	A01	1	114X1337	0.18	0.93
OP-LCHC007	A00	1	114X1328	0.19	0.89
	A01	1	114X1329		
	A04	1	114X1331		
OP-LCQC008	A01	1	114X1341	0.20	0.89
OP-LCHC008	A00	1	114X1304	0.20	0.87
	A01	1	114X1301		
	A04	1	114X1302		
OP-LCHC012	A00	1	114X1440	0.28	0.84
	A04	1	114X1443		
OP-LCHC012	A00	1	114X1444	0.31	0.83
OP-LCQC012	A01	1	114X1449	0.29	0.94
OP-LCHC015	A00	1	114X1548	0.34	0.81
	A01	1	114X1549		
	A04	1	114X1551		
OP-LCQC012	A01	1	114X1569	0.35	0.97
OP-LCQC014	A01	1	114X1573	0.40	0.95
OP-LCHC018	A00	1	114X1556	0.42	0.95
	A01	1	114X1557		
	A04	1	114X1559		
OP-LCHC021	A00	1	114X1600	0.47	0.97
	A01	1	114X1601		
	A04	1	114X1602		
OP-LCHC026	A01	1	114X1673	0.63	0.95
OP-LCHC034	A01	1	114X1781	0.89	1
	A04	1	114X1783		



For regular updates and detailed capacities, please refer to Coolselector®2 software  
[coolselector.danfoss.com](http://coolselector.danfoss.com)

Conditions EN 13215 (dew point): +32°C ambient temp., superheat 10K, subcooling 0K  
 Rated COP & SEPR at EcoDesign rating conditions: +32°C ambient, subcooling 0 K, RGT20°C



## Danfoss is with you **all the way**

Danfoss has a global market presence selling in **over 100 countries** and with factories, Application Development Centers (ADC) and laboratories all over the globe\*.

This global footprint ensures the highest level of **customer service and application expertise** with local technical support near you- speaking your language, and understanding your everyday needs and challenges. Backed by a wide distribution network trained to select, specify and sell our products, it's the guarantee that we are by your side, all the way.

For **24/7 support**, we have developed intuitive tools and apps to help you to make the right product selection, choose an alternative refrigerant, troubleshoot your installation or be trained to use natural refrigerants or the latest Danfoss products.

Learn more.  
Achieve more.

Cold room:

[coldroom.danfoss.com](http://coldroom.danfoss.com)

Product selection:

[coolselector.danfoss.com](http://coolselector.danfoss.com)

Free learning platform:

[learning.danfoss.com](http://learning.danfoss.com)

Refrigerants and Energy Efficiency:

[refrigerants.danfoss.com](http://refrigerants.danfoss.com)

\* Danfoss ADCs are located in:  
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