ENGINEERING
TOMORROW

Danfoss Optyma™ condensing units for Europe

Match your application needs – every time

With the Danfoss Optyma™ outdoor and indoor condensing units for Europe, for 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 safer protection of perishables.

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

Optimal Efficiency

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

Available from... dean&wood · hrp · refrigeration wholesale · dwg

cr.danfoss.com

Danfoss Optyma™
packaged/outdoor condensing units

Highly efficient and reliable plug and play condensing units designed with the contractor and end-user in mind, and providing unique benefits.

Benefits for the contractor

- Simple and fast selection and installation, reduced maintenance time
- Models compatible with multiple lower GWP refrigerants
- Reduced refrigerant costs thanks to microchannel condenser inside

Benefits for the end-user

- Increased food safety and longer products shelf life
- Units suitable for residential areas thanks to low sound level operation
- Reduced life cycle costs of refrigeration equipment thanks to highly efficient units

Optyma™ **Slim Pack W05**

Compact and cost effective. When space, quiet operation, efficiency and simple installation matter.
With microchannel condenser

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Optyma™ **Plus**

Top performer. When quietness, high efficiency, connectivity and fastest installation and maintenance matter.
With electronic controller

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Optyma™ **Plus INVERTER**

Premium unit. When top efficiency, fastest installation and maintenance, tight temperature and humidity control matter.
With variable speed drive

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MBP and LBP **applications**

- Cold rooms, display cabinets in convenience stores, mini-markets, restaurants, fisheries, butcheries, bakeries, florists, laboratories
- Wine cellars
- Milk cooling
- Industrial processes
- Dairy and general food storage

Designation

OP - MSXM034 ML W05 G

1 2 3 4 5 6 7 8

OP = Optyma

1	Application: **M** = MBP ; **L** = LBP
2	Condensing unit family: **S** = Slim Pack / **P** = OP Plus, OP Plus INVERTER
3	Refrigerant: **H** = R404A/R507 ; **G** = R134a ; **Q** = R452A, R404A/R507 **X** = R404A/R507, R134a, R407A, R407F, R448A, R449A, R452A **Y** = R404A/R507, R449A ; **P** = R448A, R449A, R407A, R407A, R404A/507
4	**M** = Microchannel condenser
5	Displacement in cm^3: Example 034 = 34 cm^3
6	Compressor platform: such as VVL = variable speed scroll VLZ
7	Version: **W05:** Optyma™ **Slim Pack** **P00**: Optyma™ **Plus** **P01**: Optyma™ **Plus INVERTER**
8	Electrical code: **G** = 230V/1-phase compressor & fan **E** = 400V/3-phase compressor & 230V/1-phase fan

Feature overview:

	Optyma™ Slim Pack W05	Optyma™ Plus	Optyma™ Plus INVERTER
IP level	IP54	IP54	IP54
Compressor technology	Scroll/Reciprocating	Scroll/Reciprocating	Variable speed scroll
Control box (pre-wired E-panel)	yes	yes	yes
Microchannel condenser	yes	yes	yes
Fan speed controller	-	yes	yes
Main switch (circuit breaker)	-	yes	yes
Filter drier (flare connections)	yes	yes	yes
Sight glass	yes	yes	yes
Crankcase heater	yes	yes	yes
HP/LP adjustable pressostat	Mechanical	Electronic	Electronic
Fail safe mini-pressostat	-	Mechanical	Mechanical
Access door(s)	-	yes	yes
Acoustic insulation	-	yes	yes
Condensing unit electronic controller	-	yes	yes
Network connectivity	-	yes	yes
Stack mounting	-	yes	-
Oil separator	-	-	yes
Net weight in kg	B1 housing: from 50.4 to 53 B2 housing: from 61.5 to 77 B3 housing: from 76 to 79	H1 housing: from 49 to 53 H2 housing: from 80 to 94 H3 housing: from 101 to 107 H4 housing: 169	124 & 125
Dimensions in mm (height x width x depth)	B1 housing: 530 x 910 x 364 B2 housing: 690 x 1087 x 464 B3 housing: 825 x 1105 x 464	H1 housing: 652 x 906 x 356 H2 housing: 813 x 1055 x 430 H3 housing: 967 x 1406 x 481 H4 housing: 966 x 1800 x 600	965 x 1406 x 481

Overview by range and refrigerant:

Min / Max Cooling capacity range [kW]	Optyma™ Slim Pack	Optyma™ Plus	Optyma™ Plus INVERTER
Medium temperature (MBP)			
R449A	0.8 - 10.2	0.7 - 14.9	1.7 - 8.3
R448A	3.3 - 10.2	3.3 - 14.9	1.7 - 8.3
R134a	0.6 - 6.6	1.7 - 10.2	-
R407A	3.3 - 9.9	3.3 - 14.6	1.7 - 8.4
R407F	3.5 - 10.2	3.5 - 15.5	1.8 - 9
R452A (preliminary data)	1.5 - 10.8	1.5 - 16.2	-
R404A/507	0.9 - 10.3	0.7 - 16	1.8 - 9
Low temperature (LBP)			
R452A	0.4 - 3.3	0.4 - 6.1	-
R404A/507	0.4 - 3.6	0.5 - 6.2	-

Rating conditions EN 13215 (dew point):
MBP: Ambient temp = 32°C; Evap temp = -10°C; Superheat = 10K; Subcooling = 0K / **LBP:** Ambient temp = 32°C; Evap temp = -35°C; Superheat = 10K; Subcooling = 0K

Selection examples for cold rooms

Precise your selection by using the Cold Room module in Coolselector 2 software.

Range	Model and cooling capacity by cold room type	Meat +1°C - 18h		Fish +1°C - 18h		Laboratories +12°C - 18h		Fruit & Vegetables +8°C - 18h		Fruit & Vegetables 0°C - 18h		Butter, Eggs, Cheese +5°C - 18h		Freezers -18°C - 16h	
		Cap. [W]	CR* (m^3)	Cap. [W]	CR* [m^3]	Cap. [W]	CR* [m^3]	Cap. [W]	CR* [m^3]	Cap. [W]	CR* [m^3]	Cap. (W)	CR* [m^3]	Cap. [W]	CR* [m^3]
OP Slim Pack	**OP-MSGM018 with R134a**	900	6	900	6	1 270	8	1 270	17	900	7	1 030	9		
OP Slim Pack	**OP-MSYM012 with R449A**	1 090	8	1 090	8	1 530	10	1 530	25	1 090	8	1 240	12		
OP Plus	**OP-MPYM018 with R449A**	1 350	11	1 350	11	1 890	13	1 890	30	1 350	12	1 530	16		
OP Plus	**OP-MPYM024 with R452A**	1 570	14	1 570	14	2 200	15	2 200	40	1 570	14	1 790	20		
OP Plus INVERTER	**OP-MPPM044 with R448A**	2 500	20	2 500	20	3 400	20	3 500	65	2 500	20	2 800	35		
OP Slim Pack	**OP-LSQM034 with R452A**													680	2
OP Plus	**OP-LSQM068 with R452A**													1 450	9

*Data relate to +32°C ambient temperature; please refer to Danfoss for other working conditions. Cold room data: Temperature - Daily working hours. * Volume of cold room.*

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

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

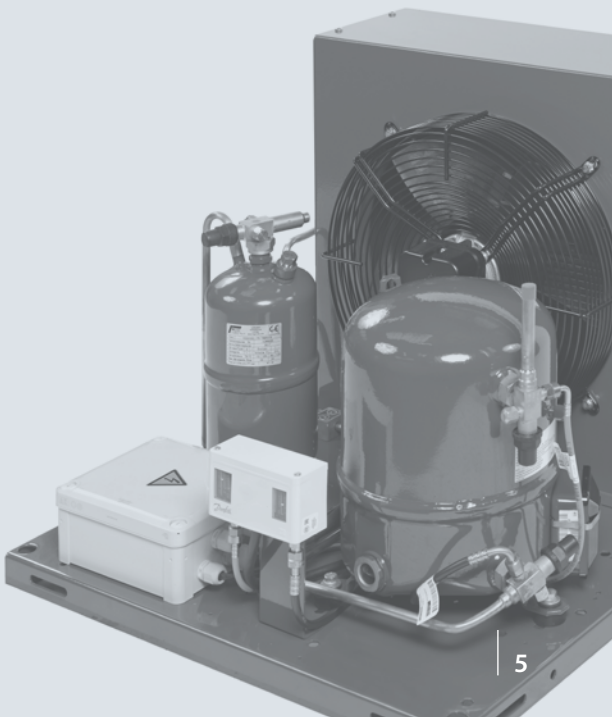
Feature overview:

	Light Commercial			Light Commercial R290			Commercial
	A00	A01	A04	A09	A10	A11	A02
Ambient temperature	Up to 43°C			Up to 43°C			Up to 46°C
Hermetic reciprocating compressor	MPT, MLY, NL, SC, GS, FR, TL, NF			NLY, NBC, NPT, NS, NX			MTZ, NTZ
Unit base	Rails or base plate						Base plate
Condenser type	Fin & Tube (painted)						Microchannel
Fan	AC/EC	AC/EC	AC/EC	EC	EC	EC	AC 6 pole
Bracket & tube for pressostat mounting	-	yes	yes	yes	-	-	-
Dual KP pressure switch	-	-	yes	-	-	-	yes
Schrader valve	-	-	-	yes	yes	yes	-
Wired electrical box	yes	yes	yes	yes	yes	yes	yes
Mini HP/LP pressostat	-	-	-	-	yes	-	-
Power cord	-	-	yes	-	yes	-	-
Receiver	-	yes	yes	-	Combo drier + receiver	-	yes
Net weight in kg	**14 chassis:** Lighter: 14 Bigger: 42			**4 chassis:** Lighter: 14 Bigger: 41			**5 chassis:** Lighter single fan: 62 Bigger single fan: 158 Lighter dual fan: 134 Bigger dual fan: 212
Dimensions in mm (height x width x depth)	**14 chassis:** Smaller: 205 x 289 x 424 Larger: 350 x 445 x 613			**4 chassis:** Smaller: 226 x 286 x 513 Larger: 350 x 442 x 480			**5 chassis:** 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
Medium temperature (MBP)		
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
Low temperature (LBP)		
R290	0.1 - 0.7	
R452A	0.1 - 0.3	0.8 - 6.1
R404A/507	0.1 - 0.9	0.9 - 6.6

5	**Compressor displacement:** Example 048 = 48 cm³
6	**Reciprocating compressor platform:** **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
7	**Version:** A00, A01, A02, A04, A09, A10, A11. See table above for features within each version.
8	**Electrical code:** **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



European regulations impacting condensing units

New energy regulations, legal obligations and labels, refrigerant bans and phase-downs: how is it impacting my applications, what to consider before selecting my products for the installation? Find your way with Danfoss.

F-Gas affected applications

The F-Gas regulation puts in place HFC phase down from 2015 to 2030 by means of quota systems and sectorial bans on high GWP (Global Warming Potential) refrigerants.

2015

Domestic refrigerators and freezers with GWP ≥150

2018

-37%
OF CO_2 EQ. TONS

- Risk of shortage
- Price impact

2020

GWP >2500
NEW INSTALLATIONS
R404A

Best alternatives

Medium temp:	Low temp:
<150 gr: R290	**<150 gr:** R290
>150 gr: R134a, R407A/F, R448A/R449A, R513A, R450A	**>150 gr:** R448A/R449A, R452A

Movable room A/C, hermetically sealed with GWP ≥150

Stationary refrigeration equipment for temperatures above -50°C with GWP ≥ 2500

Servicing equipment using new refrigerants with GWP ≥ 2500 for temperatures ≥ -50°C and change ≥ 40 tonnes CO_2 eq. Except for military equipment

Commercial refrigerators and freezers, hermetically sealed with GWP ≥ 2500

2022

Commercial refrigerators and freezers, hermetically sealed with GWP ≥150

Multipack centralised refrigeration systems for commercial use with a capacity ≥40 kW, GWP ≥150 and ≥1500 for primary circulation of cascades

2025

Single split A/C systems containing less than 3 kg of HFC with GWP ≥750

2030

Servicing equipment using refrigerants with GWP ≥2500 for temperatures ≥ -50°C and charge ≥40 tonnes CO_2 eq. Except for military equipment

EcoDesign ... and energy efficiency

The EU EcoDesign directive aims to improve the overall performance of products and thereby protect the environment by reducing indirect CO_2 emissions. Manufacturers must comply to get the CE marking on their products. It includes several lots that impact the HVACR industry and may be complemented by the Energy Labelling Directive:

ENTR Lot 1: Regulation: 2015/1095, 2015/1094. Professional refrigeration.

AFFECTED APPLICATIONS WITHIN REFRIGERATION

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

CE Danfoss condensing units are CE marked!

2 STEPS: JULY 1st 2016 AND 2018

From July 1st 2016, all condensing units placed for the first time on the market in the European Union must comply with the **Minimum Efficiency Performance Standards (MEPS)**. **From July 1st 2018**, these MEPS are more stringent.

SEASONAL ENERGY PERFORMANCE RATIO (SEPR)

SEPR is the value to measure the energy performance of the condensing units:

- For low temperatures: above 2 kW
- For medium temperatures: above 5 kW
- Below these limits, COP remains the value

Minimum Energy Performance Standards for condensing units

The table shows 2016 and 2018 EcoDesign application requirements for condensing units listed as COP & SEPR.

	Medium temperatures (-10°C)			
	COP		SEPR**	
kW*	**0.2 - 1**	**1 - 5**	**5 - 20**	**20 - 50**
July 1st 2016	1.2	1.4	2.25	2.35
July 1st 2018	**1.4**	**1.6**	**2.55**	**2.65**

	Low temperatures (-35°C)			
	COP		SEPR**	
kW*	**0.1 - 0.4**	**0.4 - 2**	**2 - 8**	**8 - 20**
July 1st 2016	0.75	0.85	1.5	1.6
July 1st 2018	**0.8**	**0.95**	**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.

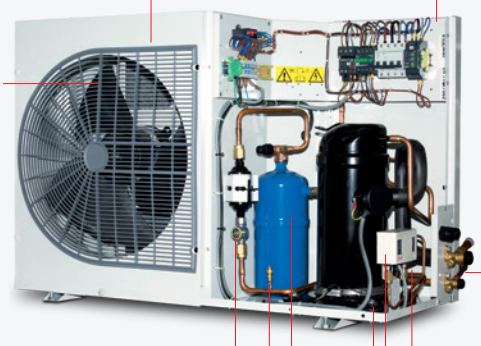
Quick and safe installation and service
Enjoy fast and easy installation with the main switch, service valves, and quick connections. Additionally, the easy-to-clean Microchannel condenser saves you time and effort on servicing.

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.

Standard range **(W05)**



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 in the UK:
£0.13 / 1 KWH = 2 391 x 0.13 = £311

£311 annual electricity savings made by your customer in the UK

* Source: Danfoss

Optyma™ Slim Pack

Refrigerants with GWP level below 2500

R449A – MBP

Model	Version	Phases	Code no.	Cooling capacity in [kW] at evaporating temp. -10°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-MSYM009	W05	1	114X7108	0.80	1.89			31
OP-MSYM012	W05	1	114X7109	1.10	1.89			34
OP-MSYM014	W05	1	114X7110	1.15	1.60			29
OP-MSYM018	W05	1	114X7111	1.47	1.91			39
OP-MSYM024	W05	1	114X7097	1.85	2.08			33
OP-MSYM026	W05	1	114X7083	2.05	1.97			36
	W05	3	114X7093					
OP-MSYM034	W05	1	114X7084	2.55	1.92			37
	W05	3	114X7094					
OP-MSXM034	W05	1	114X7061	3.34	2.07			38
	W05	3	114X7062					
OP-MSXM044	W05	1	114X7161	4.19	1.98			38
	W05	3	114X7162					
OP-MSXM046	W05	1	114X7063	4.44	2.03			38
	W05	3	114X7064					
OP-MSXM057	W05	1	114X7065	5.28	1.84	3.15	10 689	38
	W05	3	114X7066					
OP-MSXM068	W05	1	114X7067	6.77	2.20	3.48	11 946	39
	W05	3	114X7068					
OP-MSXM080	W05	1	114X7069	7.80	2.14	3.49	13 664	39
	W05	3	114X7070					
OP-MSXM099	W05	3	114X7071	9.59	2.09	3.46	17 433	39
OP-MSXM108	W05	3	114X7072	10.17	1.96	3.31	19 336	39

R448A – MBP

Model	Version	Phases	Code no.	Cooling capacity in [kW] at evaporating temp. -10°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-MSXM034	W05	1	114X7061	3.35	2.07			38
	W05	3	114X7062					
	W09	3	114X7196					
OP-MSXM044	W05	1	114X7161	4.19	1.98			38
	W05	3	114X7162					
OP-MSXM046	W05	1	114X7063	4.45	2.03			38
	W05	3	114X7064					
OP-MSXM057	W05	1	114X7065	5.29	1.84	3.15	10 689	38
	W05	3	114X7066					
OP-MSXM068	W05	1	114X7067	6.78	2.20	3.48	11 946	39
	W05	3	114X7068					
OP-MSXM080	W05	1	114X7069	7.81	2.14	3.49	20 322	39
	W05	3	114X7070					
OP-MSXM099	W05	3	114X7071	9.60	2.09	3.46	17 433	39
OP-MSXM108	W05	3	114X7072	10.18	1.96	3.31	19 336	39

Did you know?

Refrigerants flexibility across our ranges:

OP-MSXM057: The "X" letter means that this model is also compatible with multiple refrigerants such as R134a or R407F. This simplifies stock and logistics and reduces costs. Check our designation for the options.

Conditions EN 13215 (dew point): +32°C ambient temp., superheat 10K, subcooling 0K
Rated COP, SEPR & annual electricity consumption at EcoDesign rating conditions:
+32°C ambient, subcooling 0 K, RGT20°C
Values refer to 3-phase units

For regular updates and detailed capacities, please refer to Coolselector®2 software
coolselector.danfoss.co.uk

Optyma™ Slim Pack

Refrigerants with GWP level below 2500

R134a – MBP

Model	Version	Phases	Code no.	Cooling capacity in [kW] at evaporating temp. -10°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-MSGM012	W05	1	114X7099	0.64	1.71			31
OP-MSGM015	W05	1	114X7100	0.72	1.64			32
OP-MSGM018	W05	1	114X7101	0.86	1.61			32
OP-MSGM021	W05	1	114X7102	1.03	1.74			32
OP-MSGM026	W05	1	114X7103	1.28	1.80			31
OP-MSGM033	W05	1	114X7104	1.66	2.02			36
OP-MSXM034	W05	1	114X7061	2.16	2.25			38
	W05	3	114X7062					
OP-MSXM044	W05	1	114X7161	2.74	2.23			38
	W05	3	114X7162					
OP-MSXM046	W05	1	114X7063	2.92	2.33			38
	W05	3	114X7064					
OP-MSXM057	W05	1	114X7065	3.54	2.28			38
	W05	3	114X7066					
OP-MSXM068	W05	1	114X7067	4.38	2.37			39
	W05	3	114X7068					
OP-MSXM080	W05	1	114X7069	5.09	2.26	3.43	9 350	39
	W05	3	114X7070					
OP-MSXM099	W05	3	114X7071	6.29	2.46	3.83	10 641	39
OP-MSXM108	W05	3	114X7072	6.64	2.40	3.74	11 517	39

R407F – MBP

Model	Version	Phases	Code no.	Cooling capacity in [kW] at evaporating temp. -10°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-MSXM034	W05	1	114X7061	3.48	2.14			38
	W05	3	114X7062					
OP-MSXM044	W05	1	114X7161	4.31	1.94			38
	W05	3	114X7162					
OP-MSXM046	W05	1	114X7063	4.57	1.94			38
	W05	3	114X7064					
OP-MSXM057	W05	1	114X7065	5.38	1.82	2.98	11 360	38
	W05	3	114X7066					
OP-MSXM068	W05	1	114X7067	7.12	2.23	3.58	12 680	39
	W05	3	114X7068					
OP-MSXM080	W05	1	114X7069	7.99	2.05	3.32	14 449	39
	W05	3	114X7070					
OP-MSXM099	W05	3	114X7071	9.78	1.97	3.23	18 803	39
OP-MSXM108	W05	3	114X7072	10.20	1.85	3.07	20 698	39

R407A – MBP

Model	Version	Phases	Code no.	Cooling capacity in [kW] at evaporating temp. -10°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-MSXM034	W05	1	114X7061	3.29	2.18			38
	W05	3	114X7062					
OP-MSXM044	W05	1	114X7161	4.04	1.98			38
	W05	3	114X7162					
OP-MSXM046	W05	1	114X7063	4.27	1.98			38
	W05	3	114X7064					
OP-MSXM057	W05	1	114X7065	5.10	1.87	3.01	10 758	38
	W05	3	114X7066					
OP-MSXM068	W05	1	114X7067	6.64	2.27	3.62	11 790	39
	W05	3	114X7068					
OP-MSXM080	W05	1	114X7069	7.53	2.17	3.48	13 140	39
	W05	3	114X7070					
OP-MSXM099	W05	3	114X7071	9.16	2.02	3.31	17 376	39
OP-MSXM108	W05	3	114X7072	9.86	1.94	3.19	19 420	39

Conditions EN 13215 (dew point): +32°C ambient temp., superheat 10K, subcooling 0K
Rated COP, SEPR & annual electricity consumption at EcoDesign rating conditions: +32°C ambient, subcooling 0 K, RGT20°C
Values refer to 3-phase units

Optyma™ Slim Pack

Refrigerants with GWP level below 2500

R452A* – MBP

Model	Version	Phases	Code no.	Cooling capacity in [kW] at evaporating temp. -10°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-MSYM018	W05	1	114X7111	1.53	1.85			39
OP-MSYM024	W05	1	114x7097	1.92	2.01			33
OP-MSYM026	W05	1	114X7083	2.12	1.89			36
	W05	3	114X7093					
OP-MSYM034	W05	1	114X7084	2.63	1.84			37
	W05	3	114X7094					
OP-MSXM034	W05	1	114X7061	3.47	2.21			38
	W05	3	114X7062					
OP-MSXM044	W05	1	114X7161	4.44	2.16			38
	W05	3	114X7162					
OP-MSXM046	W05	1	114X7063	4.66	2.14			38
	W05	3	114X7064					
OP-MSXM057	W05	1	114X7065	5.45	1.85	3.15		38
	W05	3	114X7066					
OP-MSXM068	W05	1	114X7067	7.37	2.40	3.87		39
	W05	3	114X7068					
OP-MSXM080	W05	1	114X7069	8.60	2.38	3.68		39
	W05	3	114X7070					
OP-MSXM099	W05	3	114X7071	10.03	2.10	3.52		39
OP-MSXM108	W05	3	114X7072	10.78	2.02	3.48		39

**Preliminary data: check Coolselector®2 software for updates*

R452A – LBP

Model	Version	Phases	Code no.	Cooling capacity in [kW] at evaporating temp. -35°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-LSQM014	W05	1	114X7106	0.38	0.96			32
OP-LSQM018	W05	1	114X7107	0.40	0.95			32
OP-LSQM026	W05	1	114X7085	0.58	0.96			36
OP-LSQM034	W05	1	114X7086	0.74	0.95			37
OP-LSQM048	W05	1	114X7087	0.95	1.07			40
	W05	3	114X7088					
OP-LSQM074	W05	1	114X7095	1.22	0.98			44
	W05	3	114X7096					
OP-LSQM068	W05	1	114X7089	1.46	1.16			40
	W05	3	114X7090					
OP-LSQM067	W05	3	114X7091	2.31	1.18	1.67	11 635	40
OP-LSQM084	W05	3	114X7092	2.82	1.16	1.60	14 448	42
OP-LSQM098	W05	3	114X7075	3.29	1.16	1.61	16 732	43

Conditions EN 13215 (dew point): +32°C ambient temp., superheat 10K, subcooling 0K
Rated COP, SEPR & annual electricity consumption at EcoDesign rating conditions: +32°C ambient, subcooling 0 K, RGT20°C
Values refer to 3-phase units

Optyma™ Slim Pack

Refrigerants with GWP level above 2500

R404A – MBP

Model	Version	Phases	Code no.	Cooling capacity in [kW] at evaporating temp. -10°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-MSYM009	W05	1	114X7108	0.91	1.99			32
OP-MSYM012	W05	1	114X7109	1.24	2.01			34
OP-MSYM014	W05	1	114X7110	1.28	1.69			29
OP-MSYM018	W05	1	114X7111	1.67	1.93			39
OP-MSYM024	W05	1	114x7097	2.07	2.07			33
OP-MSYM026	W05	1	114X7083	2.29	1.95			36
	W05	3	114X7093					
OP-MSYM034	W05	1	114X7084	2.82	1.89			37
	W05	3	114X7094					
OP-MSXM034	W05	1	114X7061	3.40	2.11			38
	W05	3	114X7062					
OP-MSXM044	W05	1	114X7161	4.31	2.07			38
	W05	3	114X7162					
OP-MSXM046	W05	1	114X7063	4.51	2.03			38
	W05	3	114X7064					
OP-MSXM057	W05	1	114X7065	5.25	1.76	3.01		38
	W05	3	114X7066					
OP-MSXM068	W05	1	114X7067	7.18	2.31	3.73	12 468	39
	W05	3	114X7068					
OP-MSXM080	W05	1	114X7069	8.35	2.29	3.71	14 633	39
	W05	3	114X7070					
OP-MSXM099	W05	3	114X7071	9.65	2.04	3.37	18 663	39
OP-MSXM108	W05	3	114X7072	10.32	2	3.31	20 322	39

R404A – LBP

Model	Version	Phases	Code no.	Cooling capacity in [kW] at evaporating temp. -35°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-LSQM014	W05	1	114X7106	0.44	1.03			29
OP-LSQM018	W05	1	114X7107	0.48	1.07			29
OP-LSQM026	W05	1	114X7085	0.65	1.01			36
OP-LSQM034	W05	1	114X7086	0.83	0.98			37
OP-LSQM048	W05	1	114X7087	1.00	1.13			40
	W05	3	114X7088					
OP-LSQM074	W05	1	114X7095	1.43	1.07			44
	W05	3	114X7096					
OP-LSQM068	W05	1	114X7089	1.63	1.14			40
	W05	3	114X7090					
OP-LSQM067	W05	3	114X7091	2.60	1.19	1.65	13 258	40
OP-LSQM084	W05	3	114X7092	3.11	1.21	1.67	15 691	42
OP-LSQM098	W05	3	114X7075	3.61	1.24	1.72	17 737	43

Did you know?

R404A refrigerant is subject to ban and delist in new installations due to high GWP HFC's regulations.

Conditions EN 13215 (dew point): +32°C ambient temp., superheat 10K, subcooling 0K
Rated COP, SEPR & annual electricity consumption at EcoDesign rating conditions: +32°C ambient, subcooling 0 K, RGT20°C
Values refer to 3-phase units

Optyma™ Plus
Equipped for **quietness** and **top performance**

The same robust quality with added technology and smarter design. That's a seriously cool combination.

50%
less installation time. A fast fit that lets you keep up the tempo

Quick and safe installation and service
It is another step forward in plug and play. It will not just save you valuable time in installation, set up and service, it will also reduce your customers' bill.

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

The best sound performance in the market
Due to its long-life compressor, acoustic insulation, component design as well as intelligent fan speed reduction during low capacity operation.

Connectivity
Contributes to considerable energy savings, making the Optyma™ **Plus** up to 20% more economical than an equivalent product.

High efficiency to the top

In-field stacking cuts costs
With its unique load-bearing design, it's possible to stack units in the field. This cuts installation time, and saves on carpentry and brackets to reduce cost.

Compact cabinet speeds installation
New compact design makes it easier to handle when fitting in tight spaces, saving installation time.

Accessibility to speed up service
Easier and quicker accessibility to all components with new double door design – saves time during servicing, maintenance and repair.

Intelligent technology speeds start-up and enhances reliability
Preset parameters make it easier to get it right from the start. Fewer mistakes reduce the risk of damage and save time and money on repairs.

High SEPR/COP **cuts energy costs**

E.g. in a cold room where frozen food is stored and with 4.2 kW of cooling capacity.

Optyma™ Plus LBP unit vs equivalent unit in the market*

Cooling cap.: 4.2 kW
Refrigerant: R452A

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UNIT	Danfoss	Market
COP	1.08	0.97
USAGE	~ 25 820 kWh	~ 30 012 kWh

Annual energy consumption saved: 4 192 kWh

Savings based on cost of energy in the UK:
£0.13 / 1 KWH = 4 192 x 0.13 = £545

£545 annual electricity savings made by your customer in the UK

* Source: Danfoss

Optyma™ Plus

Refrigerants with GWP level below 2500

R449A – MBP

Model	Phases	Code no.	Cooling capacity in [kW] at evaporating temperature -10°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-MPYM008	1	114X4119	0.75	1.93			29
OP-MPYM009	1	114X4120	0.80	1.89			30
OP-MPYM012	1	114X4121	1.10	1.89			32
OP-MPYM014	1	114X4122	1.15	1.60			29
OP-MPYM018	1	114X4230	1.47	1.91			36
OP-MPYM024	1	114X4200	1.85	2.08			36
OP-MPYM026	1	114X4212	2.05	1.97			36
	3	114X4213					
OP-MPYM034	1	114X4226	2.56	1.94			36
	3	114X4227					
OP-MPXM034	1	114X4261	3.34	2.07			37
	3	114X4264					
OP-MPXM046	1	114X4281	4.44	2.03			37
	3	114X4284					
OP-MPXM057	1	114X4290	5.28	1.84	3.15	10 689	37
	3	114X4293					
OP-MPXM068	1	114X4308	6.77	2.20	3.48	11 946	38
	3	114X4311					
OP-MPXM080	1	114X4321	7.80	2.14	3.49	13 664	38
	3	114X4324					
OP-MPXM108	3	114X4344	10.17	1.96	3.31	19 336	44
OP-MPXM125	3	114X4414	12.14	2.12	3.42	21 624	44
OP-MPXM162	3	114X4434	14.92	1.91	3.13	30 009	46

R134a – MBP

Model	Phases	Code no.	Cooling capacity in [kW] at evaporating temperature -10°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-MPGM033	1	114X4220	1.66	2.02			36
OP-MPXM034	1	114X4261	2.16	2.25			37
	3	114X4264					
OP-MPXM046	1	114X4281	2.92	2.33			37
	3	114X4284					
OP-MPXM057	1	114X4290	3.54	2.28			37
	3	114X4293					
OP-MPXM068	1	114X4308	4.38	2.37			38
	3	114X4311					
OP-MPXM080	1	114X4321	5.09	2.26	3.43	9 350	38
	3	114X4324					
OP-MPXM108	3	114X4344	6.64	2.40	3.74	11 517	44
OP-MPXM125	3	114X4414	7.98	2.23	3.40	14 508	46
OP-MPXM162	3	114X4434	10.25	2.25	3.46	18 715	46

Conditions EN 13215 (dew point): +32°C ambient temp., superheat 10K, subcooling 0K
Rated COP, SEPR & annual electricity consumption at EcoDesign rating conditions: +32°C ambient, Subcooling 0 K, RGT20°C
Values refer to 3-phase units

For regular updates and detailed capacities, please refer to Coolselector®2 software
coolselector.danfoss.co.uk

R448A – MBP

Model	Phases	Code no.	Cooling capacity in [kW] at evaporating temperature -10°C	Rated COP	SEPR	Annual electricity consump-tion [kWh]	Sound pressure level @10m dB(A)
OP-MPXM034	1	114X4261	3.35	2.07			37
	3	114X4264					
OP-MPXM046	1	114X4281	4.45	2.03			37
	3	114X4284					
OP-MPXM057	1	114X4290	5.29	1.84	3.15	10 689	37
	3	114X4293					
OP-MPXM068	1	114X4308	6.78	2.20	3.48	11 946	38
	3	114X4311					
OP-MPXM080	1	114X4321	7.81	2.14	3.49	13 664	38
	3	114X4324					
OP-MPXM108	3	114X4344	10.18	1.96	3.31	19 336	44
OP-MPXM125	3	114X4414	12.16	2.12	3.42	21 624	46
OP-MPXM162	3	114X4434	14.94	1.91	3.13	30 009	46

R407F – MBP

Model	Phases	Code no.	Cooling capacity in [kW] at evaporating temperature -10°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-MPXM034	1	114X4261	3.48	2.14			37
	3	114X4264					
OP-MPXM046	1	114X4281	4.57	2.14			37
	3	114X4284					
OP-MPXM057	1	114X4290	5.38	1.80	2.98	11 360	37
	3	114X4293					
OP-MPXM068	1	114X4308	7.12	2.23	3.58	12 680	38
	3	114X4311					
OP-MPXM080	1	114X4321	7.99	2.05	3.32	14 449	38
	3	114X4324					
OP-MPXM108	3	114X4344	10.20	1.85	3.07	20 698	44
OP-MPXM125	3	114X4414	12.31	1.94	3.13	23 326	46
OP-MPXM162	3	114X4434	15.47	1.86	3.05	31 553	46

R407A – MBP

Model	Phases	Code no.	Cooling capacity in [kW] at evaporating temperature -10°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-MPXM034	1	114X4261	3.29	2.18			37
	3	114X4264					
OP-MPXM046	1	114X4281	4.27	1.98			37
	3	114X4284					
OP-MPXM057	1	114X4290	5.10	1.87	3.01	10 758	37
	3	114X4293					
OP-MPXM068	1	114X4308	6.64	2.27	3.62	11 790	37
	3	114X4311					
OP-MPXM080	1	114X4321	7.53	2.17	3.48	13 140	37
	3	114X4324					
OP-MPXM108	3	114X4344	9.86	1.94	3.19	19 420	37
OP-MPXM125	3	114X4414	11.52	1.99	3.18	22 054	37
OP-MPXM162	3	114X4434	14.57	1.90	3.11	29 436	37

Optyma™ Plus

Refrigerants with GWP level below 2500

R452A* – MBP

Model	Phases	Code no.	Cooling capacity in [kW] at evaporating temperature -10°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-MPYM018	1	114X4230	1.53	1.85			
OP-MPYM024	1	114X4200	1.92	2.01			
OP-MPYM026	1	114X4212	2.12	1.89			
	3	114X4213					
OP-MPYM034	1	114X4226	2.63	1.84			
	3	114X4227					
OP-MPXM034	1	114X4261	3.47	2.21			
	3	114X4264					
OP-MPXM046	1	114X4281	4.66	2.14			
	3	114X4284					
OP-MPXM057	1	114X4290	5.45	1.85	3.15		
	3	114X4293					
OP-MPXM068	1	114X4308	7.37	2.40	3.87		
	3	114X4311					
OP-MPXM080	1	114X4321	8.60	2.38	3.84		
	3	114X4324					
OP-MPXM108	3	114X4344	10.78	2.02	3.48		
OP-MPXM125	3	114X4414	12.87	2.27	3.61		
OP-MPXM162	3	114X4434	16.18	2.10	3.38		

**Preliminary data: check Coolselector®2 software for updates*

R452A – LBP

Model	Phases	Code no.	Cooling capacity in [kW] at evaporating temperature -35°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-LPQM017	1	114X3118	0.40	0.95			29
OP-LPQM026	1	114X3216	0.58	0.96			36
OP-LPQM048	1	114X3233	0.95	1.07			38
	3	114X3225					
OP-LPQM074	1	114X3252	1.22	0.98			38
	3	114X3253					
OP-LPQM068	1	114X3249	1.46	1.16			39
	3	114X3241					
OP-LPQM096	3	114X3357	1.77	1.07		10 744	41
OP-LPQM136	3	114X3365	3.24	1.21	1.63	16 467	42
OP-LPQM215	3	114X3476	4.27	1.20	1.67	21 203	47
OP-LPQM271	3	114X3482	6.07	1.24	1.74	29 027	47

Refrigerants with GWP level above 2500

R404A – MBP

Model	Phases	Code no.	Cooling capacity in [kW] at evaporating temperature -10°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-MPYM008	1	114X4119	0.85	2.11			29
OP-MPYM009	1	114X4120	0.91	1.99			30
OP-MPYM012	1	114X4121	1.24	2.01			32
OP-MPYM014	1	114X4122	1.28	1.69			29
OP-MPYM018	1	114X4230	1.67	1.93			36
OP-MPYM024	1	114X4200	2.07	2.07			36
OP-MPYM026	1	114X4212	2.29	1.95			36
	3	114X4213					
OP-MPYM034	1	114X4226	2.82	1.89			36
	3	114X4227					
OP-MPXM034	1	114X4261	3.40	2.11			37
	3	114X4264					
OP-MPXM046	1	114X4281	4.51	2.03			37
	3	114X4284[1)]					
OP-MPXM057	1	114X4290	5.25	1.76	3.01	11 397	37
	3	114X4293					
OP-MPXM068	1	114X4308	7.18	2.31	3.73	12 468	38
	3	114X4311					
OP-MPXM080	1	114X4321	8.35	2.29	3.71	14 633	38
	3	114X4324					
OP-MPXM108	3	114X4344	10.32	2	3.31	20 322	44
OP-MPXM125	3	114X4414	12.82	2.18	3.48	23 928	46
OP-MPXM162	3	114X4434	16.03	1.99	3.23	32 292	46

R404A – LBP

Model	Phases	Code no.	Cooling capacity in [kW] at evaporating temperature -35°C	Rated COP	SEPR	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
OP-LPQM017	1	114X3118	0.48	1.07			29
OP-LPQM026	1	114X3216	0.65	1.01			36
OP-LPQM048	1	114X3225	1.00	1.13			38
	3	114X3233					
OP-LPQM074	1	114X3252	1.43	1.07			38
	3	114X3253					
OP-LPQM068	1	114X3241	1.63	1.14			39
	3	114X3249					
OP-LPQM096	3	114X3357	1.75	1.02		11 218	41
OP-LPQM136	3	114X3365	3.07	1.11	1.60	16 195	42
OP-LPQM215	3	114X3476	4.69	1.25	1.71	23 171	47
OP-LPQM271	3	114X3482	6.24	1.23	1.81	29 365	47

Did you know?

R404A refrigerant is subject to ban and delist in new installations due to high GWP HFC's regulations.

Conditions EN 13215 (dew point): +32°C ambient temp., superheat 10K, subcooling 0K
Rated COP, SEPR & annual electricity consumption at EcoDesign rating conditions: +32°C ambient, subcooling 0 K, RGT20°C
Values refer to 3-phase units

Optyma™ Plus INVERTER
Capacity modulation in a simple and **adaptive** package

Combines our market-leading expertise in condensing unit design with the unique benefits of stepless inverter scroll technology. The result is energy consumption reduced by up to 30% with better food preservation.

Best SEPR with stepless modulation reduces energy consumption by up to

30%

Quick and safe installation and service

Preset parameters and Modbus communication makes start-up and maintenance of the condensing unit effortlessly quick and easy.

High SEPR: 3.84 – certified by ASERCOM

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

Accurate temperature control

Accurate temperature control and low in-rush current result in a more stable storage temperature and longer product shelf life.

Extended capacity

Stepless compressor modulation - able to slow down and speed up from 30 to 100 RPS to save energy and match load fluctuations very accurately. The inverter drive incorporates smart logic to increase reliability during operation.

Designed for **ultimate efficiency**

Stepless capacity modulation
From 30 to 100 rps modulation leads to 20-30% higher energy efficiency compared to fixed-speed condensing units.

Simple commissioning
Preset drive parameters with dedicated refrigeration software.

Future-proof
Working with lower GWP refrigerants such as R448A and R449. Also compatible with R407A/F and R404A.

Danfoss compressor and drive package
Dedicated to refrigeration with years of market application and validation.

Full intelligent control through the Optyma™ **Plus Controller**
Control, alarm management, day & night operation, can connect to ADAP-KOOL® software, etc.

Simple plug-and-play installation
Safe, simple and hassle-free installation with tried-and-tested components.

High SEPR/COP **cuts energy costs**

E.g. in a cold room where meat is stored and with 9 kW of cooling capacity.

Optyma™ Plus INVERTER MBP unit vs mechanically modulated technology*

Cooling cap.: 9 kW
Refrigerant: R407F

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UNIT	Danfoss	Market
SEPR	3.84	2.50
USAGE	~ 14 000 kWh	~ 21 600 kWh

Annual energy consumption saved: 7 600 kWh

Savings based on cost of energy in the UK:
£0.13/ 1 KWH = 7 600 x 0.13 = £988

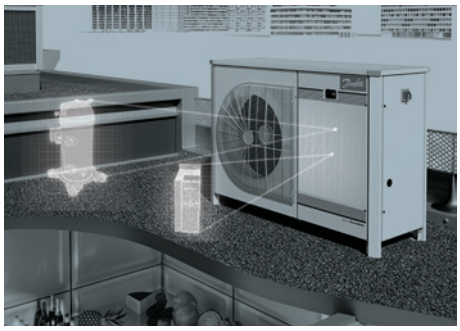
£988 annual electricity savings made by your customer in the UK

* Source: Danfoss

Optyma™ Plus INVERTER

Model	Code no.	Rotation per second (RPS)	Cooling capacity in [kW] at evaporating temperature -10°C				SEPR R448A/ R449A	Annual electricity consumption [kWh]	Sound pressure level @10m dB(A)
			R448A/ R449A	R407A	R407F	R404A			
OP-MPPM028	114X4302	30	1.73	1.69	1.81	1.85	3.38	10 103	40
		75	4.27	4.18	4.54	4.57			42
		100	5.45	5.44	5.86	5.94			43
OP-MPPM035	114X4316	30	2.17	2.12	2.27	2.34	3.29	12 735	42
		75	5.24	5.20	5.65	5.66			43
		100	6.68	6.74	7.25	7.22			44
OP-MPPM044	114X4334	30	2.78	2.70	2.90	3.01	3.73	14 094	42
		75	6.57	6.54	7.09	7.11			44
		100	8.38	8.42	9.05	9.03			45

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



For regular updates and detailed capacities, please refer to Coolselector®2 software
coolselector.danfoss.co.uk

About **Variable Speed** technology

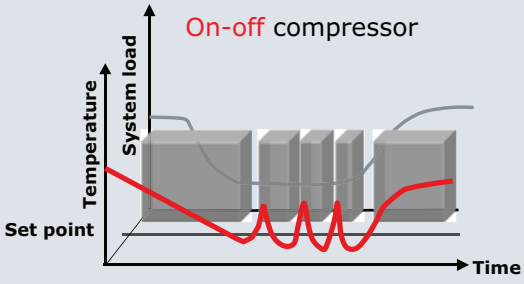
Refrigeration systems are usually designed for peak demand, which represents only a small percentage of actual operational time. Such oversizing leads to efficiency losses and extra costs for oversized equipment. Capacity modulation is a way to match cooling capacity to cooling demand.

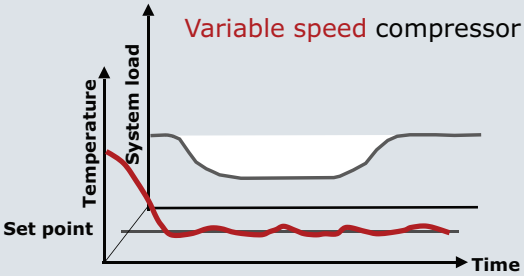
There are several ways to modulate the cooling capacity in refrigeration systems. The most commonly used are on-off cycling, hot gas bypass, manifold configurations of multiple compressors, mechanical modulation and variable speed technology.

The variable speed method varies refrigerant flow by actually changing the speed of the compressor. An inverter compressor uses a variable frequency drive – also known as an inverter drive– to slow down or speed up the motor that drives the compressor. This is where inverter compressors bring most savings compared to alternative technologies.

Currently, three different market trends are converging to create growing demand for efficient and sustainable solutions:

- Application requirements (accurate temperature and humidity levels)
- Energy efficiency & environmental impact
- Intelligent systems and reliability





Optyma™ Light Commercial – up to ~1.5 kW

Specially designed for key commercial applications such as glass door merchandisers, bottle coolers, chilled food or ice cream cabinets. To meet the latest guidelines while satisfying tomorrow's consumer needs, Danfoss compressors use the environmentally friendly R290 propane as a refrigerant.

Faster and safer installation and maintenance

Schrader valve for easy charging of refrigerant, pre-wired e-box, ACB mini pressostat and ATEX class N fan motor for enhanced safety.

R290 natural refrigerant

The major environmental benefits are obtained combining the use of the R290 with the design criteria of highly efficient compressors and EC fan motor.

Serviceability and compactness

Combo of drier and receiver in one piece, making it the ideal fit for compact systems and providing higher serviceability.

Universal

Most units are designed with rail concept, allowing easy condensed water evacuation, high airflow, and reduced height to fit display cabinets. Suited for high ambient temperatures thanks to EC fan ATEX class N.

R290 unit

Energy efficient, environmentally friendly and safe hydrocarbons

Hydrocarbons such as propane R290 have excellent thermodynamic properties, and in this respect they are as good as or better than HFC or HCFC refrigerants in most applications. When they are used responsibly and relevant norms are followed, hydrocarbons can be employed in a variety of refrigeration and air conditioning applications. Hydrocarbons can deliver high energy efficiency and have zero Ozone Depletion Potential (ODP) and negligible Global Warming Potential (GWP).

Relevant norms & standards when working with hydrocarbon refrigerants:

ATEX 94/9/EC Directive
Specifies the requirements for equipment intended for use in potentially explosive atmospheres (both electrical and mechanical). Organizations in EU must follow the directive to protect employees from explosion risk in areas with an explosive atmosphere.

Pressure Equipment Directive 97/23/EC (PED)
The directive provides a legislative framework for pressurized equipment and assemblies.

EN378 1-4
EN378 defines "best practice" for design, operation and maintenance. It is a harmonised standard, which ensures that all essential requirements in the PED are fulfilled.

ISO 5149 1-4
The international safety standard defines "best practices" very similarly to EN378, but without referring to EU law.

IEC 60335: International Standard
Specifies all requirements for small hermetically sealed household appliances (supports the EU Low Voltage Directive (2006/95/EC). It deals with the safety of electrical appliances for household and similar purposes.

Optyma™ Light Commercial – up to ~1.5 kW

Refrigerants with GWP level below 2500

R290 – MBP

Model	Version	Phase	Code no.	Cooling capacity in kW at evaporating temp. -10°C	Rated COP
OP-MCNC003	A09	1	114F1202	0.24	1.88
	A10	1	114F1203		
	A11	1	114F1201		
OP-MCNC004	A09	1	114F1205	0.34	1.88
	A10	1	114F1206		
	A11	1	114F1204		
OP-MCNC006	A09	1	114F1308	0.46	1.94
	A10	1	114F1309		
	A11	1	114F1307		
OP-MCNC008	A09	1	114F1411	0.64	2.03
	A10	1	114F1412		
	A11	1	114F1410		
OP-MCNC009	A09	1	114F1414	0.72	2.02
	A10	1	114F1415		
	A11	1	114F1413		
OP-MCNC011	A09	1	114F1417	0.83	1.93
	A10	1	114F1418		
	A11	1	114F1416		
OP-MCNC014	A09	1	114F1420	0.95	1.66
	A10	1	114F1421		
	A11	1	114F1419		
OP-MCNC016	A09	1	114F1623	1.11	1.79
	A10	1	114F1624		
	A11	1	114F1622		
OP-MCNC018	A09	1	114F1626	1.30	1.84
	A10	1	114F1627		
	A11	1	114F1625		
OP-MCNC020	A09	1	114F1629	1.45	1.79
	A10	1	114F1630		
	A11	1	114F1628		

R452A– LBP

Model	Version	Phase	Code no.	Cooling capacity in kW at evaporating temp. -35°C	Rated COP
OP-LCQC004	A01	1	114X1221	0.12	0.81
OP-LCQC006	A01	1	114X1337	0.13	0.84
OP-LCQC008	A01	1	114X1341	0.19	0.88
OP-LCQC012	A01	1	114X1449	0.28	0.96
OP-LCQC012	A01	1	114X1569	0.33	0.98
OP-LCQC014	A01	1	114X1573	0.37	0.95

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

For regular updates and detailed capacities, please refer to Coolselector®2 software
coolselector.danfoss.co.uk

R290 – LBP

Model	Version	Phase	Code no.	Cooling capacity in kW at evaporating temp. -35°C	Rated COP
OP-LCNC004	A09	1	114F0202	0.12	1.04
	A10	1	114F0203		
	A11	1	114F0201		
OP-LCNC006	A09	1	114F0205	0.15	1.06
	A10	1	114F0206		
	A11	1	114F0204		
OP-LCNC008	A09	1	114F0308	0.20	1.08
	A10	1	114F0309		
	A11	1	114F0307		
OP-LCNC011	A09	1	114F0411	0.31	1.15
	A10	1	114F0412		
	A11	1	114F0410		
OP-LCNC016	A09	1	114F0414	0.42	1.15
	A10	1	114F0415		
	A11	1	114F0413		
OP-LCNC023	A09	1	114F0417	0.52	1.03
	A10	1	114F0418		
	A11	1	114F0416		
OP-LCNC034	A09	1	114F0620	0.69	1.18
	A10	1	114F0621		
	A11	1	114F0619		

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		
	A04	1	114X0343		
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

Optyma™ Light Commercial – up to ~1.5 kW

Refrigerants with GWP level above 2500

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		
	A04	1	114X0408		
OP-MCHC015	A01	1	114X2649	1.27	1.60
	A04	1	114X2651		
OP-MCHC018	A01	1	114X0702	1.45	1.76
	A04	1	114X0703		
OP-MCHC021	A01	1	114X2765	1.72	1.74
	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
	A01	1	114X1441		
	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.co.uk

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

Optyma™ Commercial – from ~1.5 kW

Refrigerants with GWP level below 2500

R449A – MBP

Model	Phase	Code no.	Cooling capacity in kW at evaporating temp. -10°C	Rated COP	SEPR	Sound pressure level @10m dB(A)
OP-MCRN030	3	114X5721	2.06	1.93		45
	1	114X5722				
OP-MCRN038	3	114X5724	2.68	1.93		43
	1	114X5723				
OP-MCRN048	3	114X5726	3.57	2.09		43
	1	114X5728				
OP-MCRN054	3	114X5729	4.06	2.13		43
	1	114X5731				
OP-MCRN060	3	114X5732	4.58	1.96		43
	1	114X5734				
OP-MCRN068	3	114X5735	5.27	1.96	2.79	45
OP-MCRN086	3	114X5737	6.32	2.17	3.20	53
OP-MCRN096	3	114X5739	6.92	2.15	3.16	52
OP-MCRN108	3	114X5740	7.83	2.13	3.01	52
OP-MGRN108	3	114X5743	7.83	2.17	3.08	52
OP-MCRN121	3	114X5744	8.77	2.05	2.89	51
OP-MGRN121	3	114X5746	8.77	2.08	2.95	51
OP-MCRN136	3	114X5747	10.01	1.97	2.74	51
OP-MGRN136	3	114X5749	10.01	2	2.79	51
OP-MGRN171	3	114X5750	12.78	2.06	3.01	56
OP-MGRN215	3	114X5753	16.45	2.09	2.99	55
OP-MGRN242	3	114X5754	18.43	2.04	2.86	54
OP-MGRN271	3	114X5757	20.56	1.99	2.74	53

R448A – MBP

Model	Phase	Code no,	Cooling capacity in kW at evaporating temp. -10°C	Rated COP	SEPR	Sound pressure level @10m dB(A)
OP-MCRN030	3	114X5721	2.06	1.93		45
	1	114X5722				
OP-MCRN038	3	114X5724	2.68	1.93		43
	1	114X5723				
OP-MCRN048	3	114X5726	3.57	2.09		43
	1	114X5728				
OP-MCRN054	3	114X5729	4.06	2.13		43
	1	114X5731				
OP-MCRN060	3	114X5732	4.58	1.96		43
	1	114X5734				
OP-MCRN068	3	114X5735	5.27	1.96	2.79	45
OP-MCRN086	3	114X5737	6.32	2.16	3.19	53
OP-MCRN096	3	114X5739	6.92	2.15	3.16	52
OP-MCRN108	3	114X5740	7.83	2.13	3.01	52
OP-MGRN108	3	114X5743	7.83	2.17	3.08	52
OP-MCRN121	3	114X5744	8.77	2.05	2.89	51
OP-MGRN121	3	114X5746	8.77	2.08	2.95	51
OP-MCRN136	3	114X5747	10.01	1.97	2.74	51
OP-MGRN136	3	114X5749	10.01	1.99	2.78	51
OP-MGRN171	3	114X5750	12.78	2.06	3.01	56
OP-MGRN215	3	114X5753	16.45	2.09	2.99	55
OP-MGRN242	3	114X5754	18.43	2.03	2.86	54
OP-MGRN271	3	114X5757	20.56	1.98	2.74	53

R134a – MBP

Model	Phase	Code no.	Cooling capacity in kW at evaporating temp. -10°C	Rated COP	SEPR	Sound pressure level @10m dB(A)
OP-MCRN030	3	114X5721	1.29	1.82		45
	1	114X5722				
OP-MCRN038	3	114X5724	1.62	1.94		43
	1	114X5723				
OP-MCRN048	3	114X5726	2.01	1.85		43
	1	114X5728				
OP-MCRN054	3	114X5729	2.34	1.77		43
	1	114X5731				
OP-MCRN060	3	114X5732	3.01	1.92		43
	1	114X5734				
OP-MCRN068	3	114X5735	3.43	2.03		45
OP-MCRN086	3	114X5737	4.05	2.13		53
OP-MCRN096	3	114X5739	4.09	2.04		52
OP-MCRN108	3	114X5740	4.73	2.09		52
OP-MGRN108	3	114X5743	4.73	2.16		52
OP-MCRN121	3	114X5744	5.33	2.08	2.71	51
OP-MGRN121	3	114X5746	5.33	2.14	2.80	51
OP-MCRN136	3	114X5747	6.74	2.31	2.55	51
OP-MGRN136	3	114X5749	6.37	2.20	2.55	51
OP-MGRN171	3	114X5750	7.82	1.90	2.68	56
OP-MGRN215	3	114X5753	9.74	2.08	2.91	55
OP-MGRN242	3	114X5754	12.06	2.08	2.76	54
OP-MGRN271	3	114X5757	13.13	2.11	2.79	53

R407C – MBP

Model	Phase	Code no	Cooling capacity in kW at evaporating temp. -10°C	Rated COP	SEPR	Sound pressure level @10m dB(A)
OP-MCRN030	3	114X5721	1.84	1.89		45
	1	114X5722				
OP-MCRN038	3	114X5724	2.44	1.90		43
	1	114X5723				
OP-MCRN048	3	114X5726	3.29	2.05		43
	1	114X5728				
OP-MCRN054	3	114X5729	3.85	2.12		43
	1	114X5731				
OP-MCRN060	3	114X5732	4.39	1.97		43
	1	114X5734				
OP-MCRN068	3	114X5735	5.10	1.98	2.71	45
OP-MCRN086	3	114X5737	5.96	2.14	2.89	53
OP-MCRN096	3	114X5739	6.42	2.15	3	52
OP-MCRN108	3	114X5740	7.40	2.15	3.01	52
OP-MGRN108	3	114X5743	7.40	2.19	3.08	52
OP-MCRN121	3	114X5744	8.23	2.02	2.79	51
OP-MGRN121	3	114X5746	8.23	2.06	2.84	51
OP-MCRN136	3	114X5747	9.21	1.94	2.67	51
OP-MGRN136	3	114X5749	9.21	1.97	2.72	51
OP-MGRN171	3	114X5750	11.62	1.96	2.81	56
OP-MGRN215	3	114X5753	15.42	2.08	2.90	55
OP-MGRN242	3	114X5754	16.67	1.99	2.76	54
OP-MGRN271	3	114X5757	19.14	1.97	2.71	53

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
Values refer to 3-phase units

Optyma™ Commercial – from ~1.5 kW

Refrigerants with GWP level below 2500

R407A – MBP

Model	Phase	Code no.	Cooling capacity in kW at evaporating temp. -10°C	Rated COP	SEPR	Sound pressure level @10m dB(A)
OP-MCRN030	3	114X5721	1.94	1.84		45
	1	114X5722				
OP-MCRN038	3	114X5724	2.55	1.98		43
	1	114X5723				
OP-MCRN048	3	114X5728	3.56	2.06		43
	1	114X5726				
OP-MCRN054	3	114X5729	4.05	2.13		43
	1	114X5731				
OP-MCRN060	3	114X5732	4.61	2		43
	1	114X5734				
OP-MCRN068	3	114X5735	5.28	2.03	2.57	45
OP-MCRN086	3	114X5737	6.40	2.27	3.08	53
OP-MCRN096	3	114X5739	6.76	2.20	2.94	52
OP-MCRN108	3	114X5740	7.79	2.13	2.81	52
OP-MGRN108	3	114X5743	7.79	2.17	2.87	52
OP-MCRN121	3	114X5744	8.53	2.09	2.76	51
OP-MGRN121	3	114X5746	8.53	2.13	2.82	51
OP-MCRN136	3	114X5747	9.64	2.01	2.64	51
OP-MGRN136	3	114X5749	9.64	2.01	2.64	51
OP-MGRN171	3	114X5750	12.59	2.05	2.83	56
OP-MGRN215	3	114X5753	15.64	2.05	2.83	55
OP-MGRN242	3	114X5754	17.84	2.03	2.74	54
OP-MGRN271	3	114X5757	19.19	1.94	2.58	53

R407F – MBP

Model	Phase	Code no.	Cooling capacity in kW at evaporating temp. -10°C	Rated COP	SEPR	Sound pressure level @10m dB(A)
OP-MCRN030	3	114X5721	2.04	1.82		45
	1	114X5722				
OP-MCRN038	3	114X5724	2.67	1.94		43
	1	114X5723				
OP-MCRN048	3	114X5726	3.76	2.05		43
	1	114X5728				
OP-MCRN054	3	114X5729	4.27	2.11		43
	1	114X5731				
OP-MCRN060	3	114X5732	4.84	1.97		43
	1	114X5734				
OP-MCRN068	3	114X5735	5.53	2	2.80	45
OP-MCRN086	3	114X5737	6.72	2.25	3.27	53
OP-MCRN096	3	114X5739	7.09	2.17	3.16	52
OP-MCRN108	3	114X5740	8.17	2.10	2.99	52
OP-MGRN108	3	114X5743	8.17	2.13	3.05	52
OP-MCRN121	3	114X5744	8.93	2.06	2.87	51
OP-MGRN121	3	114X5746	8.93	2.09	2.92	51
OP-MCRN136	3	114X5747	10.11	1.94	2.67	51
OP-MGRN136	3	114X5749	10.11	1.97	2.71	51
OP-MGRN171	3	114X5750	13.26	2.03	3.13	56
OP-MGRN215	3	114X5753	16.41	2.03	2.99	55
OP-MGRN242	3	114X5754	18.70	2	2.86	54
OP-MGRN271	3	114X5757	20.11	1.91	2.67	53

R452A – MBP

Model	Phase	Code no.	Cooling capacity in kW at evaporating temp. -10°C	Rated COP	SEPR	Sound pressure level @10m dB(A)
OP-MCRN030	3	114X5721	2.28	2		45
	1	114X5722				
OP-MCRN038	3	114X5724	2.98	2.01		43
	1	114X5723				
OP-MCRN048	3	114X5726	3.71	2.04		43
	1	114X5728				
OP-MCRN054	3	114X5729	4.27	2.10		43
	1	114X5731				
OP-MCRN060	3	114X5732	4.69	1.89		43
	1	114X5734				
OP-MCRN068	3	114X5735	5.58	1.95	2.75	45
OP-MCRN086	3	114X5737	6.89	2.22	2.88	53
OP-MCRN096	3	114X5739	7.54	2.21	2.90	52
OP-MCRN108	3	114X5740	8.53	2.19	2.84	52
OP-MGRN108	3	114X5743	8.53	2.22	2.90	52
OP-MCRN121	3	114X5744	9.56	2.11	2.77	51
OP-MGRN121	3	114X5746	9.56	2.14	2.81	51
OP-MCRN136	3	114X5747	10.20	1.99	2.58	51
OP-MGRN136	3	114X5749	10.03	1.97	2.57	51
OP-MGRN171	3	114X5750	14.02	2.15	3.10	56
OP-MGRN215	3	114X5753	17.57	2.12	3.10	55
OP-MGRN242	3	114X5754	19.03	1.98	3.01	54
OP-MGRN271	3	114X5757	20.60	1.89	2.71	53

R452A – LBP

Model	Phase	Code no.	Cooling capacity in kW at evaporating temp. -35°C	Rated COP	SEPR	Sound pressure level @10m dB(A)
OP-LCQN048	3	114X5758	0.87	1.03		42
	1	114X5759				
OP-LCQN068	3	114X5761	1.48	1.14		40
	1	114X5762				
OP-LCQN096	3	114X5764	1.73	1.04		51
OP-LGQN096	3	114X5766	2.14	1.30	1.70	51
OP-LCQN108	3	114X5768	2.66	1.32	1.88	47
OP-LGQN108	3	114X5769	2.66	1.37	1.95	47
OP-LGQN136	3	114X5771	3.28	1.26	1.69	47
OP-LCQN136	3	114X5772	3.28	1.23	1.65	47
OP-LGQN215	3	114X5774	4.73	1.11	1.63	55
OP-LGQN271	3	114X5776	6.14	1.17	1.66	55

For regular updates and detailed capacities, please refer to Coolselector®2 software
coolselector.danfoss.co.uk

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
Values refer to 3-phase units

Optyma™ Commercial – from ~1.5 kW

Refrigerants with GWP level above 2500

R404A – MBP

Model	Phase	Code no.	Cooling capacity in kW at evaporating temp. -10°C	Rated COP	SEPR	Sound pressure level @10m dB(A)
OP-MCRN030	3	114X5721	2.22	1.88		45
	1	114X5722				
OP-MCRN038	3	114X5724	2.92	2.02		43
	1	114X5723				
OP-MCRN048	3	114X5726	4.02	2.08		43
	1	114X5728				
OP-MCRN054	3	114X5729	4.56	2.15		43
	1	114X5731				
OP-MCRN060	3	114X5732	5.17	2.01	2.85	43
	1	114X5734				
OP-MCRN068	3	114X5735	6.15	2.15	2.77	45
OP-MCRN086	3	114X5737	7.39	2.36	3.34	53
OP-MCRN096	3	114X5739	7.81	2.29	3.14	52
OP-MCRN108	3	114X5740	9.03	2.22	3.07	52
OP-MGRN108	3	114X5743	9.03	2.25	3.13	52
OP-MCRN121	3	114X5744	9.91	2.18	3.03	51
OP-MGRN121	3	114X5746	9.91	2.21	3.08	51
OP-MCRN136	3	114X5747	11.21	2.07	2.83	51
OP-MGRN136	3	114X5749	11.21	2.09	2.87	51
OP-MGRN171	3	114X5750	14.25	2.09	3.02	56
OP-MGRN215	3	114X5753	17.73	2.09	3.03	55
OP-MGRN242	3	114X5754	20.20	2.07	2.91	54
OP-MGRN271	3	114X5757	21.72	1.97	2.74	53

R404A – LBP

Model	Phase	Code no,	Cooling capacity in kW at evaporating temp. -35°C	Rated COP	SEPR	Sound pressure level @10m dB(A)
OP-LCQN048	3	114X5758	0.92	1.09		42
	1	114X5759				
OP-LCQN068	3	114X5761	1.54	1.04		40
	1	114X5762				
OP-LCQN096	3	114X5764	1.72	1		51
OP-LGQN096	3	114X5766	2.07	1.21	1.6	51
OP-LCQN108	3	114X5768	2.50	1.21	1.68	47
OP-LGQN108	3	114X5769	2.50	1.25	1.74	47
OP-LGQN136	3	114X5771	3.14	1.16	1.70	47
OP-LCQN136	3	114X5772	3.14	1.13	1.66	47
OP-LGQN215	3	114X5774	4.98	1.12	1.62	55
OP-LGQN271	3	114X5776	6.66	1.17	1.62	55

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
Values refer to 3-phase units

ENGINEERING
TOMORROW

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