

ENGINEERING
TOMORROW



February 2022 | Danfoss Climate Solutions for cooling

TECH INSIDER



Introduction

Danfoss Tech Insider keeps you updated with the latest news on the cooling and industrial products portfolios from Danfoss Climate Solutions. The content is intended to give a quick overview of core technical news and updates in our product portfolio, including links to relevant documentation and more information.

Danfoss Tech Insider is sent out, on a monthly basis, to ensure you are always up to date with the latest innovations and changes made to Danfoss products and solutions.

We hope you will enjoy reading Danfoss Tech Insider!

Table of Contents

Electric Expansion Valve, ETS 8M	3
Electric Expansion Valve, ETS 400L	4
EMP2 Products Gland Change	5
Optimization of HFI and SV 1-3 + 4-6 Design.....	6
Full Range DSH Multi-Refrigerant Qualification for Large Scrolls	8
Product Discontinuation of PM, PML, PMLX Spare Parts.....	12
New Product Overviews Featuring Industrial Controls Products.....	13
PR-SC4 Modbus Firmware Upgrade Required.....	13
Videos in YouTube	14
Details for Additional Information.....	14

Electric Expansion Valve, ETS 8M



We are pleased to announce the release of new ETS 8M electric expansion valves for sale globally.

Looking to further strengthen and expand the choice available to our OEM's, Danfoss launches the new ETS 8M series, offering additional EEV options in the lower capacity end of the Danfoss portfolio for heat pumps, and close control systems.

The valves have been highly optimized for use in those systems as well as proven for chillers. It provides superior flow control in both directions and thus high system efficiency and low applied cost. It features standard dimensions for easy drop in in existing systems.

The new ETS 8M is available to order now for samples and sales.

Key Features

- Low Opening Degree (OD) and Stable Control
- High MOPD in normal and reverse flow
- Linear stable flow control
- Dedicated L and S flow curves for modular chillers and low ambient HP respectively

→ **High system efficiency**

→ **Low applied cost**

Approvals

- JB/T 10212
- RoHS (EU)
- UL 429
- REACH
- RoHS (China)
- PED

Specification	Parameters
Orifice sizes (Ø mm)	4.0, 4.5, 5.5, 6.5
Capacity curve	Linear, optional S-polyline
Refrigerants	R410A, R32, R407C, R290, R134a, R513A, R452A, R454B, R452B, R454C, R449B, R404A, R448A, R449A, R515B
Max. working pressure	49 bar
MOPD (Max. Δ pressure)	39 bar (B->A), 32 bar (A->B)
Media temperature	-30°C – +70°C
Connection size, Solder ODM	3/8" for orifice 4.0 and 4.5, 5/8" for all orifice sizes
Number of steps	500 half-step pulses
Open pulses	37±15 steps (B->A and A->B)
Nominal pulse rate	31 pps
Coil and drive type	Unipolar 1-2 step. Bipolar 2-2 step allowed.
Coil voltage	12V DC -15%/+10%
RMS current, nominal	261 mA/phase
Cable connection	XHP-5, XHP-6
Cable lengths	2m, 3m, 6m
Internal Leakage	≤800 ml/min, under 1.0 Mpa air pressure
IP	IP67
Approvals	JB/T 10212, UL 429, RoHS (China), RoHS (EU), REACH, PED

Pricing and Availability

ETS 8M has been released and are available for ordering.

More information

ETS 8M is included in [CoolSelector2](#).

ETS 8M is also listed in the [Danfoss Product Store](#), where more detailed information can be downloaded.

Please note: If you are unable to find a specific product in the above-mentioned lists, please contact your local Danfoss sales representative.

Electric Expansion Valve, ETS 400L



We are pleased to announce the release 2 of the new ETS 400L electric expansion valves for sale globally. This release consists of selective ETS 400L single pack, non-oil-free version, check details below.

The new 400L can be a drop in solution for the old ETS 400 valves with S-flow characteristic. Large ETS also has a variant with Linear flow similar to the ETS Colibri flow characteristic. Please also check the previous announcement on release 1 of ETS 175L and ETS 250L and phase out of old ETS models.

Key Features:

- Precision flow control with high resolution
- Proven know-how and high reliability
- Easy serviceable
- Wide range for all common and new refrigerants
- Drop in solution to convert old ETS 400

Data

Data	Value
Valve type	ETS 400L
Max working pressure (MWP)	37 barg
Inlet fluid temperature range	-40 °C to +70 °C
R134A nominal capacity	1196 Kw (341 TR)
Approval	PED, CE

Product Codes:

Following codes are available for sales.

I-Pack codes and additional approvals (UL, CRN, EAC, LLC TYSK) are estimated to be released in March 2022.

Type					Connections	
	Code		Linear/S-curve	Sight glass	ODF x ODF (A x B)	Remark
					[in.]	Released
ETS 400L	034G3632	Single Pack	Linear	Yes	1 5/8 X 1 5/8	Released
	034G3630	Single Pack	S-shape	Yes	1 5/8 X 1 5/8	Released
	034G3633	Single Pack	Linear	Yes	2 1/8 X 2 1/8	Released
	034G3631	Single Pack	S-shape	Yes	2 1/8 X 2 1/8	Released
	034G3636	Single Pack	Linear	Yes	2 5/8 X 2 5/8	Expected released in March 22
	034G3634	I-pack	Linear	Yes	1 5/8 X 1 5/8	Expected released in March 22
	034G3635	I-pack	Linear	Yes	2 1/8 X 2 1/8	Expected released in March 22

Pricing and Availability

ETS 400L has been released and are available for ordering from end week 5.

More information

ETS Larger selection is included in [CoolSelector2](#)

ETS Large is available in [Danfoss Product Store](#)

EMP2 Products Gland Change



Danfoss has decided to change the cable gland for EMP2.

Please pay attention to applicable cable diameter. The minimum cable diameter remains the same however the maximum diameter is limited to 12 mm.

The new cable gland is foreseen to be implemented during February-March 2022.

Old

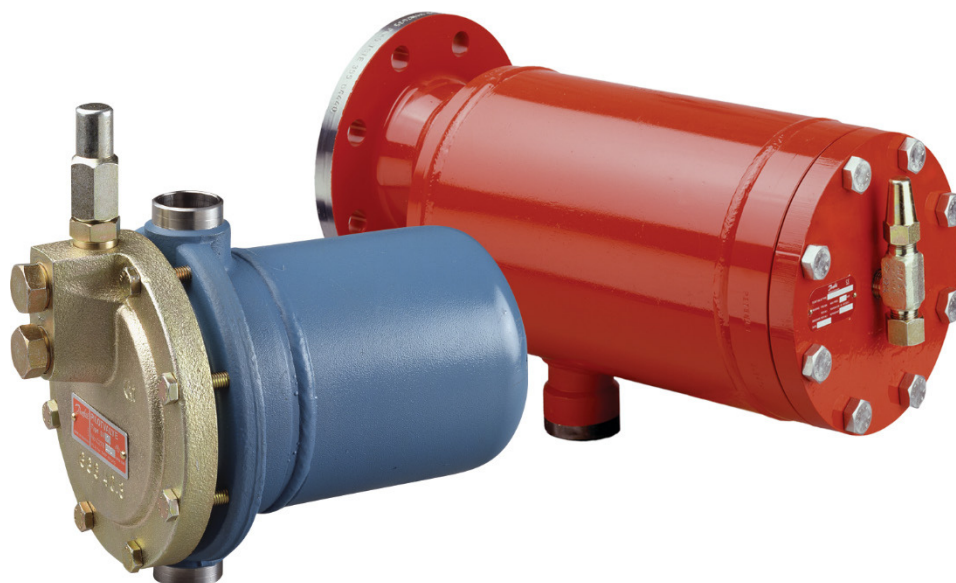
New



6 – 14 mm

6 – 12 mm

Optimization of HFI and SV 1-3 + 4-6 Design



As part of Danfoss's ongoing process for quality and processing optimization, Danfoss will improve the manufacturing process of the housings of the float valves HFI and SV 1-3 + SV 4-6, from the current welded design to a casting design. This eliminates a large number of manual welding's and thereby reduces the risks which are linked to a manual welding process to zero. Additionally we reduce the complexity of the sourcing process and the risks linked to this.

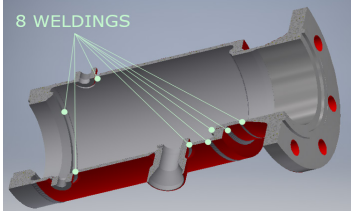
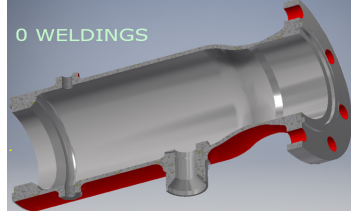
Changes in dimensions and form:

There will be some physical changes to the products related to:

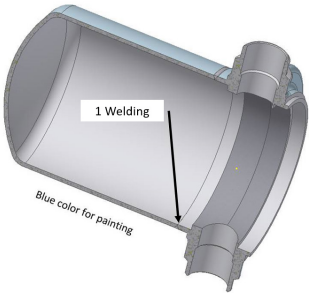
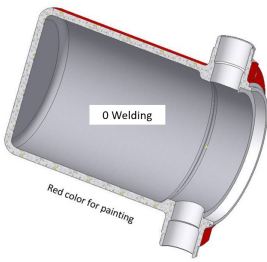
- Form
- Dimensions
- Material type
- Weight of the valve housings

Connection wise the HFI and SV 1-3 + 4-6 will have the same connections as before and on the same positions.

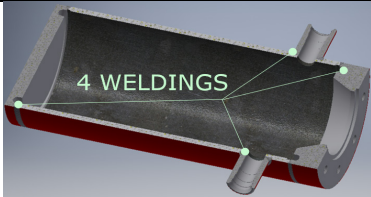
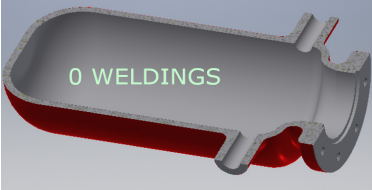
Design changes on HFI:

Valve	Issue	Existing design	New design
HFI	Valve body design		
	Wall thickness	6,3 mm	10,0 mm
	Weight (valve body)	+24 % to +31 % weight increase	
	Dimensions	+8 to 58 mm on outer diameter	
	Material	P215 NL P275 NL P285QH	G20Mn5QT

Design changes on SV 1-3:

Valve	Issue	Existing design	New design
SV 1-3	Valve body design		
	Wall thickness	3 mm	6 mm
	Weight (valve body)	3.4 Kg	5.2 Kg
	Dimensions	+6 mm on outer diameter	
	Material	X5CrNi18-10 1.4301, EN 10088-2 P285QH 1.0478 EN 10222-4 or, TTSt 35V 1.1101 DIN17173	G20Mn5QT 1.6220 EN 10213-3

Design changes on SV 4-6:

Valve	Issue	Existing design	New design
SV 4-6	Valve body design		
	Wall thickness	7,1 mm	10,0 mm
	Weight (valve body)	+22 % weight increase	
	Dimensions	+6 mm on outer diameter	
	Material	P275NL TTST35N EN-GJS-400-18LT	G20Mn5QT

Affected products

Sales code numbers will not change.

Timing:

The design change will be ongoing from February 2022 through the rest of 2022 while we replace stock of the old design. Please contact your local Danfoss Sales Manager if you need a more specific information or date for the design change.

Full Range DSH Multi-Refrigerant Qualification for Large Scrolls



We are pleased to announce that the multi-refrigerant range, currently available only in code 4 (380-415V 3~ 50 Hz / 460V 3~ 60 Hz), will be extended to code 3 (208-230V 3~ 60 Hz), code 7 (575V 3~ 60 Hz), and code 9 (380-400V 3~ 60 Hz). This is the second step of Danfoss Commercial Compressors (DCC) alternative refrigerant program. While the first step was focusing on the European market, DCC is now offering all the voltage codes to support the transition in the North American market

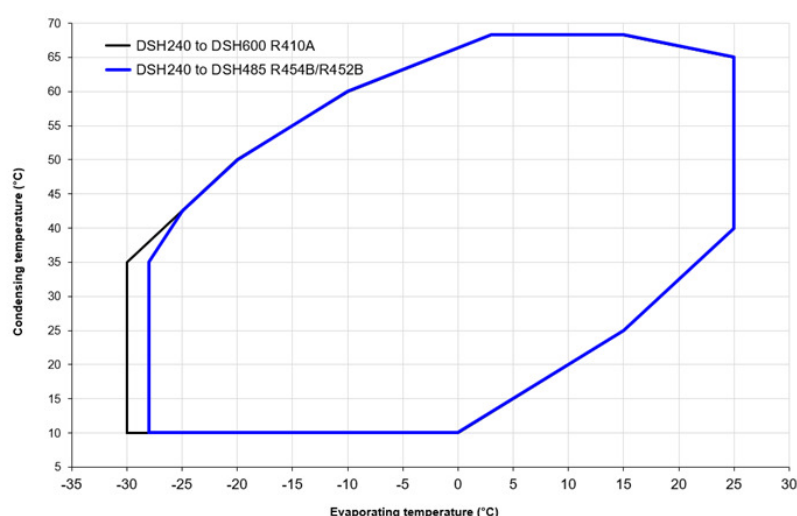
We also notify you that Danfoss has qualified a larger R454B/R452B application map on large scrolls, now offering similar limitations as R410A.

Multi-refrigerant DSH compressors already qualified according to UL60335-2-34 4th edition have been reevaluated according to the 6th edition, which will result in a raise of the UL index in the technical reference. The opportunity of this reevaluation campaign has been taken to qualify the DSH240-4 on the voltage range 380V-415V instead of 380V-400V. This will lead to an update of the locked rotor amperage (LRA) value of this compressor.

Finally, we inform you that, following the qualification DSH multi-refrigerant in codes 3/7/9, Danfoss Commercial Compressors will discontinue the production of these 30Ton and 40Ton compressors in their R410A_ only version.

Description of the changes

- **New R454B/R452B application map for DSH large compressors**



Note that low evaporating limitation is the same for R454B/R452B and R410A in terms of pressure, the small difference appearing in the graph only resulting from the conversion into temperatures and is purely the consequence of refrigerants properties.

▪ **New DSH multi-refrigerant references** (Voltage codes 3, 7 and 9)

Compressor model	Packaging	Motor protection	Ordering references
DSH240-3	Single pack	Module 110-240V	120H1751
DSH240-3	Industrial pack	Module 110-240V	120H1750
DSH240-3	Single pack	Module 24V AC	120H1749
DSH240-3	Industrial pack	Module 24V AC	120H1748
DSH295-3	Single pack	Module 110-240V	120H1747
DSH295-3	Industrial pack	Module 110-240V	120H1746
DSH295-3	Single pack	Module 24V AC	120H1745
DSH295-3	Industrial pack	Module 24V AC	120H1744
DSH381-3	Single pack	Module 110-240V	120H1743
DSH381-3	Industrial pack	Module 110-240V	120H1742
DSH381-3	Single pack	Module 24V AC	120H1741
DSH381-3	Industrial pack	Module 24V AC	120H1740
DSH485-3	Single pack	Module 110-240V	120H1739
DSH485-3	Industrial pack	Module 110-240V	120H1738
DSH485-3	Single pack	Module 24V AC	120H1737
DSH485-3	Industrial pack	Module 24V AC	120H1736

Compressor model	Packaging	Motor protection	Ordering references
DSH240-7	Single pack	Module 110-240V	120H1735
DSH240-7	Single pack	Module 24V AC	120H1734
DSH295-7	Single pack	Module 110-240V	120H1733
DSH295-7	Single pack	Module 24V AC	120H1732
DSH381-7	Single pack	Module 110-240V	120H1731
DSH381-7	Single pack	Module 24V AC	120H1730
DSH485-7	Single pack	Module 110-240V	120H1729
DSH485-7	Single pack	Module 24V AC	120H1728

Compressor model	Packaging	Motor protection	Ordering references
DSH240-9	Industrial pack	Module 110-240V	120H1727
DSH240-9	Single pack	Module 110-240V	120H1726
DSH240-9	Industrial pack	Module 24V AC	120H1725
DSH240-9	Single pack	Module 24V AC	120H1724
DSH295-9	Industrial pack	Module 110-240V	120H1723
DSH295-9	Single pack	Module 110-240V	120H1722
DSH295-9	Industrial pack	Module 24V AC	120H1721
DSH295-9	Single pack	Module 24V AC	120H1720
DSH381-9	Industrial pack	Module 110-240V	120H1719
DSH381-9	Single pack	Module 110-240V	120H1718
DSH381-9	Industrial pack	Module 24V AC	120H1717
DSH381-9	Single pack	Module 24V AC	120H1716
DSH485-9	Industrial pack	Module 110-240V	120H1715
DSH485-9	Single pack	Module 110-240V	120H1714
DSH485-9	Industrial pack	Module 24V AC	120H1713
DSH485-9	Single pack	Module 24V AC	120H1712

Compliance to UL 60335-2-34 6th Edition:

The compliance to the 6th edition of UL 60335-2-34 is highlighted on the compressor nameplate by the rise of the UL index in the compressor technical reference (7th digit).

The DSH240-4 now qualified on voltage range "380-415V" will have its LRA raised from 215A to 227A.



DSH381/485 (30T / 40T) "R410A only" code 3/ 7/ 9 phased out:

Compressor model	Single packaging reference	Industrial packaging reference	Former technical reference	New technical reference (UL 6 th edition)
DSH240-4 110-230 V module	120H1374	120H1373	DSH240A4APC	DSH240B4APC
DSH240-4 24V module	120H1376	120H1375	DSH240A4AXC	DSH240B4AXC
DSH295-4 110-230 V module	120H1370	120H1369	DSH295A4APC	DSH295B4APC
DSH295-4 24V module	120H1372	120H1371	DSH295A4AXC	DSH295B4AXC
DSH381-4 110-230 V module	120H1366	120H1365	DSH381B4APD	DSH381C4APD
DSH381-4 24V module	120H1368	120H1367	DSH381B4AXD	DSH381C4AXD
DSH485-4 110-230 V module	120H1362	120H1361	DSH485B4APC	DSH485C4APC
DSH485-4 24V module	120H1364	120H1363	DSH485B4AXC	DSH485C4AXC

From March 2022 the DSH381/485 "R410A only" voltage code 3/7/9 will be phased out. They will be advantageously replaced by DSH multi-refrigerant version.

Please consider following replacement table.

References to be phased out (R410A only 4 th edition)		New multi-refrigerant references	
Compressor designation	Old codes	Designation	Replacement code
DSH381-3AB-SINGLE	120H1281	→ DSH381-3AP-SINGLE	120H1743
DSH381-3AB-INDUST	120H1280	→ DSH381-3AP-INDUST	120H1742
DSH381-3AA-SINGLE	120H1283	→ DSH381-3AX-SINGLE	120H1741
DSH381-3AA-INDUST	120H1282	→ DSH381-3AX-INDUST	120H1740
DSH485-3AB-SINGLE	120H1460	→ DSH485-3AP-SINGLE	120H1739
DSH485-3AB-INDUST	/	→ DSH485-3AP-INDUST	120H1738
DSH485-3AA-SINGLE	120H1344	→ DSH485-3AX-SINGLE	120H1737
DSH485-3AA-INDUST	120H1343	→ DSH485-3AX-INDUST	120H1736
DSH381-7AB-SINGLE	120H1294	→ DSH381-7AP-SINGLE	120H1731
DSH381-7AA-SINGLE	120H1295	→ DSH381-7AX-SINGLE	120H1730
DSH485-7AB-SINGLE	120H1292	→ DSH485-7AP-SINGLE	120H1729
DSH485-7AA-SINGLE	120H1293	→ DSH485-7AX-SINGLE	120H1728
DSH381-9AB-INDUST	120H1304	→ DSH381-9AP-INDUST	120H1719
DSH381-9AB-SINGLE	120H1305	→ DSH381-9AP-SINGLE	120H1718

DSH381-9AA-INDUST	120H1306	→	DSH381-9AX-INDUST	120H1717
DSH381-9AA-SINGLE	120H1307	→	DSH381-9AX-SINGLE	120H1716
DSH485-9AB-INDUST	120H1300	→	DSH485-9AP-INDUST	120H1715
DSH485-9AB-SINGLE	120H1301	→	DSH485-9AP-SINGLE	120H1714
DSH485-9AA-INDUST	120H1302	→	DSH485-9AX-INDUST	120H1713
DSH485-9AA-SINGLE	120H1303	→	DSH485-9AX-SINGLE	120H1712

- **DSH240/295 models (20/25T) “R410A only”** models made in Wuqing plant, China

All DSH in multi-refrigerant version and UL 6th edition will be exclusively produced in the Trevoux factory, France.

Consequently, North American customers interested in multi-refrigerant version and UL 6th edition will have to order compressors from France.

Please consider following equivalence table.

CNCC production			FRCC production	
Compressor designation	R410A only UL 4 th edition		Compressor designation	Multi-refrigerant R410A/R454B/R452B UL 6 th edition
DSH240-4AA-SINGLE	120H1331	→	DSH240-4AX-SINGLE	120H1376
DSH240-4AB-SINGLE	120H1329	→	DSH240-4AP-SINGLE	120H1374
DSH295-4AA-SINGLE	120H1327	→	DSH295-4AX-SINGLE	120H1372
DSH295-4AB-SINGLE	120H1325	→	DSH295-4AP-SINGLE	120H1370
DSH240-4AA-INDUST	120H1330	→	DSH240-4AX-INDUST	120H1375
DSH240-4AB-INDUST	120H1328	→	DSH240-4AP-INDUST	120H1373
DSH295-4AA-INDUST	120H1326	→	DSH295-4AX-INDUST	120H1371
DSH295-4AB-INDUST	120H1324	→	DSH295-4AP-INDUST	120H1369
DSH240-3AA-SINGLE	120H1291	→	DSH240-3AX-SINGLE	120H1749
DSH240-3AB-SINGLE	120H1289	→	DSH240-3AP-SINGLE	120H1751
DSH295-3AA-SINGLE	120H1287	→	DSH295-3AX-SINGLE	120H1745
DSH295-3AB-SINGLE	120H1285	→	DSH295-3AP-SINGLE	120H1747
DSH240-3AA-INDUST	120H1290	→	DSH240-3AX-INDUST	120H1748
DSH240-3AB-INDUST	120H1288	→	DSH240-3AP-INDUST	120H1750
DSH295-3AA-INDUST	120H1286	→	DSH295-3AX-INDUST	120H1744
DSH295-3AB-INDUST	120H1284	→	DSH295-3AP-INDUST	120H1746
DSH240-7AA-SINGLE	120H1291	→	DSH240-7AX-SINGLE	120H1734
DSH240-7AB-SINGLE	120H1289	→	DSH240-7AP-SINGLE	120H1735
DSH295-7AA-SINGLE	120H1287	→	DSH295-7AX-SINGLE	120H1732
DSH295-7AB-SINGLE	120H1285	→	DSH295-7AP-SINGLE	120H1733
DSH240-9AA-SINGLE	12H1315	→	DSH240-9AX-SINGLE	120H1724
DSH240-9AB-SINGLE	12H1313	→	DSH240-9AP-SINGLE	120H1726
DSH295-9AA-SINGLE	12H1311	→	DSH295-9AX-SINGLE	120H1720
DSH295-9AB-SINGLE	12H1309	→	DSH295-9AP-SINGLE	120H1722
DSH240-9AA-INDUST	12H1314	→	DSH240-9AX-INDUST	120H1725
DSH240-9AB-INDUST	12H1312	→	DSH240-9AP-INDUST	120H1727
DSH295-9AA-INDUST	12H1310	→	DSH295-9AX-INDUST	120H1721
DSH295-9AB-INDUST	12H1308	→	DSH295-9AP-INDUST	120H1723

Product Discontinuation of PM, PML, PMLX Spare Parts



PM, PML and PMLX valves were phased out several years ago and now it is time for some of the associated complex spare parts.

We have decided to phase out below listed spare parts for the PM, PML and PMLX valves.

We will not phase out all spare parts related to PM, PML and PMLX valves. Danfoss will continue to offer the most critical spare parts for the valves so it is possible to do an inspection and service, but a complete renovation will no longer be possible.

For all valves size 25-65 mentioned in the list below, we can offer the alternative ICV-PM. With this the valve can be replaced with the new portfolio of ICS, ICL and ICLX without cutting or welding on site, instead of a complete renovation. For more information refer to the datasheet for ICS and ICLX.

Following code numbers will be phased out:

Sales code	Description
027F0556	PML 32 OVERHAUL KIT
027F0557	PML 40 OVERHAUL KIT
027F0558	PML 50 OVERHAUL KIT
027F0559	PML 65 OVERHAUL KIT
027F0563	PMLX 32 OVERHAUL KIT
027F0568	PMLX 40 OVERHAUL KIT
027F0569	PMLX 50 OVERHAUL KIT
027F0570	PMLX 65 OVERHAUL KIT
027F3370	OVERHAUL KIT C, PM20 (STD. CONE)
027F3371	PM25 (STD. CONE) - OVERHAUL KIT C
027F3373	OVERHAUL KIT, PM32 STD. CONE
027F3374	OVERHAUL KIT C, PM40 STD. CONE

Sales code	Description
027F3375	OVERHAUL KIT, PM50 STD. CONE
027F3376	OVERHAUL KIT, PM65 STD. CONE
027F3380	OVERHAUL KIT, PM5
027F3381	PM10 (V. CONE) - OVERHAUL KIT C
027F3382	PM15 (V. CONE) - OVERHAUL KIT C
027F3383	OVERHAUL KIT, PM32 V. CONE
027F3384	OVERHAUL KIT, PM 40 V-CONE
027F3385	OVERHAUL KIT, PM50 V. CONE
027F3386	OVERHAUL KIT, PM65 V. CONE

Affected code numbers will be phased out by December 2022.

The last buy option will be Dec. 31st, 2022, and the last orders will then be delivered in beginning of 2023.

For more information, please visit our Danfoss Store or contact your local sales representative.

New Product Overviews Featuring Industrial Controls Products

We have published new product overviews on pressure, temperature and fluid monitoring and control products. The product portfolio covers solenoid valves, pressure transmitters, temperature sensors, pressure switches, differential pressure switches and temperature switches.

Find the overviews below:

- [Solenoid valves overview](#)
- [Switches overview](#)
- [Pressure transmitters overview](#)
- [Temperature sensors overview](#)

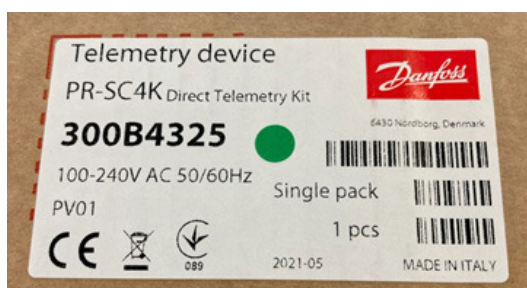


PR-SC4 Modbus Firmware Upgrade Required

As part of Danfoss' continuous improvement process to add functionalities to our products already delivered, a firmware upgrade deployed over the air to support the use of the SC4 with new controllers was completed recently. However, the new firmware requires a very stable connectivity to the cloud to deploy correctly. If connectivity is not secured or stable, some of the device affected might have problems to operate correctly.

This issue affects a very small number of devices already in the field and the large majority of them have been already corrected. Furthermore, all devices that are currently been sold or delivered have been corrected. However, if you are experiencing an issue with an SC4 or are planning to deploy an SC4, contact your Danfoss point of contact for a correct replacement.

New devices that have been updated will be marked as follows. A green sticker has been added to identify the new stock.



Affected products:

	Old Codes	New Codes
PR-SC4 Modbus Single Pack	300B4301	300B4326
PR-SC4 Modbus US Single Pack	300B4318	
PR-SC4K Modbus Telemetry Kit	300B4310	300B4327
PR-SC4K Modbus US Telemetry Kit	300B4320	

Videos in YouTube

- Head2Head: Cold rooms or walk-ins vs. commercial refrigerators - [LINK](#)
- Refrigeration safety | Ask an expert:
 - Operation of a safety valve set pressure - [LINK](#)
 - What to consider with safety valves? - [LINK](#)
 - What can cause high/low pressure switches to not function over time? - [LINK](#)
- Requirements for refrigeration systems | Ask an expert - [LINK](#)
- Danfoss Sensing Solutions videos:
 - The influence of smart sensors on machine learning and AI - [LINK](#)
 - Sensor fusion - [LINK](#)



Details for Additional Information

UK/IE

[Cooling United Support Hub](#)

[Support Made Easy](#)

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