

ENGINEERING
TOMORROW



October 2024 | 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!

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AK-SM 800A Series, Software Release 4.1 Including Security Updates

Danfoss announces a new software release of the ADAP-KOOL™ System Manager 800A series.

Please note, a new Danux package (4.14.014.194) accompanies this release and is recommended to be installed prior to loading the AK-SM 800A application update. Both packages can be found on [ADAP-KOOL support site](#).

Software package 4.1 requires Danux 4.14.014.194



Important notes on Package 4.1 update

Before installing Package 4.1, we recommend first installing Danux 4.14.014.194. If you're updating from version 4.0, your current security settings will stay the same. However, if you're updating from version 3.3 or earlier, there are important security changes you need to be aware of.

With the previous update (4.0), Danfoss introduced improved security for the AK-SM 800A System Manager. This is part of our effort to follow the best practices and meet required standards for IT security. In this update, we have focused on strengthening the system's security by default. This includes features like session control, which is a tool that manages how users log in and interact with the system. The default security setting is now Strict mode, which ensures a more secure operation. Session control offers different configuration settings (Backward compatibility, Permissive and Strict).

Depending on how these settings are configured, the remote interface will need to comply accordingly.

For more details on product security visit [ADAP-KOOL® support site](#).

Software Release 4.1 (package ID 4.1.4) main highlights (full change log [available online](#))

Security
New Danux for improved security (4.14.014.194)
New Features
New polling suspension (supporting use case of pre-programming generic devices)
Support for Danfoss Alsmart device 32-bit integers
Bug fixes
Strict mode now supported for Alsense demand response service / Audit trail formatting issue
SVB5 & Service Tool page navigation and data update are very slow in Strict/Permissive mode
Carlo Gavazzi EM530 & EM511 not showing kilowatts on Device Detail Graph

Software Installation

Perform a unit backup and check for any open alarms before proceeding with update.

Step 1: Install Danux 4.1.4.014.194.lpk

- Open StoreView Browser 5 or StoreView Web and select the OS update option to start the Danux upgrade.
- Allow a few minutes for the new OS to be fully installed.

Important Notes:

- The package size is large, and depending on your network speed, the installation may take 10+ minutes.
- Ensure power is not interrupted during the OS update.
- If your system uses DHCP, it is recommended to perform the update locally, as the IP address may change after rebooting.

Step 2: Update System Manager Firmware (Package 4.1.4.spk)

- Using StoreView Browser 5, StoreView Web, or a local USB flash drive, select the OS update option and proceed with the firmware upgrade.
- Ensure power is not interrupted during the software update.
- Once the installation is complete, verify that the system is functioning correctly.

Approved products:

The below table shows approved AK-SM 800A portfolio versions suitable for software 4.1.

AK-SM 800A variants

Type	Description	Code no.
AK-SM 820A	C-Store (Refrigeration / HVAC / Lighting)	080Z4024
AK-SM 850A	Refrigeration (including Lighting)	080Z4021
AK-SM 850A – no WiFi	No Wi-Fi, Refrigeration (including Lighting)	080Z4022
AK-SM 880A	Full (Refrigeration / HVAC / Lighting)	080Z4028
AK-SM 880A – TP78	Retro-fit Full (Refrigeration / HVAC / Lighting)	080Z4029

AK-SM 800A variants without LonWorks®

Type	Description	Code no.
AK-SM 820A	C-Store (Refrigeration / HVAC / Lighting)	080Z4044
AK-SM 850A	Refrigeration (including Lighting)	080Z4041
AK-SM 880A	Full (Refrigeration / HVAC / Lighting)	080Z4048

Timing

Package 4.1 is released for general update and is available via [ADAP-KOOL® support site](#).

Security

To help keeping your Danfoss products secured and protected, we emphasize implementing cyber security best practices to maximize your protection against malicious attacks.

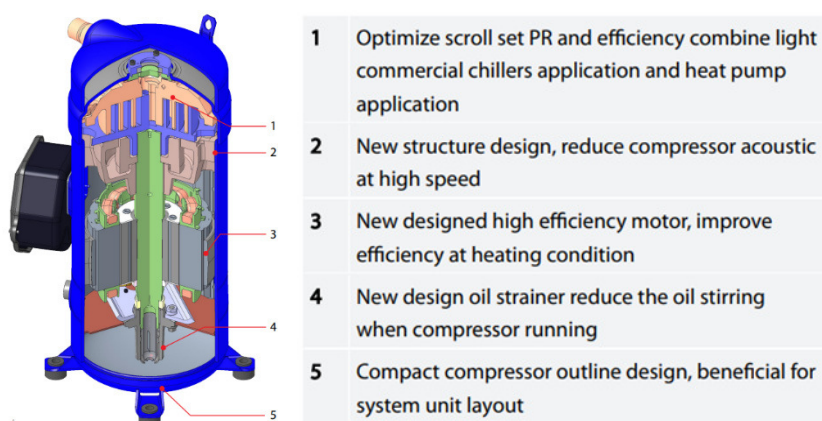
R290 Variable Speed Compressor VZN Series Release

Danfoss has released a new variable speed compressor VZN086/104/140/175 models that can be used with R290 refrigerant. A new type of drive, CDS203, has also been released for use with the VZN series.

R290 is a hydrocarbons with a zero Ozone Depletion Potential (ODP=0) and a low Global Warming Potential (GWP:3/AR4) natural substance found in natural gas (up to 20%). It is a technically splendid refrigerant with a high thermodynamic efficiency and has been used as a refrigerant for almost 100 years, serving a variety of applications with many different capacities.

R290 is non-toxic but highly flammable. Under certain atmospheric concentrations, it easily reacts with oxygen and burns or creates an explosion. According to ISO817, it is categorized as an A3 refrigerant. Please refer to European regulations and directives about the use of refrigerants of the A3 safety group (EN378, EN60335).

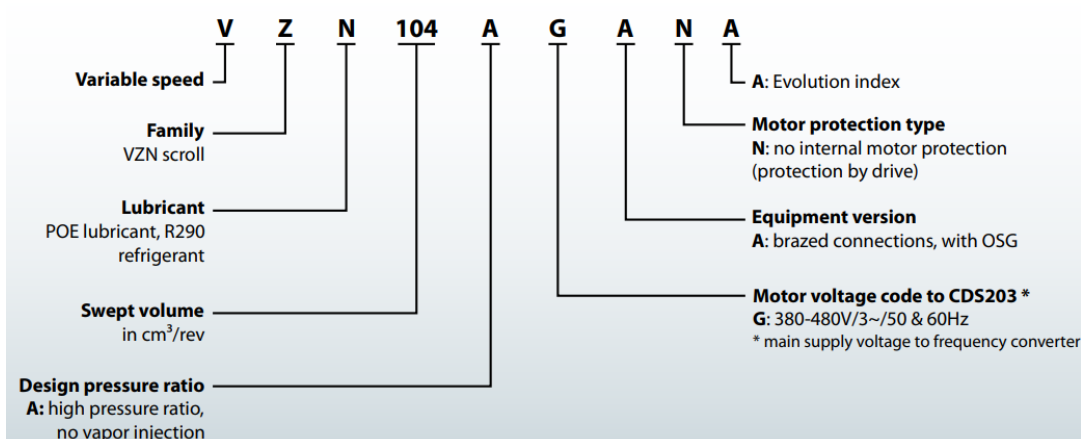
The VZN scroll compressor for R290 is a new design optimized for medium-density refrigerant to achieve the highest efficiency in heating and cooling modes, a more comprehensive operating map, and an increased lifetime. The VZN series includes four models: VZN086, VZN104, VZN140, and VZN175 with code G motors. They have CE certification.



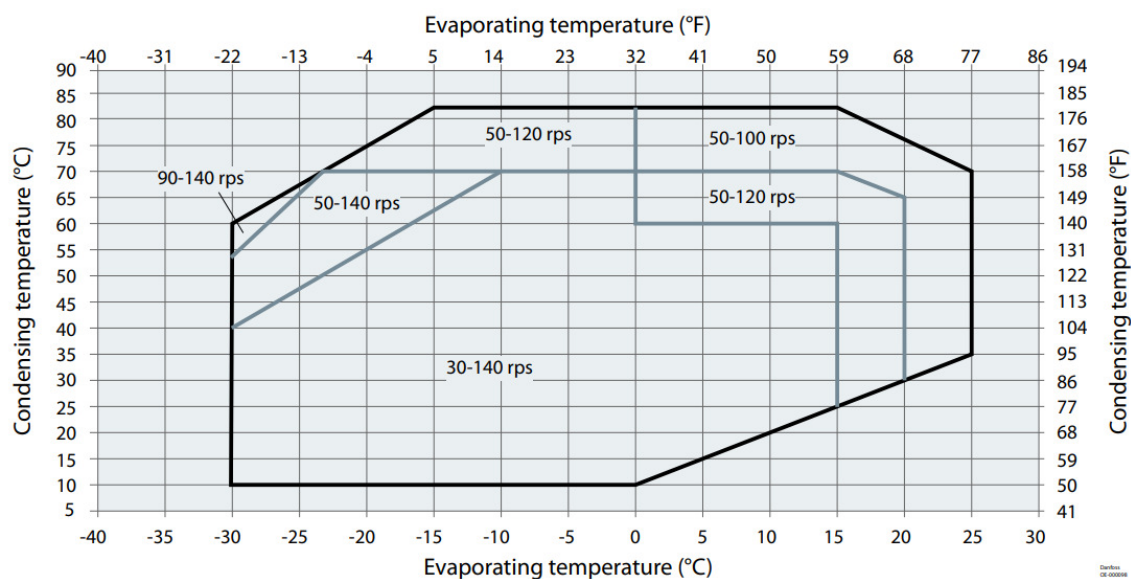
Technical data

Compressor model	Swept volume		Displacement										Oil charge		Net weight	
			30 rps		60 rps		90 rps		120 rps		140 rps					
	cm ³ /rev	cu.in/rev	m ³ /h	cu.ft/h	m ³ /h	cu.ft/h	m ³ /h	cu.ft/h	m ³ /h	cu.ft/h	m ³ /h	cu.ft/h	dm ³	oz	kg	lbs
VZN086	86	5,25	9,29	328	18,58	656	27,86	984	37,15	1312	43,34	1531	3,3	112	56	123
VZN104	104	6,35	11,23	397	22,46	793	33,7	1190	44,93	1587	52,42	1851	3,3	112	56	123
VZN140	140	8,54	15,12	534	30,24	1068	45,36	1602	60,48	2136	70,56	2492	3,3	112	65	143
VZN175	175	10,68	18,90	667	37,80	1335	56,7	2002	75,60	2670	88,20	3115	3,3	112	65	143

Nomenclature



Operating envelope



Please refer to the application guideline for superheat management, especially at high evaporating temperatures.

Sales codes

Single pack

Compressor Model	Technical Name	Commercial Name
VZN086	VZN086AGANA	120G0471
VZN104	VZN104AGANA	120G0469
VZN140	VZN140AGANA	120G0467
VZN175	VZN175AGANA	120G0465

Industrial pack

Compressor Model	Technical Name	Commercial Name
VZN086	VZN086AGANA	120G0472
VZN104	VZN104AGANA	120G0470
VZN140	VZN140AGANA	120G0468
VZN175	VZN175AGANA	120G0466

At the same time, a new type of drive, CDS203, has also been released. CDS203 15/18.5/22/30 kW frequency converter for VZN086-104-140-175 comply with EN61800. They are not considered an ignition source when used with A3-classified refrigerants and are compliant against clause 22.116 and 22.117 from IEC60335-2-40.

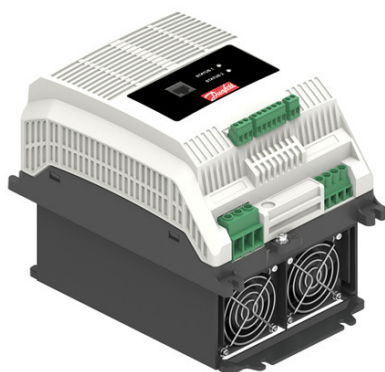
CDS203 can work at ambient temperature -20°C~60°C. It includes 2 frame sizes (Frame Size 3 for 15/18.5kW and Frame Size 4 for 22/30kW) and 2 versions (heatsink and cold plate version).

CDS203 drives are available in IP20 Front and IP55 Rear (Through Panel Mounting).

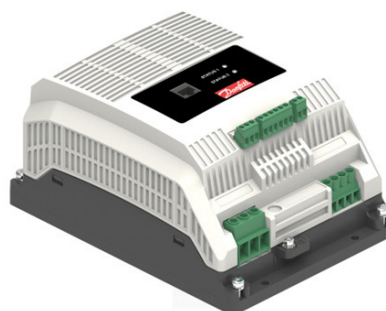
VZN compressors with CDS203 drive packages, can achieve EMC Class A Group 1(Category C2 according to EN61800-3) emission requirements (without filter work in process).

If you need more information, please contact Danfoss technical support.

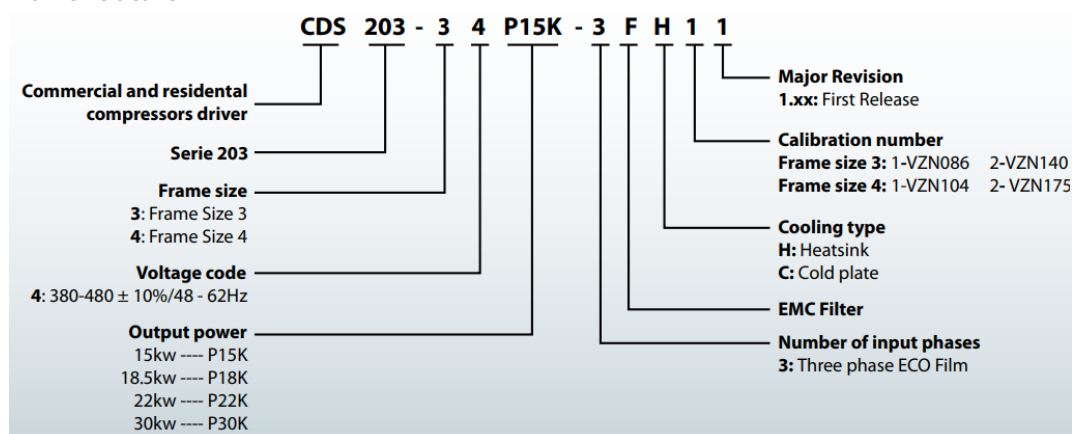
CDS203 heatsink version



CDS203 cold plate version



Nomenclature



Sales codes

Single pack

Frequency Converter					
Compressor Model	Model	Power	Cooling Type	Drive Name	Sales Code
VZN086	CDS203	15 kW	Heat sink	CDS203-34P15K-3FH11	116B3001
			Cold plate	CDS203-34P15K-3FC11	116B4001
VZN104	CDS203	18.5 kW	Heatsink	CDS203-34P18K-3FH21	116B3002
			Cold plate	CDS203-34P18K-3FC21	116B4002
VZN140	CDS203	22.0 kW	Heatsink	CDS203-44P22K-3FH11	116B3003
			Cold plate	CDS203-44P22K-3FC11	116B4003
VZN175	CDS203	30 kW	Heatsink	CDS203-44P30K-3FH21	116B3004
			Cold plate	CDS203-44P30K-3FC21	116B4004

Industrial pack

Frequency Converter					
Compressor Model	Model	Power	Cooling Type	Drive Name	Sales Code
VZN086	CDS203	15 kW	Heat sink	CDS203-34P15K-3FH11	116F3001
			Cold plate	CDS203-34P15K-3FC11	116F4001
VZN104	CDS203	18.5 kW	Heatsink	CDS203-34P18K-3FH21	116F3002
			Cold plate	CDS203-34P18K-3FC21	116F4002
VZN140	CDS203	22.0 kW	Heatsink	CDS203-44P22K-3FH11	116F3003
			Cold plate	CDS203-44P22K-3FC11	116F4003
VZN175	CDS203	30 kW	Heatsink	CDS203-44P30K-3FH21	116F3004
			Cold plate	CDS203-44P30K-3FC21	116F4004

The VZN series was released in July 2024.

If you need additional information regarding the R290 variable speed compressor VZN series release, please contact Danfoss technical support.

KoolProg Version 5.2.x – Maintenance Release Update

A new version of KoolProg (Ver. 5.2) is now available for download, which we have made several improvements and enhancements.

Includes auto software update for future releases (Ver 5.3 onwards). Supports new software version of AK-CC55 and we have added couple of new codes in this version.

Detailed description

1. Supports AK-CC55 Multicoil and Compact controllers with latest SW versions.

Product description	Part code	Software version
AK-CC55 - Multicoil case controller	084B4084	1.91 and 1.92
AK-CC55 - Multicoil case controller	084B4085	1.91 and 1.92
AK-CC55 - Compact case controller	084B4081	2.13

2. KoolProg Software auto update feature Issue fixed:

KoolProg SW auto update feature implemented in 5.1 version stopped working because of database migration to different server. This issue is fixed in 5.2 version and this version onwards users will receive a pop-up message whenever new version of KoolProg is available.

“Check for updates” button under the “About” section in previous version of KoolProg (5.1.0) is not working properly and users are advised not to use this button, it will display an incorrect error message like “Please check the network connection.”



3. Improved the performance of read/write functions in KoolProg window of AK-CC controllers

We have enhanced the performance on reading and writing of parameters in KoolProg.

4. Supports dynamic min max feature for EKE 1x controllers

Supports the dynamic min max feature for all the applicable parameters across all variants of EKE 1x controllers.

Known issues/ Specific limitations to this release:

1. KoolProg sometimes doesn't close the communication port when the MPK device is disconnected from KoolKey. This requires KoolKey disconnection and re-connection to free up the communication port.
2. MPK (EKA 201) doesn't support unknown controller file programming as these files cannot be opened in KP.
3. MYK version below 5.01 may not support all KoolProg features for AK-CC55 controllers.

Affected products

- EKE 1x (EKE 1A, EKE 1B, EKE 1C EKE 1D)
- AK-CC55

The new version of KoolProg is now [available for download here](#)

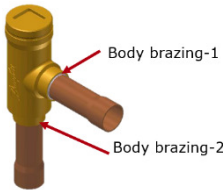

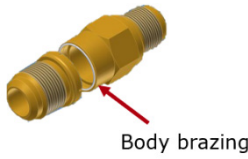
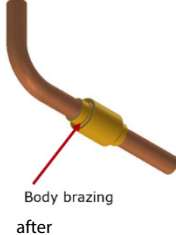

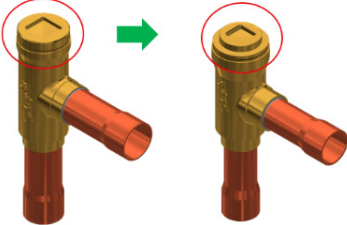


We hope that you enjoy the experience of working with this new version of KoolProg.

For any queries, please reach out to your local Danfoss Sales Contact.

NRV Check Valves - Brazing Material Change

The standardization around fewer solder materials will allow Danfoss to benefit more from the use of internal brazing know-how across our factories and will help us maintain a uniform quality, which will be a benefit for our customers. As part of the project for solder material standardization, a new Cu-based brazing alloy without zinc will be applied to the selected NRV check valves such as NRV 22s/28s/35s, flare version, and bend tube versions. In addition, a minor change to the component will be applied to the NRV22s valve body design.

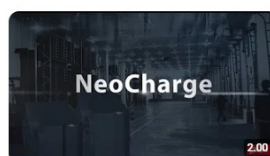
The code numbers of the affected NRV will be kept the same. We expect to implement both changes from September 2024 in the Danfoss factory as a running change. It is expected that both old and new designs will be in the market between October and December 2024.

Highlight of Changes			
<p>Change of solder material</p> <p>A new Cu based brazing alloy without Zinc will be applied to</p> <ul style="list-style-type: none"> ▪ NRV 22s/28s/35s ▪ Flare 6/10/12/16 ▪ NRV 12s Bend tube 	<p>NRV solder 22s/28s/35s</p>  <p>before</p> 	<p>NRV flare 6/10/12/16</p>  <p>Body brazing</p>	<p>NRV bend tube 12s</p>  <p>Body brazing</p> <p>after</p> 
<p>Minor change of component for NRV 22s</p>	<p>Old Design New Design</p>  <p>before after</p>  		

If you need additional information, please contact your local Danfoss sales representative.

Videos and Infographics

- NeoCharge low-charge solution explained - [LINK](#)
- Introducing Danfoss brazed plate heat exchangers for propane heat pumps - [LINK](#)
- H39L-EZU Micro Plate™ heat exchanger | Danfoss solutions for propane heat pumps - [LINK](#)
- Commercial refrigeration applications: Move on from R404A to R449A infographic- [LINK](#)
- The Danfoss Optyma™ iCO₂ enables the use of CO₂ in smaller commercial systems infographic- [LINK](#)



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