

ENGINEERING  
TOMORROW



July/August 2021 | 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.

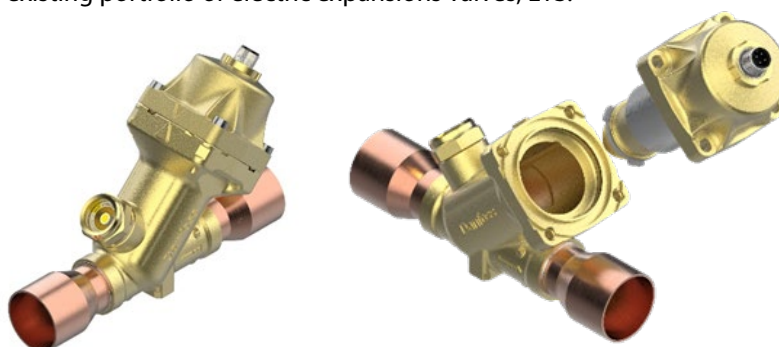
We hope you will enjoy reading Danfoss Tech Insider!

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## New Electric Expansion Valve, ETS 175L & ETS 250L

Danfoss is pleased to announce the release 1 of the ETS 175L/250L range, which is an important addition and completion to the already existing portfolio of electric expansions valves, ETS.



With many years of experience within electric expansion valves, the new range of ETS Large series offers high reliability and precise solutions for expansion and flow control in a wide range of refrigeration and air conditioning systems, the valve design uses bi-polar drives, and various control solutions exist that are compatible with bi-polar drives.

The new ETS 175L and ETS 250L, has been designed with optimized piston and actuator design to achieve high performance and specification. The new 175L/ETS 250L can be a drop in solution for the old ETS valves with S-flow characteristic. Large ETS also has a variant with Linear flow similar to the ETS Colibri flow characteristic. Variants will optimize system performance based on application and standard requirements.

### Main Applications

- Chillers
- Heat pumps from 300 to 900 kW / 85 to 260 TR

### Key Features

- Precision flow control with high resolution
- Proven know-how and high reliability
- Easy serviceable
- Wide range for all common and new refrigerants, A2L refrigerant supported
- Drop in solution to convert old ETS

### Product Codes

Following are the codes that are available for sales.

Code no	Valve type	Flow characteristic/ Connection	Packaging
034G3602	ETS175L Electric exp. valve	ETS175L- <b>linear</b> -SG-1-1/8x1-1/8-	Single Pack
034G3624	ETS175L Electric exp. valve	ETS175L-SCurve-SG-1-1/8x1-1/8-	Single Pack
034G3604	ETS175L Electric exp. valve	ETS175L- <b>linear</b> -1-1/8x1-1/8-	Single Pack
034G3603	ETS175L Electric exp. valve	ETS175L- <b>linear</b> -SG-1-3/8x1-3/8-	Single Pack
034G3625	ETS175L Electric exp. valve	ETS175L- <b>linear</b> -SG-1-3/8x1-3/8-	Single Pack
034G3600	ETS175L Electric exp. valve	ETS175L- <b>linear</b> -SG-1-3/8x1-3/8-	Single Pack
034G3601	ETS175L Electric exp. valve	ETS175L-SCurve-SG-1-3/8x1-3/8-	Single Pack
034G3626	ETS175L Electric exp. valve	ETS175L- <b>linear</b> -SG-1-5/8x1-5/8-	Single Pack
034G3627	ETS175L Electric exp. valve	ETS175L-SCurve-SG-1-5/8x1-5/8-	Single Pack
034G3628	ETS175L Electric exp. valve	ETS175L- <b>linear</b> -SG-42x42-	Single Pack
034G3629	ETS175L Electric exp. valve	ETS175L-SCurve-SG-42x42-	Single Pack

<b>034G3616</b>	ETS250L Electric exp. valve	ETS250L-Linear-SG-1-1/8x1-1/8-	Single Pack
<b>034G3617</b>	ETS250L Electric exp. valve	ETS250L-SCurve-SG-1-1/8x1-1/8-	Single Pack
<b>034G3607</b>	ETS250L Electric exp. valve	ETS250L-Linear-SG-1-3/8x1-3/8-	Single Pack
<b>034G3608</b>	ETS250L Electric exp. valve	ETS250L-SCurve-SG-1-3/8x1-3/8-	Single Pack
<b>034G3610</b>	ETS250L Electric exp. valve	ETS250L-linear-SG-1-3/8x1-3/8-	Single Pack
<b>034G3605</b>	ETS250L Electric exp. valve	ETS250L-Linear-SG-1-5/8x1-5/8-	Single Pack
<b>034G3609</b>	ETS250L Electric exp. valve	ETS250L-linear-SG-1-5/8x1-5/8-	Single Pack
<b>034G3618</b>	ETS250L Electric exp. valve	ETS250L-Linear-1-5/8x1-5/8-	Single Pack
<b>034G3606</b>	ETS250L Electric exp. valve	ETS250L-SCurve-SG-1-5/8x1-5/8-	Single Pack
<b>034G3619</b>	ETS250L Electric exp. valve	ETS250L-Linear-SG-1-5/8x2-1/8-	Single Pack
<b>034G3620</b>	ETS250L Electric exp. valve	ETS250L-SCurve-SG-1-5/8x2-1/8-	Single Pack
<b>034G3621</b>	ETS250L Electric exp. valve	ETS250L-Linear-SG-42x42-	Single Pack
<b>034G3622</b>	ETS250L Electric exp. valve	ETS250L-SCurve-SG-42x42-	Single Pack
<b>034G3611</b>	ETS250L Electric exp. valve	ETS250L-Linear-42x42-	Single Pack
<b>034G3623</b>	ETS250L Electric exp. valve	ETS250L-SCurve-SG-42x42-	Single Pack

## Product Launch of EKF 1A and EKF 2A Stepper Valve Driver



We are pleased to announce the release of the [EKF 1A and EKF 2A](#) Stepper Valve Driver for sale globally.

The new EKF 1A /2A is a Stepper Valve Driver that takes an analog signal from a master controller and converts to steps. Stepper Valve Driver EKF series is for use where stepper motor valves must be accurately controlled, typically in commercial air conditioning, heat pumps, commercial refrigeration, and food retailing applications. The product is intended to be used in the system where master controller maintains the control software but needs a way for driving the valve.

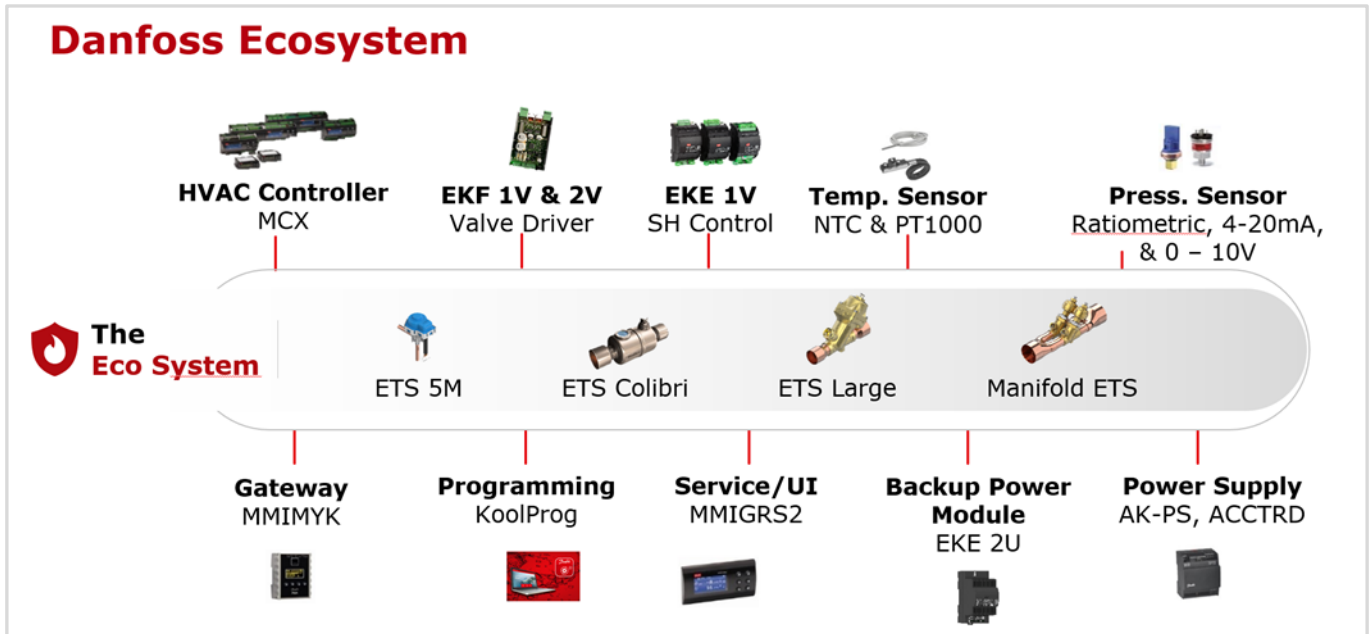
The EKF 1A /2A, Stepper Valve Driver is designed for Danfoss stepper motor valves in mind (i.e ETS series, ETS Colibri, ETS 5M, ETS 6, KVS, CCM/CCMT) but technically it can also be used with 3rd party valves with 3rd party controllers. For detail refer to the product specification.

### Features:

- 1 valve and 2 valve variants available
- Bipolar (ETS Colibri, ETS, CCMT) and Unipolar (ETS 5M, ETS 6) valves supported
- Easy selection of Danfoss valve(s) using dip-switches – No display/tools needed
- Selectable 0-10 V and 4-20 mA input reference signal
- Lost step prevention
- Backup power module can be connected i.e. EKE 2U
- DIN rail mounting
- Phoenix Connector terminals
- Digital output available for alarm/error feedback to master controller
- LEDs indicating valve movement and controller status i.e. Error/Warning
- Economical design

For more information, please have a look at the [data sheet](#) or the [Installation guide](#). For a quick visual look, please have a look at the attached brochure and [3D-AR View](#).

Contact your local Danfoss team to update any outstanding stepper valve driver quotes to the new EKF Series. Additionally, we will work with you to find a proper selection of driver type, EEV valve, and accessories to ensure that you are able to take advantage of all the benefits the new EKF stepper driver in combination with package solution Danfoss offers.



## AKS 4100/4100U - Liquid Level Sensor, Short Length 280 mm Available for R744 (CO<sub>2</sub>) and HFC, HCFC

The extension of the Danfoss AKS 4100 / 4100U Liquid Level Sensor program, provides additional opportunities for the product series. With a shorter length and developed for the specific medias R744 (CO<sub>2</sub>) and HFC / HCFC, the new sensor is ready to enter new applications.

The short length, 280 mm, is relevant for both contractors and OEMs due to its compactness, and the new media we have not been able to support until now.

The product will be available with or without HMI (Human Machine Interface) and in two language packs:

- Language Pack 1: English, German, French, Spanish
- Language Pack 2: English, Japanese, Chinese, Russian





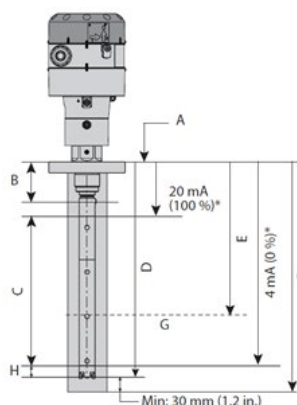
See complete list below, including spare parts:

Code	Description	Refrigerant	Language pack
084H4517	AKS 4100 Coaxial 280 mm with HMI	Ammonia	English, German, French, Spanish
084H4518	AKS 4100 Coaxial 280 mm without HMI	Ammonia	N/A
084H4536	AKS 4100U Coaxial 11 in. with HMI	Ammonia	English, German, French, Spanish
084H4567	AKS 4100 Coaxial 280 mm with HMI	Ammonia	English, Japanese, Chinese, Russian
084H4537	AKS4100U Coaxial 11 in. without HMI	Ammonia	N/A
084H4586	AKS 4100U Coaxial 11 in. with HMI	Ammonia	English, Japanese, Chinese, Russian
084H4574 *	AKS 4100 Coaxial 280 mm without HMI	CO <sub>2</sub> , R134A, R404A, R410A, R22	N/A
084H4572 *	AKS 4100 Coaxial 280 mm with HMI	CO <sub>2</sub> , R134A, R404A, R410A, R22	English, German, French, Spanish
084H4573 *	AKS 4100 Coaxial 280 mm with HMI	CO <sub>2</sub> , R134A, R404A, R410A, R22	English, Japanese, Chinese, Russian
084H4577 *	AKS4100U Coaxial 11 in. without HMI	CO <sub>2</sub> , R134A, R404A, R410A, R22	N/A
084H4575 *	AKS 4100U Coaxial 11 in. with HMI	CO <sub>2</sub> , R134A, R404A, R410A, R22	English, German, French, Spanish
084H4576 *	AKS 4100U Coaxial 11 in. with HMI	CO <sub>2</sub> , R134A, R404A, R410A, R22	English, Japanese, Chinese, Russian
084H4558 *	Process connection – Spare part AKS 4100 - Coaxial D22 - G1 in. - 280 mm	CO <sub>2</sub> , R134A, R404A, R410A, R22	N/A
084H4559 *	Process connection – Spare part AKS 4100U - Coaxial D22 - ¾ in. NPT – 11 in.	CO <sub>2</sub> , R134A, R404A, R410A, R22	N/A
084H4551	Process connection – Spare part AKS 4100 - Coaxial D22 - G1 in. - 280 mm	Ammonia	N/A
084H4552	Process connection – Spare part AKS 4100U - Coaxial D22 - ¾ in. NPT – 11 in.	Ammonia	N/A

\* New sales code numbers

With the short length variant, we have improved the dead zones. Particular in CO<sub>2</sub> the measuring range is improved compared to existing AKS 4100/4100U Coaxial D14 variants.

Refrigerant	Probe Length		Bottom Dead Zone		Top Dead Zone	
	[mm]	[in.]	[mm]	[in.]	[mm]	[in.]
R717 Ammonia	280	11.0	40	1.6	60	2.4
R744 CO <sub>2</sub>			60	2.4		
R134a			50	2		
R404A						
R410A						
R22						



<b>A</b>	Reference point
<b>B</b>	Top dead zone
<b>C</b>	Measuring range
<b>D</b>	Probe length
<b>E</b>	Distance
<b>F</b>	Inner length of standpipe
<b>G</b>	Surface level
<b>H</b>	Bottom dead zone

### Learn more – and get in touch

To learn more about the new AKS 4100/4100U please contact your local Danfoss representative.

## KoolProg Ver 4.4: Maintenance Release Update



We are pleased to release an update of **KoolProg Software (Ver. 4.4)**. We have completed several improvements, enhancements, and bug fixes to give you better and smoother experience working with KoolProg tool and our Danfoss range of electronic controllers. Below are some highlights of the updates made in version 4.3:

### Key highlights of version 4.4:

- Supports the new EKF 1A/2A Stepper valve driver
- Clone feature, new variant support by importing CDF files and new software versions support for AK-CC55
- Existing features/functions enhancements
- General improvement and bug fixes

### Detailed information:

#### 1. Supports the new EKF stepper valve driver EKF 1A and EKF 2A

Following features of KoolProg are now supported for EKF 1A and 2A

- New controller model information import
- Offline project creation
- Import settings from controller
- Online services
- Copy to controller

#### 2. AK-CC55 new features updates

- Clone feature implementation under “Copy to device”
- Support new controller variant and application automatically by importing CDF offline or from controller
- New software versions bundling
- Compact (084B4081) – 1.91 and 2.02
- Single Coil (084B4082 & 084B4083) – 1.33 and 1.53
- Multi Coil (084B4084 & 084B4085)- 1.74 and 1.83

#### 3. Bug Fixes

- EKE patch file integration (Controller reset issue in native languages)
- In-consistency in EETa firmware update
- KoolProg crash when read only type parameter file (.cbk) is saved
- SW version issue in parameter file (back up file) when .erc file format opened and saved under new file name with .erc file format.
- ERC 111A – relay status plotting issue under online services
- ERC 111A – Button configuration parameters default settings correction to match with controller default settings.

#### 4. Improvements:

- Controller connection speed improvement by providing an option under “Preference” window to select specific controller family
- Unknown controller support feature improvement – implemented new algorithm to use most appropriate database to support unknown controller
- Standardized ERC 21x offline project UI with another controller family
- 080G3423 code number added as standard code number with offline project creation support

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

We hope that you will like the experience of working with this new version of KoolProg. For any queries, please reach out to your Danfoss Sales Contact.

## Electronic Platform Upgrade of MBS 4510 (G1A) Pressure Sensor Series



Following an electronics upgrade to many of the Danfoss MBS pressure sensors, MBS 4510 Flush diaphragm (G1A) will change data sheet specification – but keeping same performance as today.

The upgrade will affect MBS 4510 (G1A) and will take place as a running change starting July 2021.

The new Danfoss electronic platform is already released and proven on a series of Danfoss products.

**Accuracy specification will be updated in the data sheet from current 0,5 % FS max to the following, also for current code numbers:**

Pressure range [bar]	Accuracy FS max
-0.25-0.50 - 0.00-4.00	≤± 1.0%
0.00-4.00 - 0.00-25.00	≤± 0.8%

- There is limited need to adjust zero and span via sensor - such calibration is mainly done on controller level.
- Accuracy performance at 20°C will be the same or better than today – the change of specification to 0,8 %/1 % FS max. is due to a production upgrade with a shop floor control system for improved data setup and will ensure quality measurements in production to provide same, repeated quality performance. The upgrade of electronics to digital calibration enables improved accuracy over a broader temperature range.
- The sensor signal behavior over the sensor calibrated pressure range and the sensor function will not change.

#### Product types name change:

From MBS 4510 to MBS 4010. Code numbers will stay the same.



## AK-PC 651 Pack Controller Phase-Out



The existing AK-PC 651 code no. 080G0312 is going to be phased-out and will be migrated to a new HW platform.

A new controller named AK-PC 651A with code no. 080G0336, based on a different HW, will replace the existing AK-PC 651 with code no. 080G0312.

There will not be dimensional changes in the product, but it will present a different layout in terms of I/Os and it will need a different wiring for the electrical connections.

Please contact your local technical support for details if needed.

We have set a last buy order for end of August 2021 and expecting last deliveries by end of November 2021.

After this timeline a limited number of pieces will be available only for service until stock is depleted.

If you have any questions regarding this information, please contact your local Danfoss representative.

## Videos in YouTube

- How to download the Fault and Event log from the Danfoss Turbocor® TTS-TGS-TTH – [LINK](#)
- How pump down works in refrigeration systems – [LINK](#)
- Danfoss Turbocor® TTH/TGH Compressor for Higher Lift Applications – [LINK](#)
- How to correctly mount and remove coils on Danfoss solenoid valves – [LINK](#)
- Coolselector®2 deep dive series - [LINK](#)

## Details for Additional Information

### UK/IE

[Cooling United Support Hub](#)

[Support Made Easy](#)

customerservice.uk@danfoss.com

customerservice.ie@danfoss.com

Customer Service UK & IE tel: 0330 808 6888

### Denmark

[Cooling United Support Hub](#)

[Support Made Easy](#)

kundeservice.dk@danfoss.com

Kundeservice tel: 69 91 80 80

### Norway

[Cooling United Support Hub](#)

[Support Made Easy](#)

kundeservice.no@danfoss.com

Kundeservice tel: 23 96 71 00

### Sweden

[Cooling United Support Hub](#)

[Support Made Easy](#)

kundservice.se@danfoss.com

Kundservice tel: 010 888 7400

### Finland

[Cooling United Support Hub](#)

[Support Made Easy](#)

asiakaspalvelu.fi@danfoss.com

Asiakaspalvelu puh: 0753 251 100

### Baltic countries

Customer Service email:

asiakaspalvelu.fi@danfoss.com

Customer Service tel: +358 753 251 113