

ENGINEERING  
TOMORROW



April 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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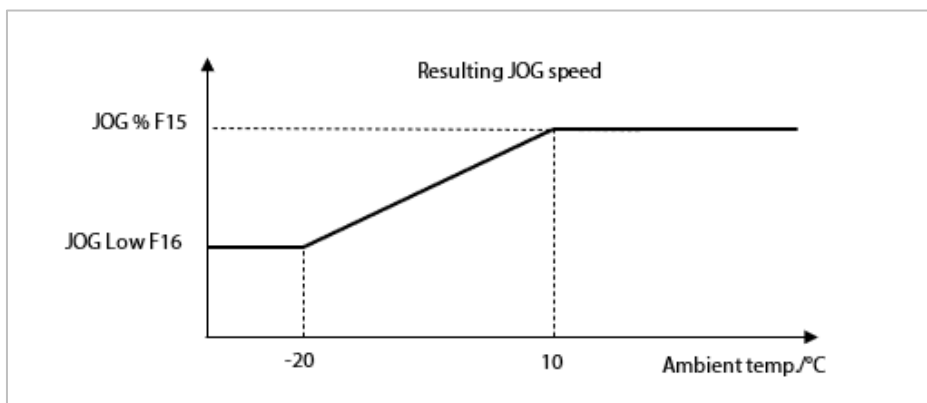
## Optyma™ Plus A2L(A1) Setting in Low Ambient Temperature Conditions

As part of Danfoss' continuous product improvement, the new A2L(A1) version and behavior might require setting the Optyma Plus package condensing unit range in low ambient temperature conditions to avoid frequent start-and-stop.

### Condensing pressure control in relation to outside temperature

The internal amplification factor is lowered to avoid frequent start/stops in low ambient temperatures in which the fan's capacity is high. This provides a smoother regulation. The 'Jog speed' is also lowered in the area from 10°C and down to -20°C. At temp. < -20°C, the 'Jog Low' value can be used.

The "Jog speed," or speed for the first 10 seconds of normal operation, can be set between 40 % and 100 % with parameter F15 (default 40 %), and for outside temperatures +10°C towards -20°C and lower, the speed will be calculated on the base of the Jog Speed at low temperatures, F16 (default 10 %, possible to set between 0 and 40 %)



In the case of A2L(A1) units, we must consider the compressor compartment pre-ventilation when used with A2L refrigerant. The condenser fan starts and operates for a period (30 sec) and speed (40 %) before the compressor starts. This happens to get a safe atmosphere while sucking potential flammable A2L refrigerant gas out of the compressor compartment. There is a fixed delay of about 8 seconds between this pre-ventilation and compressor start to reduce the airflow significantly and avoid any condensing problems on low ambient temperatures.

### Low-pressure monitoring

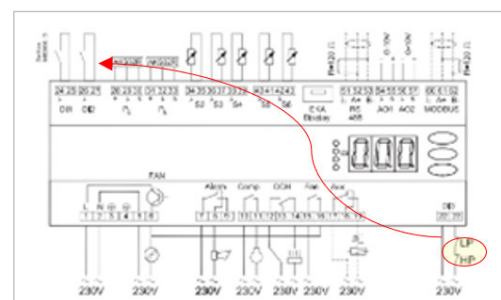
The internal low-pressure monitoring function will cut out the compressor upon detecting a suction pressure that falls below the lower limit c33 or c75 (e.g., the default 1.4 bar for MBP scroll), but only once the minimum ON time is exceeded. An alarm A2 will be issued if the compressor hits c75. These functions can be time delayed if the compressor starts at a low ambient temperature.

The min on time during Low Ambient Temperature and Low-Pressure c94, is set to default at 0 sec and can be extended to 120 sec.

**You might also be** confronted with un-desired low suction pressure and compressor cut-out, due to the fan running at 100 %. This is due to the LP and HP mini-switch type ACB, serially connected to DI3, which at opening will immediately stop the compressor and set the fan to 100 %, making it only worse in case of low-ambient conditions.

One option is to move the LP-ACB connections to the DI2 input and change o37=1 (Signal from a safety circuit (short-circuited =ok for compressor operation). Disconnected = compressor stop and A97 alarm).

In case of emergency wiring (controller defect), the original wiring must be re-established.



### Monitoring discharge temperature td

Alarm setting by r84 is important as longer running at very low pressure can result in high discharge temperatures. In the case of the A1 refrigerant, we talk 125°C, while the A2L refrigerants can result in discharge temperatures of 150°C and above and setting 135°C is recommended. Default setting 125°C and max 140°C. The alarm delay is set by c72 (default 1min).

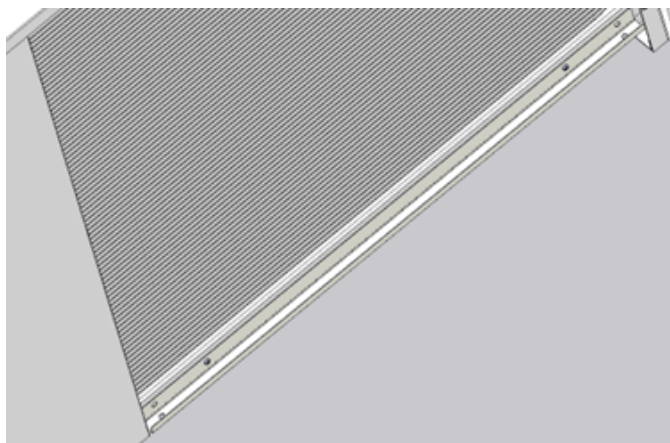
This longer time running at lower suction pressure might be a consequence of the setting on minimum on-time compressor, c01, which is default set at 5s but should instead consider  $\geq 60$  sec to avoid fall-out at low ambient and to secure oil return and heating up of the compressor.

Electrical contact on the Optyma Plus controller for the extra heater on the receiver. This function aims to enable the control of an additional heating element to protect the controller and other parts of the condensing unit in extremely cold conditions. The function is a simple thermostat that sets the Aux relay ON if the temperature measured with the added Auxiliary sensor (S5) is below the limit, set by the parameter "r71 AuxTherRef". The Aux relay will go OFF again when the temperature is at the "r71" limit plus 5 degrees, i.e., is the function has a fixed 5 degrees hysteresis. If the **added** Aux Sensor (S5) is faulty (Sensor Error), the Aux relay will be OFF.

The function will only be active if "o69 TAuxConfig" is set to 2 AND the "o40 AuxRelayCfg" is set to 1.

EKC Display	Parameter Text	Comments	Factory Value	Minimum Value	Maximum Value
r71	r71 AuxTherRef	Setpoint for Additional heater function	-25,0	-30,0	0,0 (*)
o40	o40 AuxRelayCfg	Select function for Aux Relay	1	1	3
o69	o69 Taux Config	Define use of Saux (S5)	0	0	3

### Rail at MCHC condenser, to enable blocking partial the condenser by external plate.



## ICF 20-2-121L, the New Solenoid Valve Variant for Refrigeration Applications to Replace EVRA(T) 10



We are excited to share an important update regarding the replacement of EVRA(T) 10 with our latest offering, the newest Danfoss **ICF 20-2-121L** Solenoid Valve variant.

This shift not only transfers the advantages from EVRA to ICF 20-2, but also brings in enhanced performance specifications. Acting as a direct replacement for EVRA 10, the Danfoss **ICF 20-2-121L** also embraces the well-known flexibility of the ICF platform.

EVRA(T) 10 will join the EVRA(T) product family - EVRA(T) 15 and 20 - which have already successfully transitioned to ICF 20-2.

### Changes

New design highlights:

- Direct welding replacing flanges and gaskets increases safety and saves time.
- The flat top cover gasket enables usage in systems operating in temperatures as low as -60 °C and with CO<sub>2</sub> pressure up to 65 bar.
- Enhanced serviceability and full flexibility with the ICF platform.
- Standard inclusion of a manual opener.
- Expanded availability of refrigerants due to the ICF platform (Please refer to the Product Store for details).

	Existing range	New range
<b>Main features</b>	<b>EVRA(T) 10</b>	<b>ICF 20-2-121L</b>
<b>MWP</b>	42 bar / 609 psi	65 bar / 943 psi
<b>Temp range</b>	-40 to +105 °C	-60 to +120 °C
<b>K<sub>v</sub> [m<sup>3</sup>/hr]</b>	1,5	1,8
<b>Min. OPD</b>	0,05 bar (EVRA) 0 bar (EVRAT)	0 bar
<b>Max. OPD (Coil type dep.)</b>	25 bar / 363 psi	>25 bar / >365 psi
<b>Manual Stem</b>	Optionable	Standard
<b>Design</b>	Servo Diaphragm	Servo Diaphragm



The new ICF 20-2 variant, ICF 20-2-121L, will be released **globally** from **April 2024**.

### Product sales codes numbers

Description	Conn. type	Conn std.	Code number
<b>Valve station ICF 20-2-121L</b>	DIN 15	EN 10220	<b>027L3826</b>
<b>Valve station ICF 20-2-121L</b>	DIN 20	EN 10220	<b>027L3827</b>
<b>Valve station ICF 20-2-121L</b>	ANSI 15	ANSI B 36.10	<b>027L3829</b>
<b>Valve station ICF 20-2-121L</b>	ANSI 20	ANSI B 36.10	<b>027L3828</b>

The creation of other variants featuring additional connection types is feasible and will be considered upon request.



Description	Code number
ICFE 20L Solenoid module, Fiber, SPARE PART	032F8027
ICFB 20 Blind module, Fiber, SPARE PART	027L1341
ICF 20 gaskets, SPARE PART KIT	027L1261

### Coolselector2

Beginning April 1st, 2024, EVRA(T) 10 will no longer be available in [Coolselector2](#), as it will be replaced by ICF 20-2-121L. This decision has been made to streamline our offerings and enhance the selection process. The ICF 20-2 family will be expanded to include ICF 20-2-121L, which will fully support calculation and selection requirements.

### Phase out of EVRA

The release of the EVRA(T) 10 replacement will mark the beginning of the phase out process for EVRA(T) 10, 15, and 20. While ICF 20-2 will eventually replace EVRA(T) 10, this transition will not happen overnight. There will be a transition period during which EVRA(T) products will still be available, following the timeline below:

- ICF 20-2-121L Release of sales code 01.04.2024
- “Last buy” option for EVRA(T) 10, 15 and 20 31.08.2024**
- Phase out - No acceptance of new orders 01.09.2024

Open orders placed before 01.09.2024 will be fulfilled by no later than 31.12.2024. Delivery dates for orders should not be requested for later than 31.12.2024.

For a more detailed plan please contact your local Danfoss sales representative.

### Learn more – and get in touch!

To discover how the ICF 20-2 can streamline installation, save costs, and enhance operational safety and efficiency, please reach out to your local Danfoss representative for more information.

## Optyma™ Slim Pack – Secop Reciprocating Compressor Phase Out

As part of the supplier decision, we will be forced to phase out all our package condensing units which are including SECOP compressor, what's limited to 16 codes.

### Affected Products

All R134a, R513A, R1234yF A1, and A1-A2L Optyma Slim Pack condensing unit range products are bellow.



Description for Optyma Slim Pack	Compressor designation	Article code W05 version A1 models	Article code W05 version A1 + A2L models	Article code W09 version A1 models	Article code W09 version A1 + A2L models	Cooling cap R513A kW	Remaining compressor stock to support dedicated codes
OP-MSGM012SC	SC12G	114X7099	114X7238	114X7207	114X7291	0.64	24
OP-MSGM015SC	SC15G	114X7100	114X7239	114X7208	114X7292	0.72	22
OP-MSGM018SC	SC18G	114X7101	114X7240	114X7131	114X7293	0.86	10
OP-MSGM021SC	SC21G	114X7102	114X7241	114X7132	114X7294	1.03	23

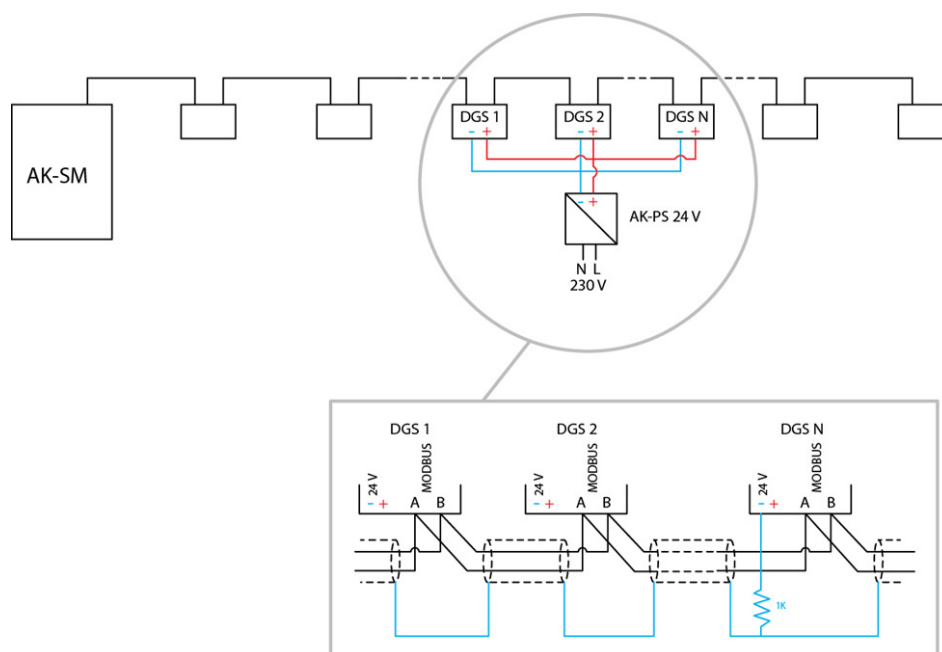
Cooling capacity upon EN13215 HBP-10°C/LBP-35°C evap., 32°C amb. SH10K, SC0K

Please contact your local Danfoss contact for more information and alternative solutions Danfoss can offer within this range of Danfoss light commercial condensing units, both A1 and A2L (A1).

Complementary, you can find alternatives via the [Coolselector2](#) or consult the latest package condensing unit.

## DGS Gas Sensor: Single Resistor of 1K Ohm Now Included in the Accessories Bag

To prevent any communication failure caused by the standard mode current, we strongly recommend, according to best installation practices, the installation of the 1 K $\Omega$  resistor included in the DGS accessories bag following the diagram below. For further information, consult the [installation guide](#), which is also included in the DGS packaging.



## Phase Out of EKA Communication Modules

We would like to inform you about phase out of EKA 174, EKA 175, EKA 176(A) and EKA 177. You can place last buy orders until stock lasts, thereafter the SK-Us will be closed, and orders cancelled. Alternative products, where applicable are mentioned below.

### Affected codes:

EKA 174, LON-module, RS485, isolated:

- 084B7124 – S/M-pack

EKA 175, LON-module, RS485:

- 084B8579 – S/M-pack
- 084B8679 – I-pack

EKA 176, Danbuss Module:

- 084B8583

EKA 176A, Danbuss Module:

- 084B8591

EKA 177, IP-module:

- 084B8592

### Alternative options:

EKA 177 → AK-CC55 Single Coil + AK-OB55 IP option board

EKA 176(A) → no replacement, EoL technology

EKA 175 in Case applications → replace controller with AK-CC55 Single Coil + AK-OB55 LON option board

EKA 175 in Pack applications → service use only, EKA 175 service stock, EKA 174 (also in limited, service supply)

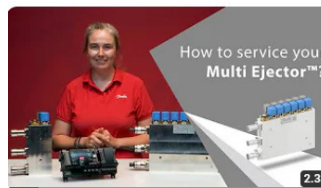
EKA 174 → service use only, functionally interchangeable with EKA 175, only isolated for different environment.

The mentioned code numbers are in phase out due to their components being end of life, as well as completed lifecycle of their own nature. EKA 176(A) Danbuss communication has been supported as service only for approximately last 10 years. EKA 177 IP module has been replaced by a combination of AK-CC55 + AK-OB55 IP. EKA 175 LON module is impacted by LON components that have reached EoL. Its purpose has also been completed for AK-CC 550(A) and AK-PC 420/520/530, while some applications may remain with EKC302D/AK-CC 350. For this use cases a small number of pcs will be secured for last orders and for service needs.

For additional information, please contact your local Danfoss sales representative.

## Videos and Podcasts

- Danfoss solutions for Data Centers - [LINK](#)
- Danfoss Multi Ejector Solution™ | A brief introduction - [LINK](#)
- Danfoss Multi Ejector Solution™ | How does it operate?- [LINK](#)
- Danfoss Multi Ejector Solution™ | Service best practices - [LINK](#)
- IPS 8 air purger installation | Locate, connect and support - [LINK](#)
- IPS 8 air purger installation | Lifting, fixing and piping - [LINK](#)
- IPS 8 air purger installation | Electrical wiring- [LINK](#)
- Introduction to the EKE 100 superheat controllers and valve drivers- [LINK](#)
- Chilling with Jens: the best podcasts in the cooling industry - [LINK](#)





## Details for Additional Information

### UK/IE

[Cooling United Support Hub](#)

[Support Made Easy](#)

[customerservice.uk@danfoss.com](mailto:customerservice.uk@danfoss.com)

[customerservice.ie@danfoss.com](mailto:customerservice.ie@danfoss.com)

Customer Service UK & IE tel: 0330 808 6888

### Denmark

[Cooling United Support Hub](#)

[Support Made Easy](#)

[kundeservice.dk@danfoss.com](mailto:kundeservice.dk@danfoss.com)

Kundeservice tel: 69 91 80 80

### Norway

[Cooling United Support Hub](#)

[Support Made Easy](#)

[kundeservice.no@danfoss.com](mailto:kundeservice.no@danfoss.com)

Kundeservice tel: 23 96 71 00

### Sweden

[Cooling United Support Hub](#)

[Support Made Easy](#)

[kundserservice.se@danfoss.com](mailto:kundserservice.se@danfoss.com)

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