Danfoss AK-CC55 Multi Coil Installation Guide

Contents

Danfoss AK-CC55 Multi Coil

Product Information

- **Specifications:**
  - **Model:** AK-CC55 Multi Coil
  - **Manufacturer:** Danfoss
  - **Voltage:** 230 V AC (115 AC)
  - **Max Current:** 0.5 A
  - **Compatible Controllers:** EKC 204A, AK-CC 210, AK-CC 250, AK-CC 450, AK-CC 550, AK-CC55

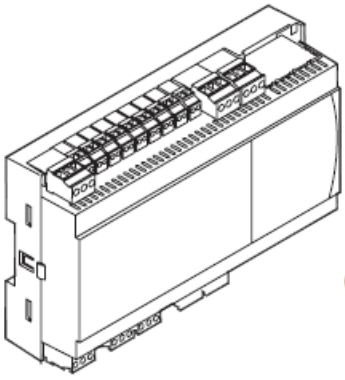
Product Usage Instructions

- **Installation Guide:**
  - The controller is provided with labels from the factory indicating a generic application.
  - When selecting the required application, specific labels are provided so that you can mount the relevant one.
- **Data Communication:**
  - The installation of the data communication cable must be performed correctly with sufficient distance to high voltage cables.
  - The signal from one pressure transmitter can be received by up to 10 controllers.
  - There must not be a significant pressure drop from the pressure transmitter’s position in the suction line to the individual evaporators.
- **Connections:**
  - Connect AI1 Pressure transmitter AKS 32R to terminals 40, 41, and 42 using cable 060G1034 (Black=40, Brown=41, Blue=42). Ensure no significant pressure drops between the evaporators are controlled.
  - AI2 – AI7 are primarily for temperature inputs. Place Pt 1000 ohm sensor AKS11 at the evaporator outlet S2, and Pt 1000 AKS11, PTC 1000 EKS111, NTC5K EKS211, or NTC10K EKS221 sensor at S4 and S5.
  - DI1 is a digital input signal. The defined function is active when the input is short-circuited or opened, depending on the function defined in o02.
- **Overview of Outputs and Applications:**
  - Refer to the table to understand the different applications of outputs and inputs for the proper functioning of the controller.

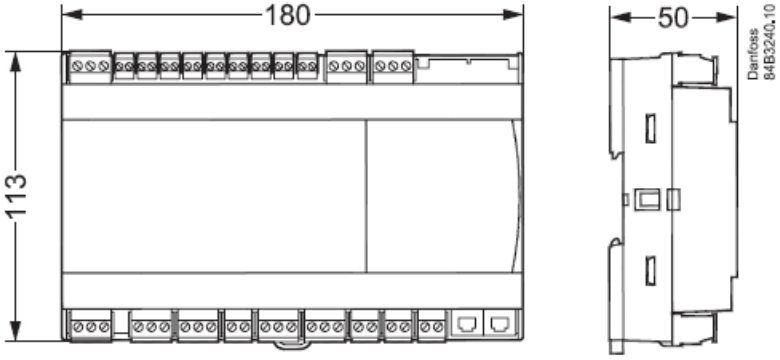
FAQs

- **Q: Can multiple pressure transmitters be connected to the controller?**
  - **A:** Yes, up to 10 controllers can receive signals from one pressure transmitter each.
- **Q: What is the maximum cable length for L1 + L2?**
  - **A:** The maximum cable length for L1 + L2 is 100 meters.

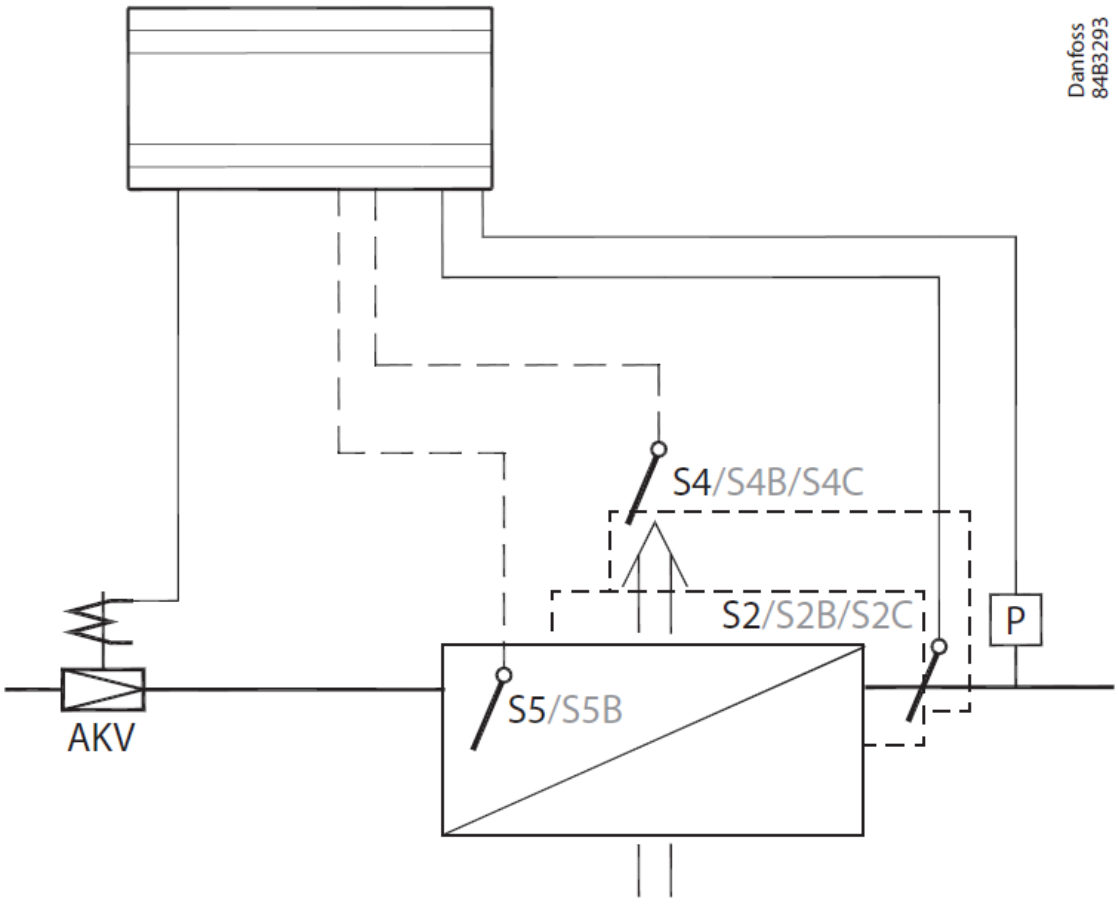
Identification



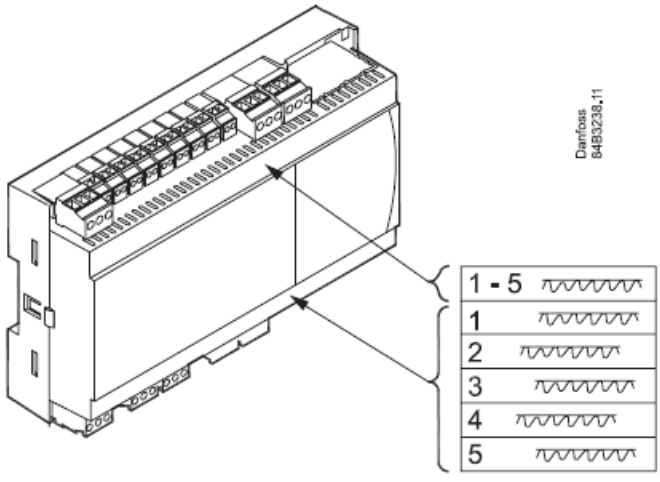
Dimensions



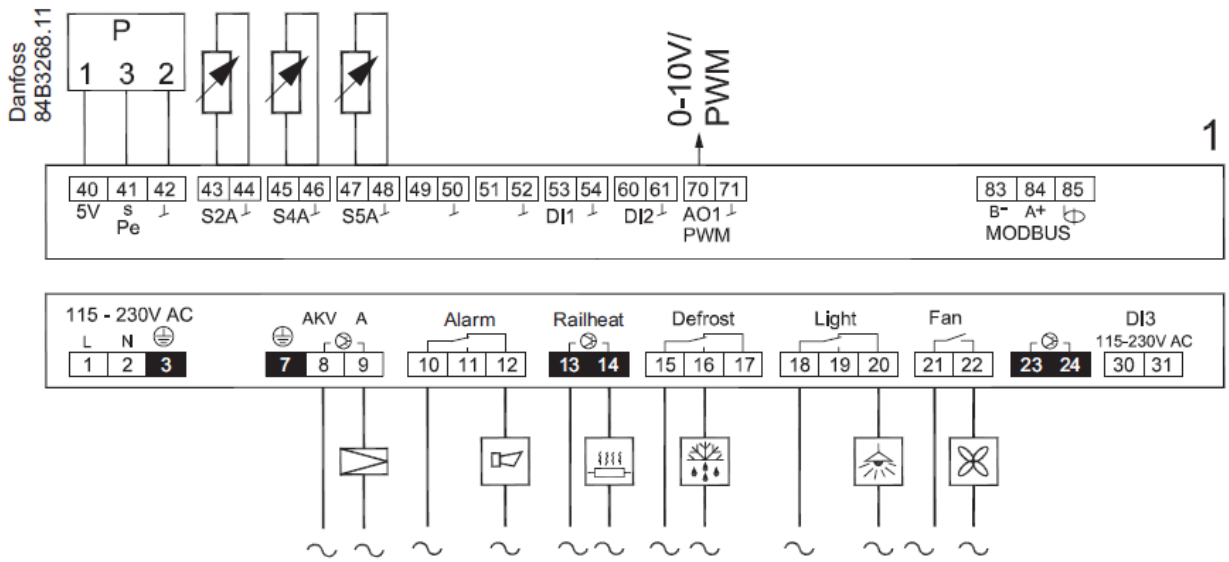
Principle



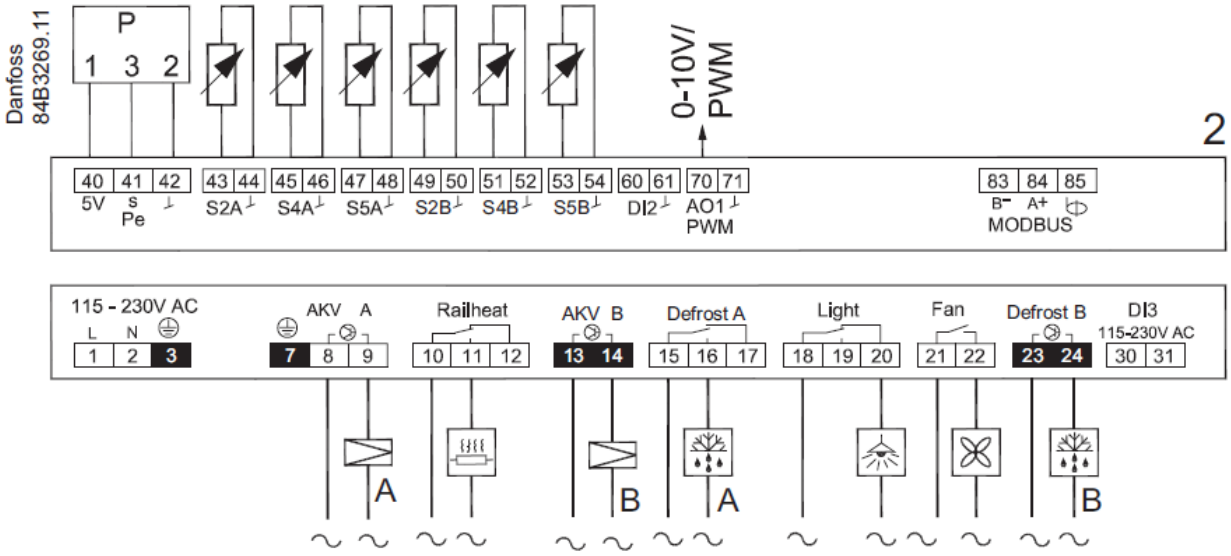
The controller is provided with labels from the factory indicating a generic application. When selecting the required application, specific labels are provided so that you can mount the relevant one.



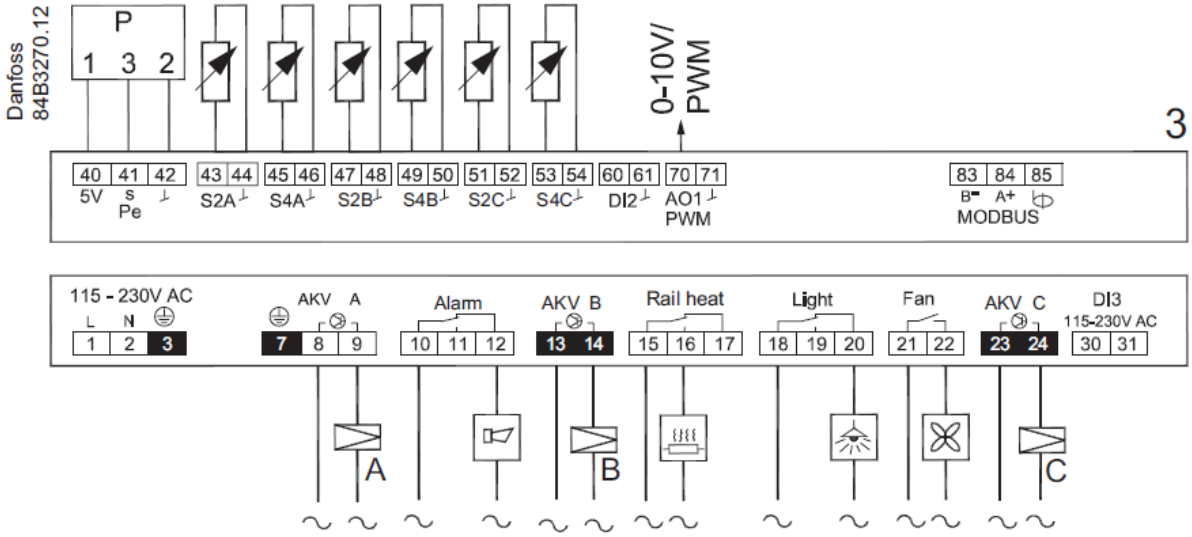
1.


Danfoss
84B3268.11
P
1 3 2
0-10V/
PWM
1
40 41 42
5V S Pe
43 44 S2A
45 46 S4A
47 48 S5A
49 50
51 52
53 54 DI1
60 61 DI2
70 71 AO1 PWM
83 84 85
B- A+ MODBUS
115 - 230V AC
L N
1 2 3
AKV A
7 8 9
Alarm
10 11 12
Railheat
13 14
Defrost
15 16 17
Light
18 19 20
Fan
21 22
DI3
115-230V AC
23 24
30 31

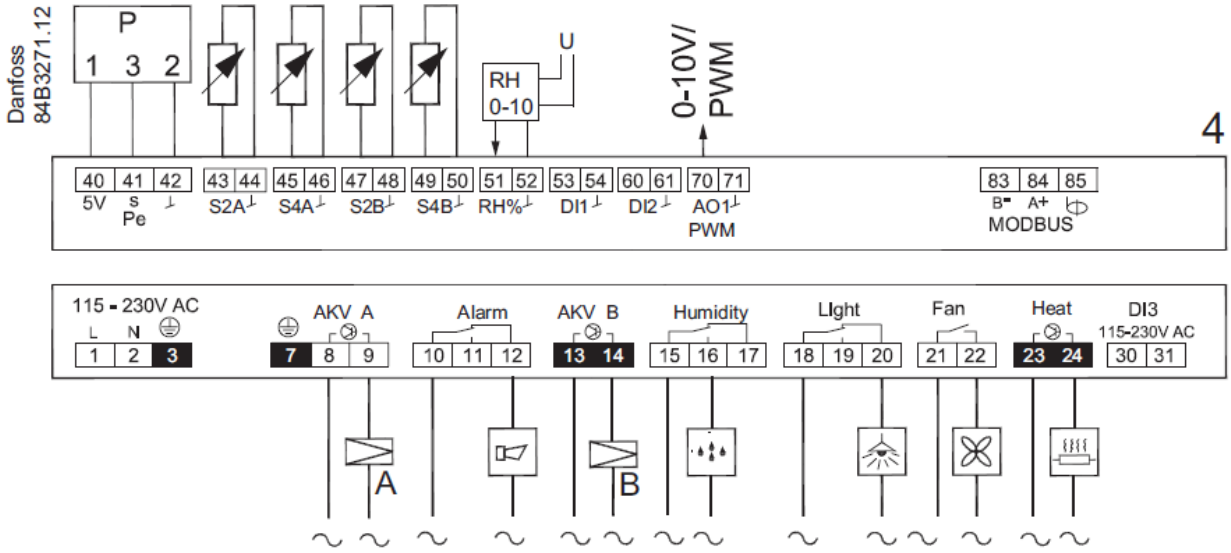
2.


Danfoss
84B3269.11
P
1 3 2
0-10V/
PWM
2
40 41 42
5V S Pe
43 44 S2A
45 46 S4A
47 48 S5A
49 50 S2B
51 52 S4B
53 54 S5B
60 61 DI2
70 71 AO1 PWM
83 84 85
B- A+ MODBUS
115 - 230V AC
L N
1 2 3
AKV A
7 8 9
Railheat
10 11 12
AKV B
13 14
Defrost A
15 16 17
Light
18 19 20
Fan
21 22
Defrost B
23 24
DI3
115-230V AC
30 31
A
B
A
B

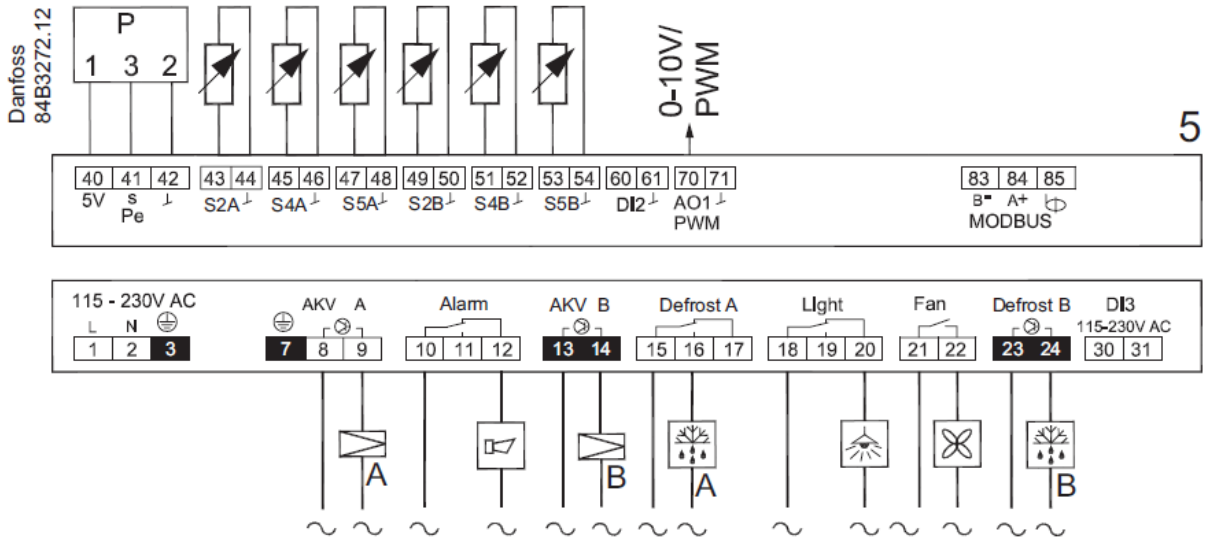
3.


Danfoss
84B3270.12
P
1 3 2
0-10V/
PWM
3
40 41 42
5V S Pe
43 44 S2A
45 46 S4A
47 48 S2B
49 50 S4B
51 52 S2C
53 54 S4C
60 61 DI2
70 71 AO1 PWM
83 84 85
B- A+ MODBUS
115 - 230V AC
L N
1 2 3
AKV A
7 8 9
Alarm
10 11 12
AKV B
13 14
Rail heat
15 16 17
Light
18 19 20
Fan
21 22
AKV C
23 24
DI3
115-230V AC
30 31
A
B
C

4.

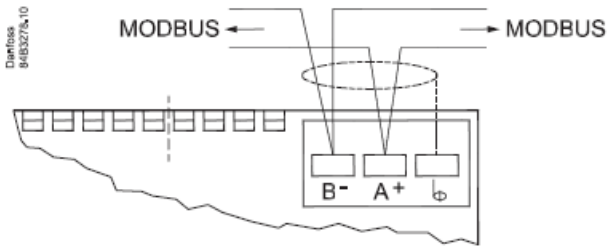


5.

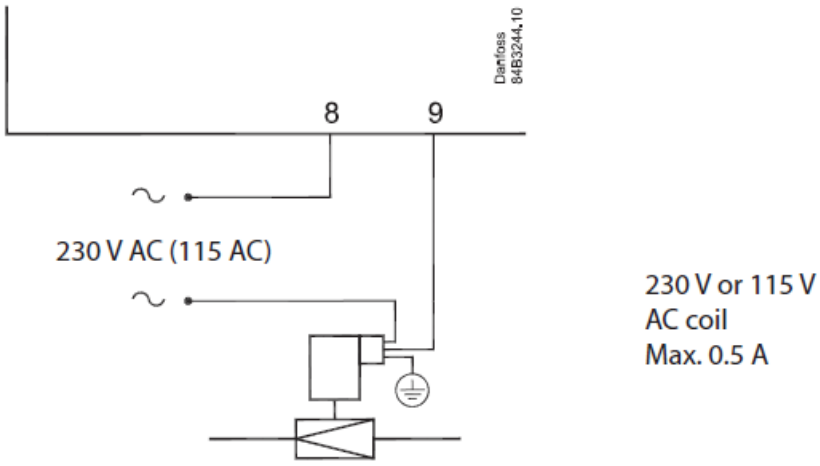


Data Communication

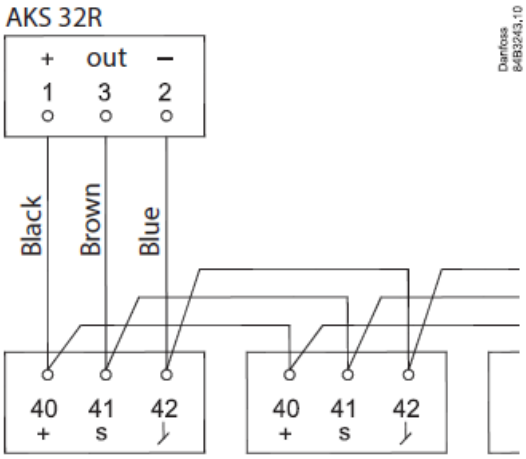
Important: It is important that the installation of the data communication cable is performed correctly with sufficient distance to high voltage cables.



AKV info

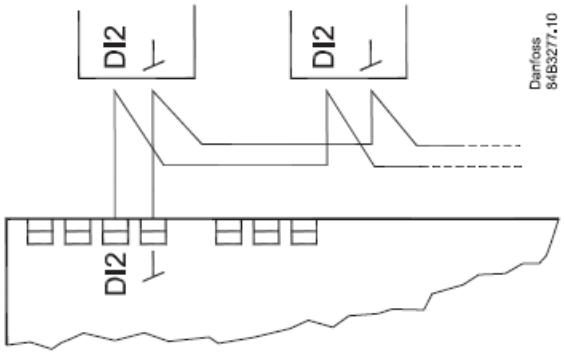


AKS 32R info



- The signal from one pressure transmitter can be received by up to 10 controllers.
- There must not be a significant pressure drop from the pressure transmitter's position in the suction line to the individual evaporators.

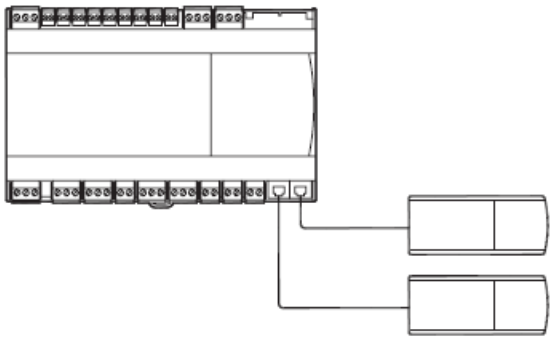
Coordinated defrost via cable connections



Max. 10
The following controllers can be connected in this way:

- EKC 204A, AK-CC 210, AK-CC 250,
- AK-CC 450, AK-CC 550 and AK-CC55.
- Refrigeration is resumed at the same time when all controllers have terminated defrost.

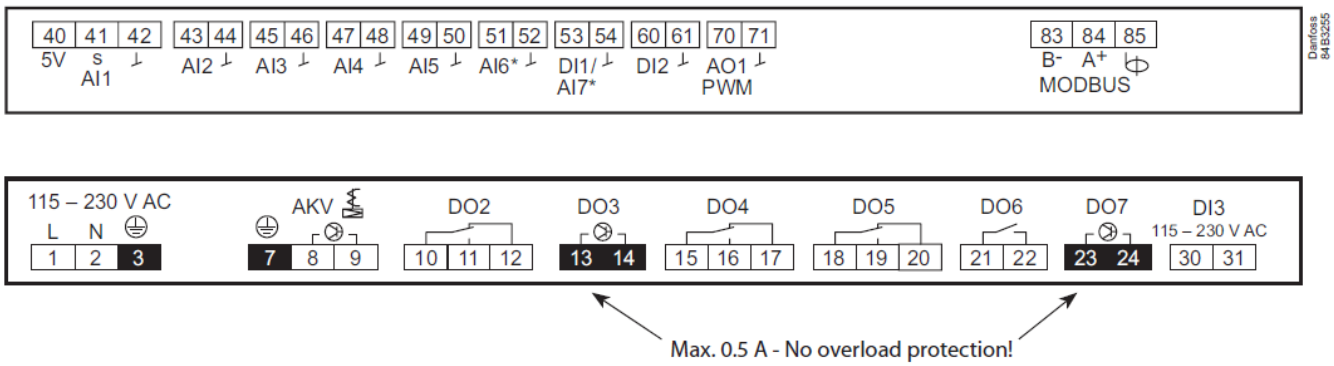
External display AK-UI55



Display

- 084B4075 / 084B4076 / 084B4077
  - **Cable 3 m:** 084B4078
  - **Cable 6 m:** 084B4079

Connections



See table below.

Overview Of Outputs

Overview of outputs and applications

Application	DO1	DO2	DO3	DO4	DO5	DO6	DO7	AO1/ PWM	AI1	AI2	AI3	AI4	AI5	AI6	DI1/ AI7	DI2	DI3
1	A			A				●	Pe	S2A	S4A	S5A			●	●	●
2	A		B	A			B	●	Pe	S2A	S4A	S5A	S2B	S4B	S5B	●	●
3	A		B				C	●	Pe	S2A	S4A	S2B	S4B	S2C	S4C	●	●
4	A		B	humidity			heat	●	Pe	S2A	S4A	S2B	S4B	RH%	●	●	●
5	A		B	A			B	●	Pe	S2A	S4A	S5A	S2B	S4B	S5B	●	●

See also the wiring diagrams earlier in the Installation Guide.

- • = Optional

AI1 Pressure transmitter

- AKS 32R
- Connect to terminals 40, 41 and 42.
- (Use cable 060G1034: Black=40, Brown=41, Blue=42)
- The signal from one pressure transmitter can be received by up to 10 controllers. But only if there are no significant pressure drops between the evaporators to be controlled. See the drawing on page 4.

AI2 – AI7 Primarily for temperature inputs

- **S2**
  - Pt 1000 ohm sensor AKS11, placed at the evaporator outlet
- **S4, S5**
  - Pt 1000 AKS11, PTC 1000 EKS111, NTC5K EKS211 or NTC10K
  - EKS221 sensor. All have to be of the same type.
  - S4, discharge air sensor, placed in the cold air after the evaporator
  - S5, defrost sensor, placed in the evaporator
  - RH%, 0-10 V signal input from Humidity sensor

(If the DI1 input is used for temperature measurement, it will appear as AI7.)

DI1

- Digital input signal.
- The defined function is active when the input is short-circuited or
- opened, depending on the function defined in o02.

DI2

- Digital input signal.
- The defined function is active when the input is short-circuited or opened, depending on the function defined in o37.

AO1 Analogue output signal

- Analogue 0-10 V (currently not used)
- Pulse width modulated signal
- Can be used for fast control of rail heat via an external power solid state relay.

MODBUS

- For data communication.
- Terminal 83 = BTerminal
- 84 = A+
- Terminal 85 = screen

Supply voltage

- 230 V AC or 115 V AC

DO1 AKV valve section A

- Connection of expansion valve type AKV, AKVA, AKVH or AKVP. The coil must be a 230 V or 115 V AC coil.

DO2 Alarm

- There is a connection between terminals 10 and 12 in alarm situations and when the controller is without power.
- DO2 has reinforced insulation that can be used with 24 V.

Rail heat

- There is a connection between terminals 10 and 11 when the function is on.
- DO3 (Solid State Relay)
- Rail heat, AKV valve section B
- There is a connection between terminals 13 and 14 when the function must be active.
- The coil must be a 230 V or 115 V AC coil. Max. 0.5 A.

DO4

- Defrost section A, Rail heat, Humidity
- There is a connection between terminals 15 and 16 when the function is on.

DO5 Light

- There is a connection between terminals 18 and 20 when the function must be active.

DO6 Fan

- There is a connection between terminals 21 and 22 when the fan is on.

DO7 (Solid State Relay)

- Defrost section B, AKV valve section C, Heat function
- There is a connection between terminals 23 and 24 when the function is on.
- The coil must be a 230 V or 115 V AC coil. Max. 0.5 A.

DI3

- Digital input signal.
- The signal must have a voltage of 0 / 230 V AC (115 V AC)
- The function is defined in o84.

Display (RJ12 plug)

- If external readings/operation of the controller is required, a display can be connected.
- For one display the max. cable length is 100 m.
- For two displays the sum of the two cable lengths must not exceed 100 m.

Electric noise

Cables for sensors, low voltage DI inputs and data communication must be kept separate from other electric cables:

- Use separate cable trays
- Keep a distance between cables of at least 10 cm
- Long cables at the low-voltage DI input should be avoided

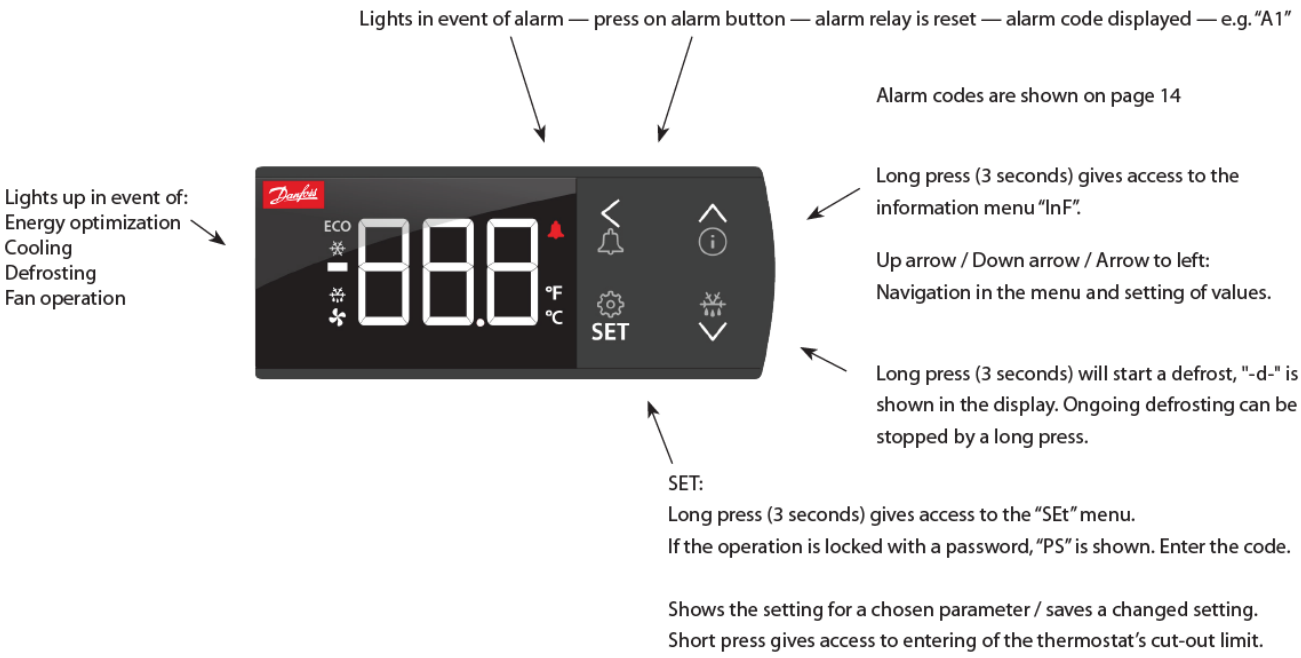
Installation considerations

- Accidental damage, poor installation, or site conditions, can give rise to malfunctions of the control system, and ultimately lead to a plant breakdown.
- Every possible safeguard is incorporated into our products to prevent this. However, a wrong installation could still present problems. Electronic controls are no substitute for normal, good engineering practice.
- Danfoss will not be responsible for any goods, or plant components, damaged as a result of the above defects. It is the installer’s responsibility to check the installation thoroughly and to fit the necessary safety devices.
- Special reference is made to the necessity of signals to the controller when the compressor is stopped and to the need of liquid receivers before the compressors.
- Your local Danfoss agent will be pleased to assist with further advice, etc.

Operation with setting display

Display AK-UI 55 Set
The values will be shown with three digits, and with a setting you can determine whether the temperature is to be

shown in °C or in °F.



The display can give the following messages:

- **-d-** Defrost is in progress
- **Err** The temperature cannot be displayed due to a sensor error
- **Err1** The display cannot load data from the controller. Disconnect and then reconnect the display
- **Err2** Lost display communication
- **ALA** The alarm button is activated. The first alarm code is then shown
- **– – –** At the top position of the menu or when max. value has been reached, the three dashes are shown at the top of the display
- **– – –** At the bottom position of the menu or when min. value has been reached, the three dashes are shown in the bottom of the display
- **Loc** The menu operation is locked. Unlock by pressing (for 3 seconds) on the 'up arrow' and 'down arrow' simultaneously
- **UnL** The menu operation is unlocked
- **– – –** The parameter has reached min. or max. limit
- **PS** A password is required for access to the menu
- **Fan** Appliance cleaning has been initiated. The fans are running
- **OFF** Appliance cleaning is activated and the appliance can now be cleaned
- **OFF** The main switch is set to Off
- **SEr** The main switch is set to service / manual operation
- **CO2 Flashes:** Will display in the event of a refrigerant leakage alarm, but only if the refrigerant is set up for CO

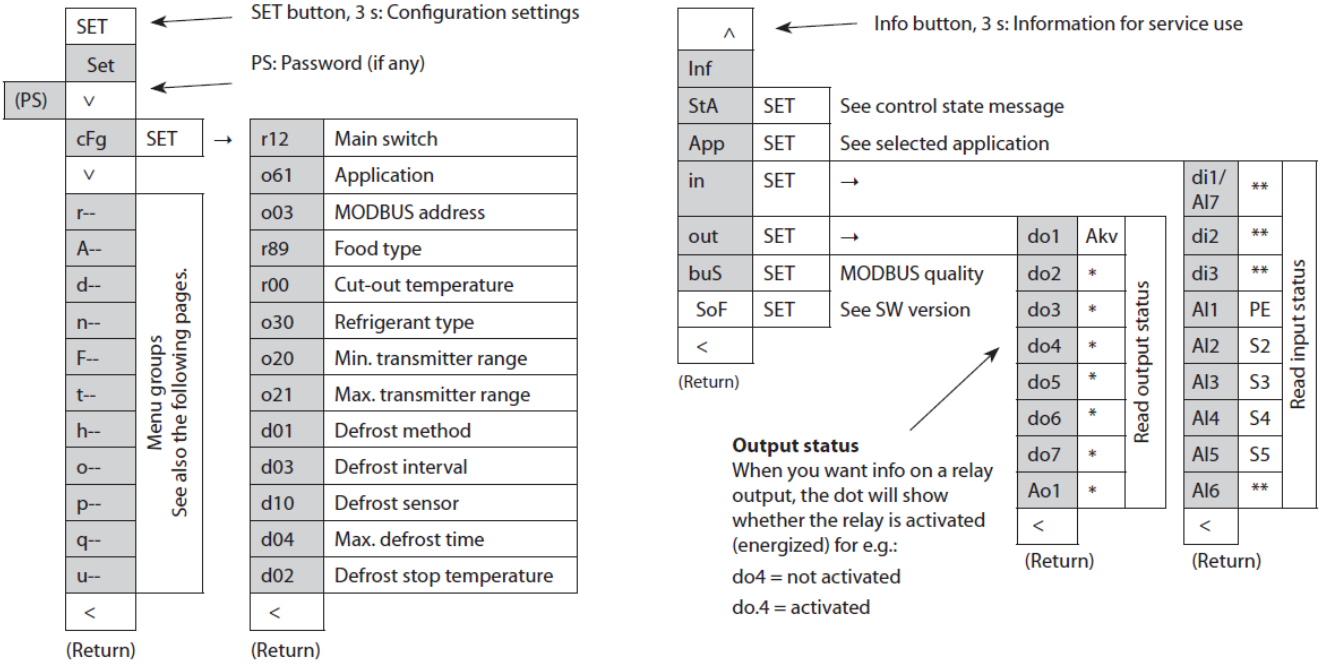
Factory setting

If you need to return to the factory-set values, do the following:

- Cut off the supply voltage to the controller

- Keep up “ ∧ ” and down “ ∨ ” arrow buttons depressed at the same time as you reconnect the supply voltage
- When FAc is shown in the display, select “yes”.

Parameter grouping at display operation



Get a good start
With the following procedure, you can start regulation very quickly:

1. Open parameter r12 and stop the regulation (in a new and not previously set unit, r12 will already be set to 0 which means stopped regulation.)
2. Select application based on the wiring diagrams on pages 2-3
3. Open parameter o61 and set the application number
4. For network. Set the address in o03
5. Then select a set of presets from the “Food type” help table
6. Open parameter r89 and set the number for the array of settings. The few selected settings will now be transferred to the menu
7. Set the desired cut-out temperature to r00
8. Select refrigerant via parameter o30
9. Set the pressure transmitter min. and max. range via parameter o20 and o21.
10. Set the desired defrost method in d01
11. Set the interval time between defrost starts in d03
12. Set the desired defrost sensor in d10
13. Set the maximum defrost time in d04
14. Set the defrost stop temperature in d02
15. Open parameter r12 and start the regulation
16. Go through the parameter list and change the factory value where needed.
17. **Get the controller up and running on the network:**
    - **MODBUS:** Activate the scan function in the system unit

- **If another data communication card is used in the controller:**
  - **Lon RS485**: Activate the function o04

The output's function. (Determined at configuration). The DOs and AOs can also be forced controlled from this menu, when the r12 Main switch has been set in position "service". Forced control of a function can also be performed in codes q11 to q27. The input's function. (Determined at configuration).

Food type

Setting of settings (r89). After setting 1-5, the setting is returned to 0. **Food type =**	**1 Vegetables**	**2 Milk**	**3 Meat/ fish**	**4 Frozen food**	**5 Ice cream**
Temperature (r00)	8 °C	0 °C	-2 °C	-20 °C	-24 °C
Max. temp. setting (r02)	10 °C	4 °C	2 °C	-16 °C	-20 °C
Min. temp. setting (r03)	4 °C	-4 °C	-6 °C	-24 °C	-28 °C
Upper alarm limit (A13)	14 °C	8 °C	8 °C	-15 °C	-15 °C
Lower alarm limit (A14)	0 °C	-5 °C	-5 °C	-30 °C	-30 °C
Upper alarm limit for S6 (A22)	14 °C	8 °C	8 °C	-15 °C	-15 °C
Lower alarm limit for S6 (A23)	0 °C	-5 °C	-5 °C	-30 °C	-30 °C

Can only be set when r12=0.

AK-UI55 display menu

Function	**Values**	**R-W**	**Code**	**1**	**2**	**3**	**4**	**5**	**Min. value**	**Max. value**	**Fact. value**
Thermostat											
Cut-out 1		0-0	r00	*	*	*	*	*	r03	r02	2.0 °C
Differential		1-2	r01	*	*	*	*	*	0.1 °C	20.0 °C	2.0 °C
Max cut-out limit		0-2	r02	*	*	*	*	*	r03	50.0 °C	50.0 °C
Min cut-out limit		0-2	r03	*	*	*	*	*	-50.0 °C	r02	-50.0 °C
Temperature unit	0=Celsius, 1=Fahrenheit	1-2	r05	*	*	*	*	*	0	1	0
S4 Air OFF evap. A – Adjust- menu		1-2	r09	*	*	*	*	*	-10.0 °C	10.0 °C	0.0 °C

Main switch	-1=Manual, 0=Stop, 1=Start	0-2	r12	*	*	*	*	*	-1	1	0
Night offset		1-2	r13	*	*	*	*	*	-50.0 °C	50.0 °C	0.0 °C
Thermostat mode	1=ON/OFF, 2=Modulating, 3=ON/OFF Common	1-2	r14	*	*	*	*	*	1	3	1
Melt interval		1-2	r16	*	*	*	*	*	0 hours	10 hours	1 hours
Melt period		1-2	r17	*	*	*	*	*	0 min	30 min	5 min
Cut-out 2		0-2	r21	*	*	*	*	*	-50.0 °C	50.0 °C	2.0 °C
Air heater neutral zone		1-2	r62				*		0.0 °C	50.0 °C	5.0 °C
Air heater start delay		1-2	r63				*		0 min	240 min	240 min
Food type	0=None, 1=Vegetables, 2=Dairy, 3=Meat and fish, 4=Frozen food, 5=Ice cream	1-2[1)]	r89	*	*	*	*	*	0	5	0
Thermostat sensor	1=Ther. air A, 2=Average all, 3=Maximum all	1-2	r99		*	*	*	*	1	3	1
Alarm settings											
Alarm delay A		1-2	A03	*	*	*	*	*	0 min	240 min	30 min
Door open alarm delay		1-2	A04	*	*	*	*	*	0 min	240 min	60 min
Alarm delay pulldown A		1-2	A12	*	*	*	*	*	0 min	240 min	90 min
High alarm limit 1		1-2	A13	*	*	*	*	*	-50.0 °C	50.0 °C	8.0 °C
Low alarm limit 1		1-2	A14	*	*	*	*	*	-50.0 °C	50.0 °C	-30.0 °C
High alarm limit 2		1-2	A20	*	*	*	*	*	-50.0 °C	50.0 °C	8.0 °C
Low alarm limit 2		1-2	A21	*	*	*	*	*	-50.0 °C	50.0 °C	-30.0 °C
Alarm delay DI 1		1-2	A27	*			*		0 min	240 min	30 min
Alarm delay DI 2		1-2	A28	*	*	*	*	*	0 min	240 min	30 min
Defrost											

Defrost method	0=None, 1=Electrical, 4=Air/Off cycle	1-3	d01	*	*	*	*	*	0	4	1
Defrost stop limit A		1-2	d02	*	*	*	*	*	0.0 °C	50.0 °C	6.0 °C
Defrost start interval		1-2	d03	*	*	*	*	*	0 hours	240 hours	8 hours
Max. defrost time		1-2	d04	*	*	*	*	*	0 min	360 min	45 min
Time staggering power-up		1-2	d05	*	*	*	*	*	0 min	240 min	0 min
Drip off time		1-2	d06	*	*	*	*	*	0 min	60 min	0 min
Fan start delay		1-2	d07	*	*	*	*	*	0 min	60 min	0 min
Fan start temperature		1-2	d08	*	*			*	-50.0 °C	10.0 °C	-50.0 °C
Fan control during defrost	0=OFF, 1=ON, 2=OFF at drip, 3=OFF at high temp	1-2	d09	*	*	*	*	*	0	3	1
Defrost stop method	0=Time, 1=S5 sensor, 2=S4 sensor	1-2	d10	*	*	*	*	*	0	2	0
Pump down delay		1-2	d16	*	*	*	*	*	0 min	60 min	0 min
Max. thermostat run time		1-2	d18	*	*	*	*	*	0 hours	240 hours	0 hour
Rail heat during defrost	0=OFF, 1=ON, 2=Normal control	1-2	d27	*	*	*	*	*	0	2	1
Display delay after defrost		1-2	d40	*	*	*	*	*	5 min	240 min	30 min
Fan stop temperature		1-2	d41	*	*	*	*	*	-20.0 °C	20.0 °C	0.0 °C
Injection control											
Max. superheat limit		1-2	n09	*	*	*	*	*	n10	20.0 °C	12.0 °C
Min. superheat limit		1-2	n10	*	*	*	*	*	2.0 °C	n09	3.0 °C
MOP temperature		1-2	n11	*	*	*	*	*	-50.0 °C	15.0 °C	15.0 °C
AKV Period time		1-2[1)]	n13	*	*	*	*	*	3 s	6 s	6 s

- **R-W:** If the operation is protected by one or more passwords, reading and setting the parameter will be limited to:

- **R:** This setting can be seen with password no. _ or higher (3 is the highest level).
- **W:** This setting can be performed with password no. _ or higher (3 is the highest level).

1. To change this parameter the regulation must be stopped via the parameter r12 Main switch = OFF.
2. To change this parameter the parameter r12 Main switch must be set in position “SEr” allowing manual control of outputs.

Function	Values	R-W	Code	1	2	3	4	5	Min. value	Max. value	Fact. value
Fan control											
Fan stop high S5 temp.		1-2	F04	*	*			*	-50.0 °C	50.0 °C	50.0 °C
Fan pulsing mode	0=No pulsing, 1=Pulsing cut-out, 2=Pulsing cut-out night	1-2	F05	*	*	*	*	*	0	2	0
Fan period time		1-2	F06	*	*	*	*	*	1 min	30 min	5 min
Fan ON cycle		1-2	F07	*	*	*	*	*	0 %	100 %	100%
Defrost schedule											
Defrost schedule	0=No, 1=Yes	1-2	t00	*	*	*	*	*	0	1	0
Def. start 1 – Hours		1-2	t01	*	*	*	*	*	0 hours	23 hours	0 hour
Def. start 1 – min		1-2	t11	*	*	*	*	*	0 min	59 min	0 min
Def. start 2 – Hours		1-2	t02	*	*	*	*	*	0 hours	23 hours	0 hour
Def. start 2 – min		1-2	t12	*	*	*	*	*	0 min	59 min	0 min
Def. start 3 – Hours		1-2	t03	*	*	*	*	*	0 hours	23 hours	0 hour
Def. start 3 – min		1-2	t13	*	*	*	*	*	0 min	59 min	0 min
Def. start 4 – Hours		1-2	t04	*	*	*	*	*	0 hours	23 hours	0 hour
Def. start 4 – min		1-2	t14	*	*	*	*	*	0 min	59 min	0 min
Def. start 5 – Hours		1-2	t05	*	*	*	*	*	0 hours	23 hours	0 hour

Def. start 5 – min		1-2	t15	*	*	*	*	*	0 min	59 min	0 min
Def. start 6 – Hours		1-2	t06	*	*	*	*	*	0 hours	23 hours	0 hour
Def. start 6 – min		1-2	t16	*	*	*	*	*	0 min	59 min	0 min
Time hours		0-1	t07	*	*	*	*	*	0 hours	23 hours	0 hour
Time min		0-1	t08	*	*	*	*	*	0 min	59 min	0 min
Time date		0-1	t45	*	*	*	*	*	1	31	1
Time month		0-1	t46	*	*	*	*	*	1	12	1
Time year		0-1	t47	*	*	*	*	*	0	100	0
Monday – Follow schedule	0=No, 1=Yes	1-2	t51	*	*	*	*	*	0	1	1
Tuesday – Follow schedule	0=No, 1=Yes	1-2	t52	*	*	*	*	*	0	1	1
Wednesday – Follow schedule	0=No, 1=Yes	1-2	t53	*	*	*	*	*	0	1	1
Thursday – Follow schedule	0=No, 1=Yes	1-2	t54	*	*	*	*	*	0	1	1
Friday – Follow schedule	0=No, 1=Yes	1-2	t55	*	*	*	*	*	0	1	1
Saturday – Follow schedule	0=No, 1=Yes	1-2	t56	*	*	*	*	*	0	1	1
Sunday – Follow schedule	0=No, 1=Yes	1-2	t57	*	*	*	*	*	0	1	1
Humidity control											
Humidity cut-in		0-2	h23				*		0 %	100 %	70%
Humidity differential		1-2	h24				*		1 %	30 %	5%
Humidity high alarm limit		1-2	h25				*		0 %	100 %	100%
Humidity low alarm limit		1-2	h26				*		0 %	100 %	0%

Humidity alarm delay		1-2	h27				*		0 min	240 min	60 min
Humidity ctrl. at defrost	0=No, 1=Yes	1-2	h28				*		0	1	0
Humidity sensor – Min signal		1-2[1)]	h29				*		0 %	h30	0%
Humidity sensor – Max signal		1-2[1)]	h30				*		h29	100 %	100%
Humidity control	0=None, 1=Humidifier, 2=Dehumidifier	1-2[1)]	h31				*		0	2	0
Humidity max. temp.		1-2	h32				*		h33	70.0 °C	70.0 °C
Humidity min. temp.		1-2	h33				*		-5.0 °C	h32	2.0 °C
Miscellaneous											
Delay of outputs at power- up		1-2	o01	*	*	*	*	*	0 s	600 s	5s
DI1 Configuration	0=None, 1=DI status, 2=Door function, 3=Door alarm, 4=Defrost start, 5=Main switch, 6=Night setback, 7=Thermostat band, 8=Alarm at closed, 9=Alarm at open, 10=Case cleaning, 11=Forced cooling, 12=Open blinds, ~~13=Coordinated defrost~~, 14=Forced closing, 15=Shutdown, 16=Light control, 20=Leak detection, 21=Adaptive liquid control	1-2[1)]	o02	*			*		0	21	0
Network address		1-3[1)]	o03	*	*	*	*	*	0	240	0
Service pin	0=OFF, 1=ON	1-2	o04	*	*	*	*	*	0	1	0
Access code 3		3-3	o05	*	*	*	*	*	0	999	0

Function	**Values**	**R-W**	**Code**	**1**	**2**	**3**	**4**	**5**	**Min. value**	**Max. value**	**Fact. value**
Temperature sensor type	0=Pt 1000, 1=PTC 1000, 2=NTC 5k, 3=NTC 10k	1-3[1)]	o06	*	*	*	*	*	0	3	0
Max. hold time		1-2	o16	*	*	*	*	*	0 min	360 min	20 min

Pe Min range		1-3[1)]	o20	*	*	*	*	*	-1.0 Bar	5.0 Bar	-1.0Bar
Pe Max range		1-3[1)]	o21	*	*	*	*	*	6.0 Bar	200.0 Bar	12.0Bar
Refrigerant	0=Not seleted, 6=R13, 7=R13b1, 2=R22, 8=R23, 14=R32, 11=R114, 3=R134a, 12=R142b, 24=R170, 15=R227, 25=R290, 16=R401A, 18=R402A, 19=R404A, 21=R407A, 22=R407B, 20=R407C, 37=R407F, 49=R407H, 23=R410A, 32=R413A, 30=R417A, 31=R422A, 33=R422D, 34=R427A, 35=R438A, 40=R448A, 41=R449A, 48=R449B, 43=R450A, 44=R452B, 45=R454B, 9=R500, 4=R502, 10=R503, 17=R507, 36=R513A, 26=R600, 27=R600a, 5=R717, 28=R744, 46=R1233zdE, 38=R1234ze, 39=R1234yf, 47=R1234zeZ, 29=R1270, 42=R452A, 1=User defined display, 13=User defined	1-3[1)]	o30	*	*	*	*	*	0	49	0
DI2 Configuration	0=None, 1=DI status, 2=Door function, 3=Door alarm, 4=Defrost start, 5=Main switch, 6=Night setback, 7=Thermostat band, 8=Alarm at closed, 9=Alarm at open, 10=Case cleaning, 11=Forced cooling, 12=Open blinds, 13=Coordinated defrost, 14=Forced closing, 15=Shutdown, 16=Light control, 20=Leak detection, 21=Adaptive liquid control	1-2[1)]	o37	*	*	*	*	*	0	21	0
Light control mode	1=Day and night, 2=Network, 3=Door switch, 4=Network (Fallback), 5=Digital input	1-2	o38	*	*	*	*	*	1	5	1

MC Light signal	0=OFF, 1=ON	1-2	o39	*	*	*	*	*	0	1	0
Rail heat ON cycle day		1-2	o41	*	*	*	*	*	0 %	100 %	100%
Rail heat ON cycle night		1-2	o42	*	*	*	*	*	0 %	100 %	100%
Rail heat period time		1-2	o43	*	*	*			6 min	60 min	6min
Case cleaning mode	0=OFF, 1=Fans run, 2=Cleaning	0-1	o46	*	*	*	*	*	0	2	0
Application mode	1=1. One evaporator MT/LT, 2=2. Two evaporators MT/LT, 3=3. Three evaporators MT, 4=4. Coldroom 2 MT/HT, 5=5. Coldroom 2 MT/LT	1-3[1)]	o61	*	*	*	*	*	1	5	1
Access code 2		2-2	o64	*	*	*	*	*	0	999	0
Make new factory	0=OFF, 1=ON	3-3[1)]	o67	*	*	*	*	*	0	1	0
DI3 Configuration	0=None, 1=DI status, 2=Door function, 3=Door alarm, 4=Defrost start, 5=Main switch, 6=Night setback, 7=Thermostat band, 8=Alarm at closed, 9=Alarm at open, 10=Case cleaning, 11=Forced cooling, 12=Open blinds, ~~13=Coordinated defrost~~, 14=Forced closing, 15=Shutdown, 16=Light control, 20=Leak detection, 21=Adaptive liquid control	1-2[1)]	o84	*	*	*	*	*	0	21	0
Rail heat control mode	0=ON, 1=Day/Night timer, 2=Dewpoint ctrl.	1-2	o85	*	*	*	*	*	0	2	0
Dewpoint min. limit		1-2	o86	*	*	*	*	*	-10.0 °C	o87	8.0 °C
Dewpoint max. limit		1-2	o87	*	*	*	*	*	o86	50.0 °C	17.0 °C
Rail heat min. ON cycle		1-2	o88	*	*	*	*	*	0 %	100 %	30%
Door restart inj. delay		1-2	o89	*	*	*	*	*	0 min	240 min	30 min

Fan at forced closing	0=OFF, 1=ON, 2=OFF and suppress defrost, 3=ON and suppress defrost	1-2	o90	*	*	*	*	*	0	3	1
Display readout	1=Ther. air A, 2=Average all, 3=Maximum all, 4=S4A and S4B	1-2	o97	*	*	*	*	*	1	4	1
Light at Main switch OFF	0=OFF, 1=Normal ctrl.	1-2	o98	*	*	*	*	*	0	1	0
Control											
Alarm relay priority	0=Not used, 1=High Priority, 2=Medium priority, 3=All	1-2	P41	*		*	*	*	0	3	1
Blinds max. open time		1-2	P60	*	*	*	*	*	0 min	60 min	5 min
Fan stop at blinds closing		1-2	P65	*	*	*	*	*	0 s	300 s	0s
Rail heat PWM – Period time		1-2	P82	*	*	*	*	*	4 s	60 s	10s
Refrigerant factor K1		1-3[1)]	P83	*	*	*	*	*	-999	999	300
Refrigerant factor K2		1-3[1)]	P84	*	*	*	*	*	-999	999	300

Function	**Values**	**R-W**	**Code**	**1**	**2**	**3**	**4**	**5**	**Min. value**	**Max. value**	**Fact. value**
Refrigerant factor K3		1-3[1)]	P85	*	*	*	*	*	-999	999	300
Max superheat liquid ctrl.		1-2	P86	*	*	*	*	*	P87	20.0 °C	3.0 °C
Min superheat liquid ctrl		1-2	P87	*	*	*	*	*	0.0 °C	P86	1.0 °C
Access code 1		1-1	P88	*	*	*	*	*	0	999	0
Display lock	0=OFF, 1=ON	1-2	P89	*	*	*	*	*	0	1	0
DO config and manual											
AO1 Configuration	0=None, 1=Rail heat PWM	1-3[1)]	q09	*	*	*	*	*	0	1	0
EEV override A		1-2[2)]	q11	*	*	*	*	*	0 %	100 %	0%

Fan – override	0=MAN OFF, 1=MAN ON	1-2[2)]	q13	*	*	*	*	*	0	1	0
Defrost A – override	0=MAN OFF, 1=MAN ON	1-2[2)]	q14	*	*			*	0	1	0
Rail heat – override	0=MAN OFF, 1=MAN ON	1-2[2)]	q15	*	*	*			0	1	0
Alarm relay – override	0=MAN OFF, 1=MAN ON	1-2[2)]	q16	*		*	*	*	0	1	0
Light – override	0=MAN OFF, 1=MAN ON	1-2[2)]	q17	*	*	*	*	*	0	1	0
Defrost B – override	0=MAN OFF, 1=MAN ON	1-2[2)]	q22		*			*	0	1	0
Air heater – override	0=MAN OFF, 1=MAN ON	1-2[2)]	q23				*		0	1	0
Humidifier – override	0=MAN OFF, 1=MAN ON	1-2[2)]	q26				*		0	1	0
Rail heat PWM – override		1-2[2)]	q27	*	*	*	*	*	0 %	100 %	0%
High temperature – Priority	0=Disabled, 3=Low, 2=Medium, 1=High	0-2	q28	*	*	*	*	*	0	3	1
Low temperature – Priority	0=Disabled, 3=Low, 2=Medium, 1=High	1-2	q29	*	*	*	*	*	0	3	1
Sensor errors – Priority	0=Disabled, 3=Low, 2=Medium, 1=High	1-2	q30	*	*	*	*	*	0	3	1
DI alarms – Priority	0=Disabled, 3=Low, 2=Medium, 1=High	1-2	q31	*	*	*	*	*	0	3	2
Defrost – Priority	0=Disabled, 3=Low, 2=Medium, 1=High	1-2	q32	*	*	*	*	*	0	3	3
Miscellaneous – Priority	0=Disabled, 3=Low, 2=Medium, 1=High	1-2	q33	*	*	*	*	*	0	3	2
Injection – Priority	0=Disabled, 3=Low, 2=Medium, 1=High	1-2	q34	*	*	*	*	*	0	3	2
Control stopped – Priority	0=Disabled, 3=Low, 2=Medium, 1=High	1-2	q35	*	*	*	*	*	0	3	3
Leak detection – Priority	0=Disabled, 3=Low, 2=Medium, 1=High	1-2	q36	*	*	*	*	*	0	3	2
Humidity ctrl. – Priority	0=Disabled, 3=Low, 2=Medium, 1=High	1-2	q37				*		0	3	2

Food temp. sensor	1=Ther. air A, 2=Average all, 3 =Maximum all	1-2[1)]	q39	*	*	*	*	*	1	3	1
EEV override B		1-2[2)]	q41		*	*	*	*	0 %	100 %	0%
EEV override C		1-2[2)]	q42			*			0 %	100 %	0%
S4 Air OFF evap. B – Adjust- ment		1-2	q43		*	*	*	*	-10.0 ° C	10.0 ° C	0.0 °C
S4 Air OFF evap. C – Adjust- ment		1-2	q44			*			-10.0 ° C	10.0 ° C	0.0 °C
Dehumidifier -over ride	0=MAN OFF, 1=MAN ON	1-2[2)]	q46				*		0	1	0
Service											
Control state A	0=Normal ctrl., 1=Hold after def rost, 2=Min ON timer, 3=Min O FF timer, 4=Drip off, 10=Main s witch OFF, 11=Thermostat cut- out, 12=Frost protection S4, 13 =Not_used, 14=Defrost, 15=Fa n delay, 17=Door open, 18=Mel t period, 19=Modulating temp. c ontrol, 20=Emergency control, 23=Adaptive superheat control, 24=Start injection, 25=Manual control, 26=No refrigerant selec ted, 16=Forced closing, 29=Ca se cleaning, 30=Forced cooling , 31=Door open, 32=Power-up delay, 33=Air heating, 45=Shut down controller, 48=Adaptive li quid control	0-X	u00	*	*	*	*	*	0	48	0
S5 Evaporator A		0-X	u09	*	*			*	-200.0 °C	200.0 °C	0.0 °C
DI1 Status	0=OFF, 1=ON	0-X	u10	*			*		0	1	0
Defrost time A		0-X	u11	*	*	*	*	*	0 min	900 mi n	0 min
Night condition	0=OFF, 1=ON	0-X	u13	*	*	*	*	*	0	1	0
S4 Air OFF evap. A		0-X	u16	*	*	*	*	*	-200.0 °C	200.0 °C	0.0 °C
Thermostat air te mp. A		0-X	u17	*	*	*	*	*	-200.0 °C	200.0 °C	0.0 °C

Thermostat run time A		0-X	u18	*	*	*	*	*	0 min	999 min	0 min
S2 Gas outlet A		0-X	u20	*	*	*	*	*	-200.0 °C	200.0 °C	0.0 °C
Superheat A		0-X	u21	*	*	*	*	*	-200.0 °C	200.0 °C	0.0 °C
Superheat reference A		0-X	u22	*	*	*	*	*	-200.0 °C	200.0 °C	0.0 °C
EEV opening A		0-X	u23	*	*	*	*	*	0 %	100 %	0%
Pe Evap. pressure		0-X	u25	*	*	*	*	*	-1.0 Bar	200.0 Bar	0.0Bar

Function	**Values**	**R-W**	**Code**	**1**	**2**	**3**	**4**	**5**	**Min. value**	**Max. value**	**Fact. value**
Te Evap. temp.		0-X	u26	*	*	*	*	*	-200.0 °C	200.0 °C	0.0 °C
DI2 Status	0=OFF, 1=ON	0-X	u37	*	*	*	*	*	0	1	0
Display readout 1		0-X	u56	*	*	*	*	*	-200.0 °C	200.0 °C	0.0 °C
Alarm air temp. A		0-X	u57	*	*	*	*	*	-200.0 °C	200.0 °C	0.0 °C
Fan	0=OFF, 1=ON	0-X	u59	*	*	*	*	*	0	1	0
Defrost A	0=OFF, 1=ON	0-X	u60	*	*			*	0	1	0
Rail heat	0=OFF, 1=ON	0-X	u61	*	*	*			0	1	0
Alarm relay	0=OFF, 1=ON	0-X	u62	*		*	*	*	0	1	0
Light	0=OFF, 1=ON	0-X	u63	*	*	*	*	*	0	1	0
S5 Evaporator B		0-X	u75		*			*	-200.0 °C	200.0 °C	0.0 °C
Defrost B	0=OFF, 1=ON	0-X	u83		*			*	0	1	0
Air heater	0=OFF, 1=ON	0-X	u84				*		0	1	0
Rail heat power		0-X	u85	*	*	*	*	*	0 %	100 %	0%

Thermostat band	1=Band 1, 2=Band 2	0-X	u86	*	*	*	*	*	1	2	1
DI3 Status	0=OFF, 1=ON	0-X	u87	*	*	*	*	*	0	1	0
Thermostat cut-in temp.		0-X	u90	*	*	*	*	*	-200.0 °C	200.0 °C	4.0 °C
Thermostat cut-out temp.		0-X	u91	*	*	*	*	*	-200.0 °C	200.0 °C	2.0 °C
Alarm air temp. B		0-X	U34		*	*	*	*	-200.0 °C	200.0 °C	0.0 °C
Display readout 2		0-X	U35	*	*	*		*	-200.0 °C	200.0 °C	0.0 °C
Network status		0-X	U45	*	*	*	*	*	0 %	100 %	0%
Humidity sensor		0-X	U57				*		0 %	100 %	0%
Humidifier	0=OFF, 1=ON	0-X	U58				*		0	1	0
Rail heat PWM		0-X	U59	*	*	*	*	*	0 %	100 %	0%
Food temperature A		0-X	U72	*	*	*	*	*	-200.0 °C	200.0 °C	0.0 °C
Defrost sensor temperature A		0-X	U73	*	*	*	*	*	-200.0 °C	200.0 °C	0.0 °C
Control state B	0=Normal ctrl., 1=Hold after defrost, 2=Min ON timer, 3=Min OFF timer, 4=Drip off, 10=Main switch OFF, 11=Thermostat cut-out, 12=Frost protection S4, 13=Not_used, 14=Defrost, 15=Fan delay, 17=Door open, 18=Melt period, 19=Modulating temp. control, 20=Emergency control, 23=Adaptive superheat control, 24=Start injection, 25=Manual control, 26=No refrigerant selected, 16=Forced closing, 29=Case cleaning, 30=Forced cooling, 31=Door open, 32=Power-up delay, 33=Air heating, 45=Shut down controller, 48=Adaptive liquid control	0-X	U74		*	*	*	*	0	48	0
Defrost time B		0-X	U75		*	*	*	*	0 min	900 min	0 min
S4 Air OFF evap. B		0-X	U76		*	*	*	*	-200.0 °C	200.0 °C	0.0 °C

Thermostat air temp. B		0-X	U77		*	*	*	*	-200.0 °C	200.0 °C	0.0 °C
Thermostat run time B		0-X	U78		*	*	*	*	0 min	999 min	0 min
S2 Gas outlet B		0-X	U79		*	*	*	*	-200.0 °C	200.0 °C	0.0 °C
Superheat B		0-X	U80		*	*	*	*	-200.0 °C	200.0 °C	0.0 °C
Superheat reference B		0-X	U81		*	*	*	*	-200.0 °C	200.0 °C	0.0 °C
EEV opening B		0-X	U82		*	*	*	*	0 %	100 %	0%
Control state C	0=Normal ctrl., 1=Hold after defrost, 2=Min ON timer, 3=Min OFF timer, 4=Drip off, 10=Main switch OFF, 11=Thermostat cut-out, 12=Frost protection S4, 13=Not_used, 14=Defrost, 15=Fan delay, 17=Door open, 18=Melt period, 19=Modulating temp. control, 20=Emergency control, 23=Adaptive superheat control, 24=Start injection, 25=Manual control, 26=No refrigerant selected, 16=Forced closing, 29=Case cleaning, 30=Forced cooling, 31=Door open, 32=Power-up delay, 33=Air heating, 45=Shut down controller, 48=Adaptive liquid control	0-X	U83			*			0	48	0
Defrost time C		0-X	U84			*			0 min	900 min	0 min
S4 Air OFF evap. C		0-X	U85			*			-200.0 °C	200.0 °C	0.0 °C
Thermostat air temp. C		0-X	U86			*			-200.0 °C	200.0 °C	0.0 °C

Function	Values	R-W	Code	1	2	3	4	5	Min. value	Max. value	Fact. value
Thermostat run time C		0-X	U87			*			0 min	999 min	0 min
S2 Gas outlet C		0-X	U88			*			-200.0 °C	200.0 °C	0.0 °C
Superheat C		0-X	U89			*			-200.0 °C	200.0 °C	0.0 °C
Superheat reference C		0-X	U90			*			-200.0 °C	200.0 °C	0.0 °C
EEV opening C		0-X	U91			*			0 %	100 %	0%
Alarm air temp. C		0-X	U92			*			-200.0 °C	200.0 °C	0.0 °C
Defrost sensor tempera- ture B		0-X	U93		*	*	*	*	-200.0 °C	200.0 °C	0.0 °C
Defrost sensor temperature C		0-X	U94			*			-200.0 °C	200.0 °C	0.0 °C
Dehumidifier	0=OFF, 1=ON	0-X	U96				*		0	1	0

Fault message

In an error situation the alarm LED on the front will be on and the alarm relay will be activated (depending on priority). If you push the alarm button for 3 seconds you can see the alarm report in the display.

(Alarm priorities can be changed. See the User Guide.) Here are the messages that may appear:

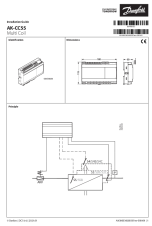
Code	Alarm text	Description
E01	Hardware failure	The controller has a hardware failure
E06	Clock lost time	The clock has lost valid time
E20	Pe Evap. pressure A – Sensor error	The sensor signal is out of range. Please check the sensor for correct operation
E24	S2 Gas outlet A – Sensor error	The sensor signal is out of range. Please check the sensor for correct operation
E26	S4 Air OFF evap. A – Sensor error	Sensor signal is out of range. Please check the sensor for correct operation
E27	S5 Evaporator A – Sensor error	Sensor signal is out of range. Please check the sensor for correct operation

E37	S5 Evaporator B – Sensor error	Sensor signal is out of range. Please check the sensor for correct operation
E59	Humidity sensor – Sensor error	Sensor signal is out of range. Please check the sensor for correct operation
E60	S4 Air OFF evap. B – Sensor error	Sensor signal is out of range. Please check the sensor for correct operation
E61	S4 Air OFF evap. C – Sensor error	Sensor signal is out of range. Please check the sensor for correct operation
E62	S2 Gas outlet B – Sensor error	Sensor signal is out of range. Please check the sensor for correct operation
E63	S2 Gas outlet C – Sensor error	Sensor signal is out of range. Please check the sensor for correct operation
A01	High temperature alarm A	The alarm temperature has been above the max alarm limit for a longer period than the set alarm delay.
A02	Low temperature alarm A	The alarm temperature has been below the min alarm limit for a longer period than the set alarm delay.
A04	Door open alarm	The door has been open for a too long time
A05	Max defrost hold time exceeded	The controller has been waiting longer time than permitted after a co-ordinated defrost.
A11	Refrigerant not selected	The refrigerant has not been selected hence control can not be initiated
A15	DI alarm 1	Alarm signal from digital input signal
A16	DI alarm 2	Alarm signal from digital input signal
A45	The main switch set OFF	The controller main switch has been set to either Stop or manual control. Alternatively, a digital input set up for the “main switch” function, has stopped the control
A59	Case in cleaning mode	A case cleaning operation has been started on a case
A70	High temperature alarm B	The alarm temperature has been above the max alarm limit for a longer period than the set alarm delay.
A71	Low-temperature alarm B	The alarm temperature has been below the minimum alarm limit for a longer period than the set alarm delay.
AA2	CO2 leak detected	CO2 is leaking from the refrigeration system
AA3	Refrigerant leak detected	Refrigerant is leaking from the refrigeration system

a02	High humidity alarm	The humidity level is too high
a03	Low humidity alarm	The humidity level is too low
a05	High temperature alarm C	The alarm temperature has been above the max alarm limit for a longer period than the set alarm delay.
a06	Low-temperature alarm C	The alarm temperature has been below the minimum alarm limit for a longer p eriod than the set alarm delay.
Data communication The importance of individual alarms can be defined with a setting. The setting must be carried out in the group “ Alarm destinations”		

For additional information, please see the respective User Guide. 14 | AN300030680307en-000401 © Danfoss | DCS (vt) | 2021.01

Documents / Resources

	Danfoss AK-CC55 Multi Coil [pdf] Installation Guide AK-CC55 Multi Coil, AK-CC55, Multi Coil, Coil

References

- User Manual