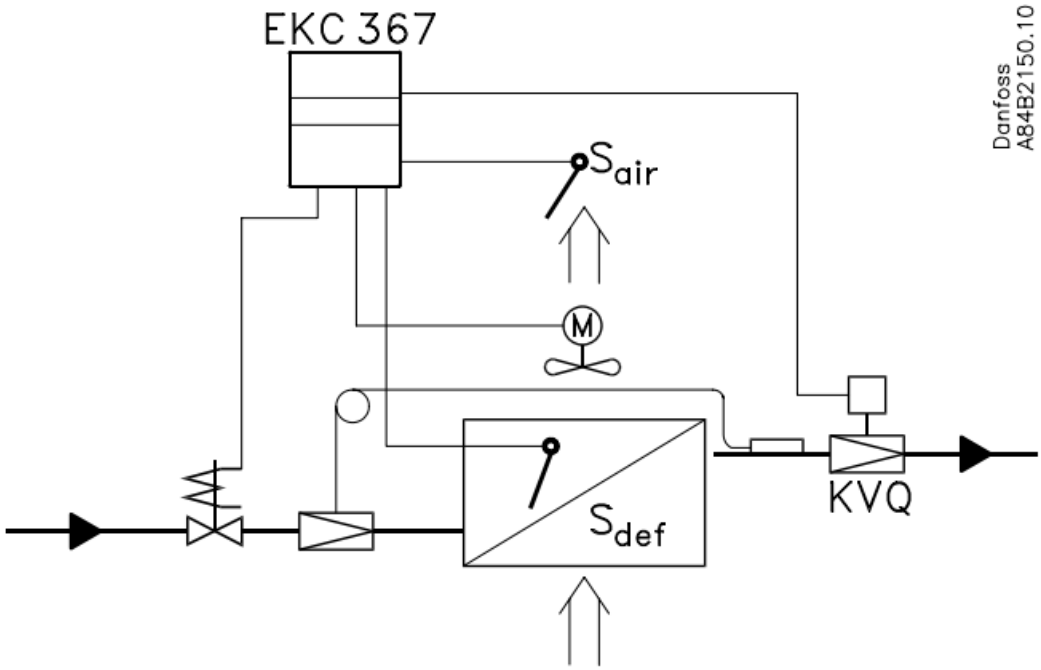
Danfoss EKC 367 Media Temperature Controller Instruction Manual

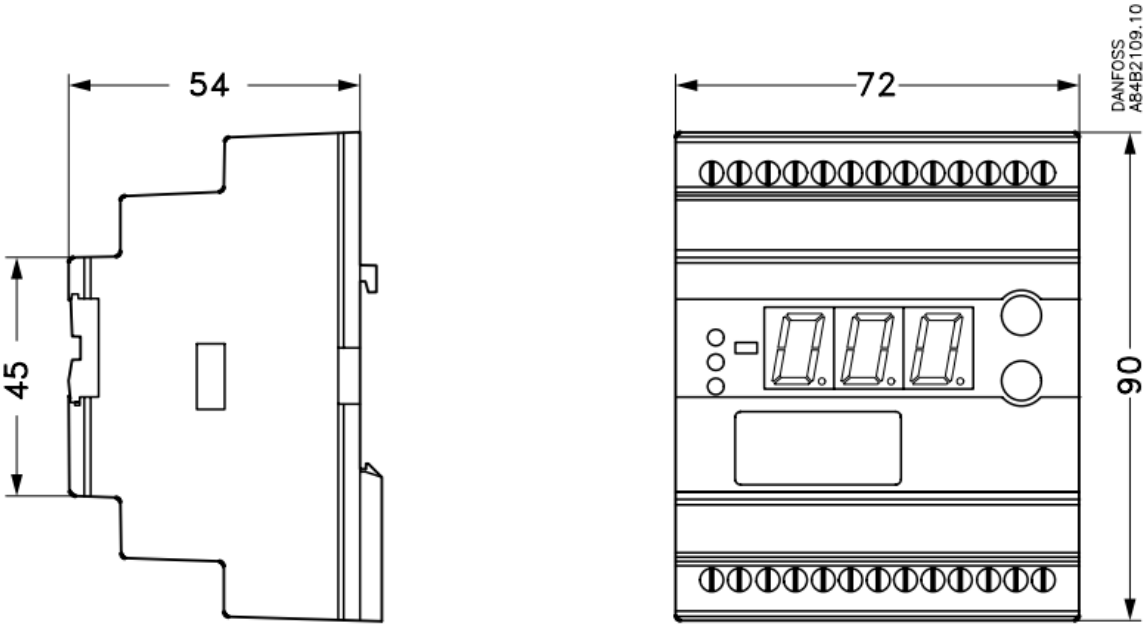
Contents

Danfoss EKC 367 Media Temperature Controller

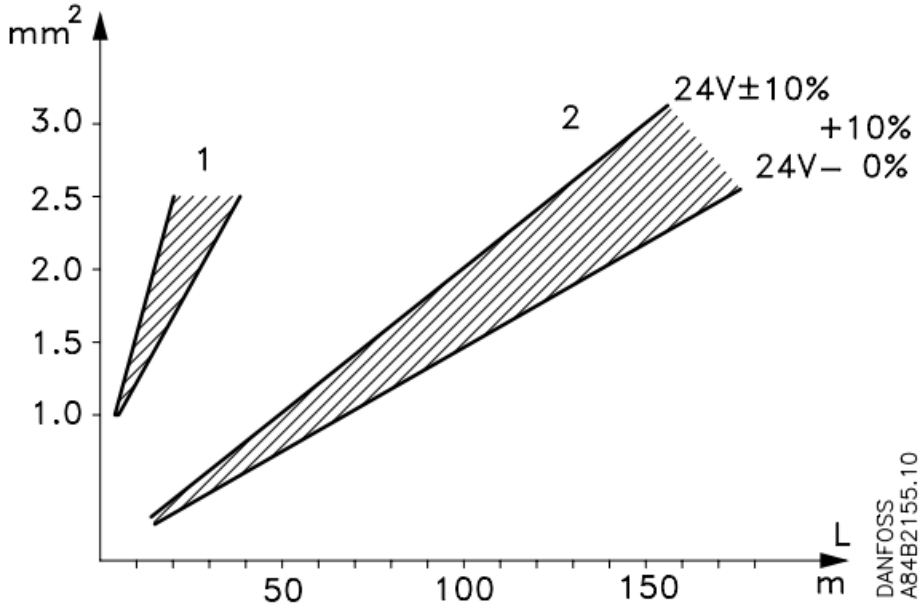
Principle

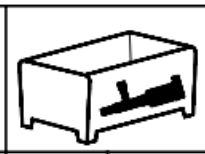
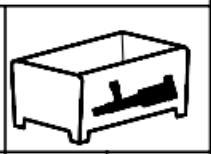
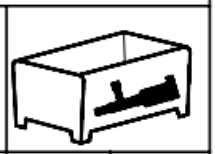


Dimensions



Cable length/ wire cross section

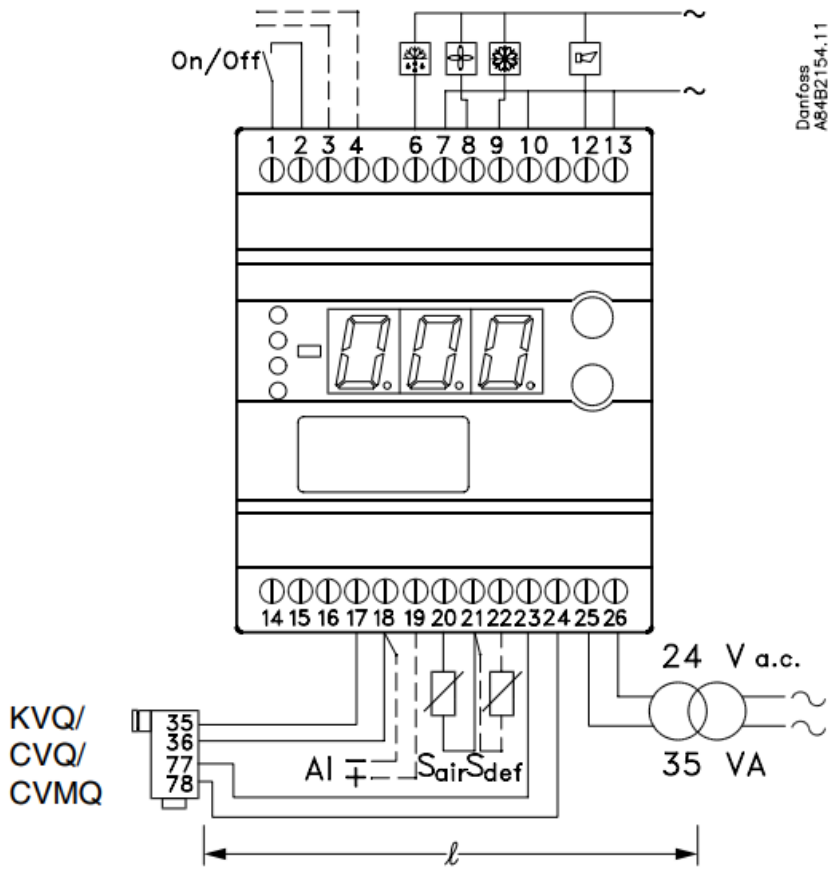


Afrimning/Defrost/Abtauung/Dégivrage												
El/Electricity				Varmgas/Hotgas/Warmgas/Gaz chaud								
--				$t_{KVQ} > 0$				$t_{KVQ} < 0$				
												
												
1	2	2	2	1	2	1	2	-	1	-	1	

Cable length for the actuator. The actuator must be supplied with 24 V a.c. ±10%. To avoid excessive voltage loss in the cable to the actuator, use a thicker cable for large distances. If the KVQ valve is mounted lying down, shorter cable lengths are allowed than if it is mounted standing up. It must not be mounted lying down in connection with hotgas defrost if the temperature around the KVQ-valve is below 0°C.

Connection

Data communication



Ledningslængde/wire length/Kabelänge/Longeur du câble

Connections

Necessary connections

Terminals:

- 25-26 Supply voltage 24 V a.c.
- 17-18 Signal from actuator (from NTC)
- 23-24 Supply to actuator (to PTC)
- 20-21 Pt 1000 sensor at evaporator outlet
- 1-2 Switch function for start/stop of regulation. If a switch

is not connected, terminals 1 and 2 must be shortcircuited. Application dependent connections

Terminal:

12-13 Alarm relay

There is connection between 12 and 13 in alarm situations and when the controller is dead

- 6-7 Relay switch for start/stop of defrost
- 8-10 Relay switch for start/stop of fan
- 9-10 Relay switch for start/stop of cooling
- 18-19 Voltage signal from other regulation (Ext.Ref.)
- 21-22 Pt 1000 sensor for defrost function.

Short-circuit of the terminals for two seconds (pulse signal) will start a defrost

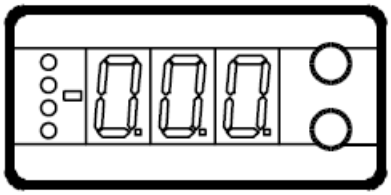
3-4 Data communication

Mount only, if a data communication module has been mounted. It is important that the installation of the data communication cable be done correctly. Cf. separate literature No. RC.8A.C…

Operation

Display

The values will be shown with three digits, and with a setting you can determine whether the temperature are to be shown in °C or in °F.



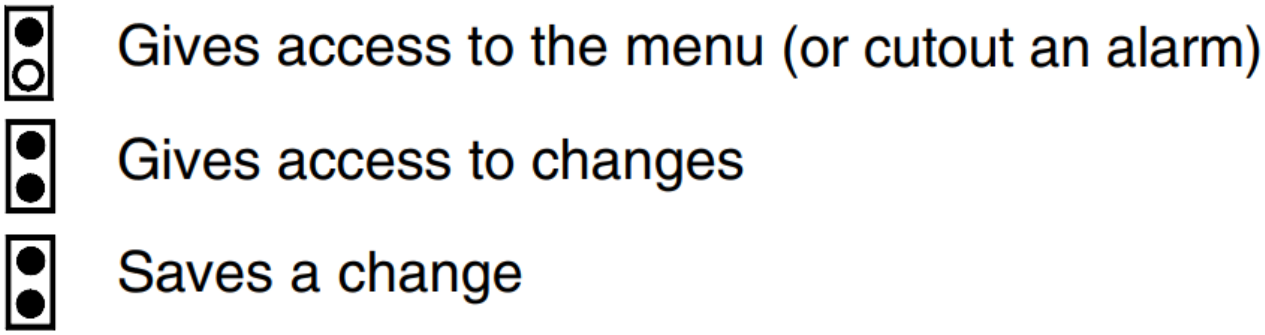
Light-emitting diodes (LED) on front panel

There are LED’s on the front panel which will light up when the belonging relay is activated. The three lowermost LED’s will flash, if there is an error in the regulation. In this situation you can upload the error code on the display and cancel the alarm by giving the uppermost button a brief push.

The controller can give the following messages:		
E1	**Error message**	Errors in the controller
E7		Cut-out Sair
E8		Shortcircuited Sair
E11		Valve's actuator temperature outside its range
E12		Analog input signal is outside the range
A1	**Alarm message**	High-temperature alarm
A2		Low-temperature alarm

The buttons

When you want to change a setting, the two buttons will give you a higher or lower value depending on the button you are pushing. But before you change the value, you must have access to the menu. You obtain this by pushing the upper button for a couple of seconds – you will then enter the column with parameter codes. Find the parameter code you want to change and push the two buttons simultaneously. When you have changed the value, save the new value by once more pushing the two buttons simultaneously



Examples of operations

Set reference temperature

1. Push the two buttons simultaneously
2. Push one of the buttons and select the new value
3. Push both buttons again to conclude the setting

Set one of the other menus

1. Push the upper button until a parameter is shown
2. Push one of the buttons and find the parameter you want to change
3. Push both buttons simultaneously until the parameter value is shown
4. Push one of the buttons and select the new value
5. Push both buttons again to conclude the setting

Menu survey

Function	Para- meter	Min.	Max.
Normal display			
Shows the temperature at the room sensor	–	°C	
Give the lower button a brief push to see the temperature at the defrost sensor	–	°C	
Reference			
Set the required room temperature	–	-70°C	160°C
Temperature unit	r05	°C	°F
External contribution to the reference	r06	-50 K	50 K
Correction of the signal from Sair	r09	-10,0 K	10,0 K
Correction of the signal from Sdef	r11	-10,0 K	10,0 K
Start/stop of refrigeration	r12	OFF	On
Alarm			
Upper deviation (above the temperature setting)	A01	0	50 K
Lower deviation (below the temperature setting)	A02	0	50 K
Alarm’s time delay	A03	0	180 min
Defrost			
Defrost method (ELECTRICITY/GAS)	d01	off	GAS
Defrost stop temperature	d02	0	25°C
Max. defrost duration	d04	0	180 min
Drip-off time	d06	0	20 min
Delay for fan start or defrost	d07	0	20 min

Fan start temperature	d08	-15	0°C
Fan cut in during defrost (yes/no)	d09	no	yes
Delay for temperature alarm after defrost	d11	0	199 min
Regulating parameters			
Actuator max. temperature	n01	41°C	140°C
Actuator min. temperature	n02	40°C	139°C
Actuator type (1=CVQ-1 to 5 bar, 2=CVQ 0 to 6 bar, 3=CVQ 1.7 to 8 bar, 4= CVMQ, 5=KVQ)	n03	1	5
P: Amplification factor Kp	n04	0,5	20
I: Integration time Tn (600 = off)	n05	60 s	600 s
D: Differentiation time Td (0 = off)	n06	0 s	60 s
Transient phenomenon 0: Fast cooling 1: Cooling with less underswing 2: Cooling where underswing is unwanted	n07	0	2
Start-up time after hotgas defrost	n08	5 min	20 min
Miscellaneous			
Controller’s address	o03*	1	60
ON/OFF switch (service-pin message)	o04*	–	–
Define input signal of analog input 0: no signal 1: 0 – 10 V 2: 2 – 10 V	o10	0	2
Language (0=english, 1=German, 2=French, 3=Danish, 4=Spanish, 5=Italian, 6=Swedish)	011*	0	6
Set supply voltage frequency	o12	50 Hz	60 Hz

Service		
Read temperature at the Sair sensor	u01	°C
Read regulation reference	u02	°C
Read valve's actuator temperature	u04	°C
Read reference of the valve's actuator temperature	u05	°C
Read value of external voltagt signal	u07	V
Read temperature at the Sdef sensor	u09	°C
Read status of input DI	u10	on/off
Read duration of defrost	u11	m

*) This setting will only be possible if a data communication module has been installed in the controller.

Factory setting

If you need to return to the factory-set values, it can be done in this way:

- Cut out the supply voltage to the controller
- Keep both buttons depressed at the same time as you reconnect the supply voltage

Start of the controller

When the electric wires have been connected to the controller, the following points have to be attended to before the regulation starts:

1. Switch off the external ON/OFF switch that starts and stops the regulation.
2. Follow the menu survey and set the various parameters to the required values.
3. Switch on the external ON/OFF switch, and the regulation will start.
4. If the system has been fitted with a thermostatic expansion valve, it must be set to minimum stable superheating. (If a specific T0 is required for the adjustment of the expansion valve, the two setting values for the actuator temperature (n01 and n02) can be set to the corresponding value while the adjustment of the expansion valve is carried out. Remember to reset the values.
5. Follow the actual room temperature on the display. (Use a data collection system, if you like, so that you can follow the temperature performance).

If the temperature fluctuates

When the refrigerating system has been made to work steadily, the controller's factory-set control parameters

should, in most cases ,provide a stable and relatively fast regulating system. If the system on the other hand oscillates, you must register the periods of oscillation and compare them with the set integration time Tn, and then make a couple of adjustments in the indicated parameters.

If the time of oscillation is longer than the integration time: (Tp > Tn, (Tn is, say, 4 minutes))

1. Increase Tn to 1.2 times Tp
2. Wait until the system is in balance again
3. If there is still oscillation, reduce Kp by, say, 20%
4. Wait until the system is in balance
5. If it continues to oscillate, repeat 3 and 4

If the time of oscillation is shorter than the integration time: (Tp < Tn, (Tn is, say, 4 minutes)

1. Reduce Kp by, say, 20% of the scale reading
2. Wait until the system is in balance
3. If it continues to oscillate, repeat 1 and 2

Frequently Asked Questions

Q: What should I do if there is an error inthe regulation?

A: The three lowermost LEDs will flash when there is an error. You can upload the error code on the display and cancel the alarm by pressing the uppermost button briefly.

Q: How do I start the regulator?

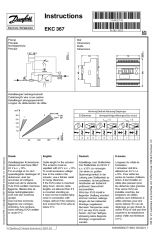
A: Follow these steps:

1. Disconnect the external on/off contact that starts and stops regulation.
2. Connect the external on/off contact to start regulation.

Q: What should be done in case of temperature fluctuations?

A: Refer to the product manual “EKC 367” for detailed instructions on handling temperature fluctuations.

Documents / Resources

	Danfoss EKC 367 Media Temperature Controller [pdf] Instruction Manual AN00008642719802-000202, AN00008642719801-000202, AN00008642719801E-0K0C02306 27, EKC 367 Media Temperature Controller, EKC 367, Media Temperature Controller, Temperat ure Controller, Controller

References

- **User Manual**