Manuals+ — User Manuals Simplified.

Danfoss EKC 361 Media Temperature Controller Installation Guide

**Installation Guide
Media temperature controller
EKC 361**

Contents

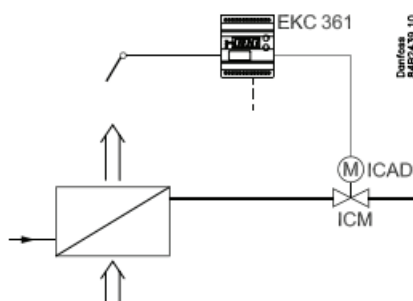## EKC 361 Media Temperature Controller

Principle
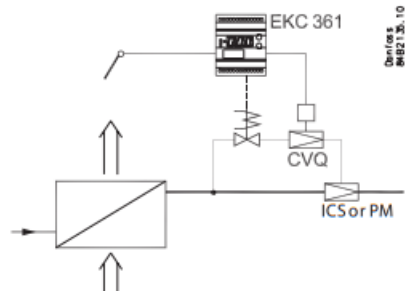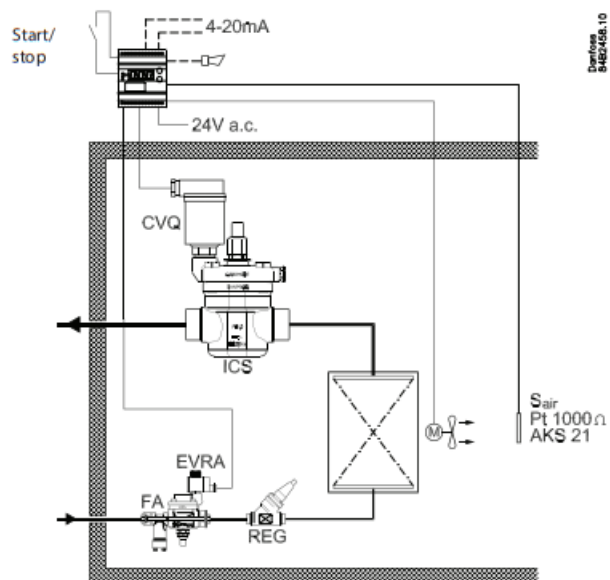
Start/
stop

4-20mA

24V a.c.

Danfoss
84B2458.10

EKC 361

Danfoss
84B2120.10

CVQ

ICS or PM

CVQ

ICS

S_air
Pt 1000 Ω
AKS 21

EVRA

FA

REG

4-20mA

24V d.c.

Danfoss
84B2459.10

EKC 361

Danfoss
84B2439.10

24V a.c.

ICAD

ICAD

ICM

ICM

S_air
Pt 1000 Ω
AKS 21

EVRA

FA

REG

Dimensions

54

45

72

90

Data communication

!! U : 24 V +/-10% !!
77-78
Cable ex.

L < 25 m	: 0.75 mm²
25 m < L < 75 m	: 1.5 mm²
75 m < L	: 2.5 mm²
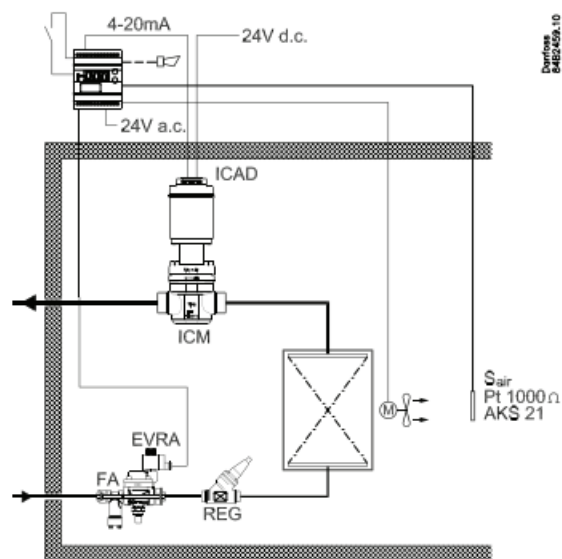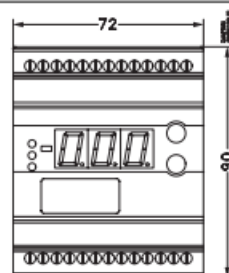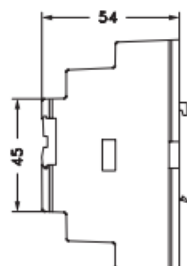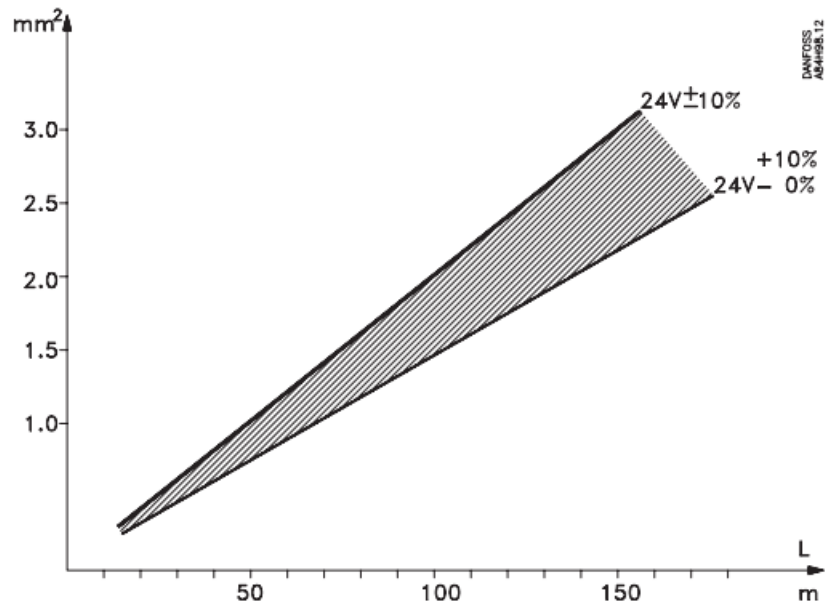
Connections

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 situa tions and when the controller is dead
8-10 Relay switch for start/stop of fan
9-10 Relay switch for start/stop of solenoid valves
18-19 Current signal from other regulation (Ext.Ref.)
21-22 Pt 1000 sensor for monitoring
2-5 Current output for Sair/Saux temperature or ICAD actuator for ICM valve
3-4 Data communication
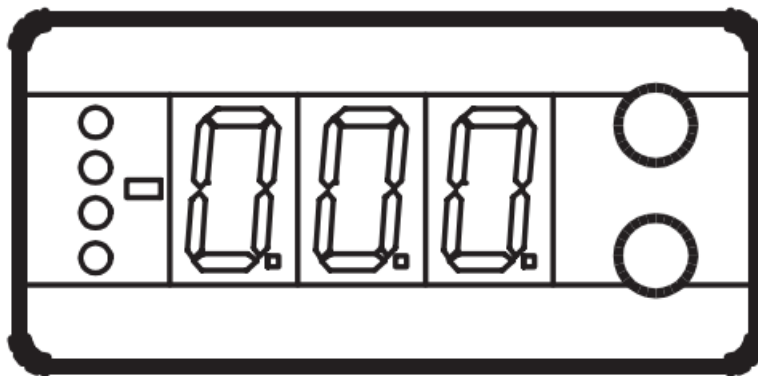Mount only, if a data communication module has been mounted.
It is important that the installation of the data communication cable be done correctly.
Cf. separate literature No. RC8AC…

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 corresponding relay is activated.
The three lowest 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:		
EI		Errors in the controller
E7		Cut-out Sair
E8	Error message	Shortcircuited Sag
EI 1		Valve's actuator temperature outside its range
EI 2		Analog input signal is outside the range
AI	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 arameter 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.

	● ○	Gives access to the menu (eller udkoble en alarm)
		Gives access to changes
	● ●	Saves a change
	● ●	

Examples of operations
Set set-point

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

Literature survey:
Manual EKC 361 Installation guide, Data communication link
RS8AE–RC8AC—

Function	Para- m eter	Min.	Max.	Fac. setti ng
Normal display				
Shows the temperature at the selected sensor At ICM valve OD also can be selected	–	°C		
Reference				
Set the required room temperature	–	-70°C	160°C	10°C
Temperature unit	r05	°C	°F	°C
Input signal's temperature influence	r06	-50°C	50°C	0.0
Correction of the signal from SA„	r09	-10,0°C	10,0°C	0.0
Correction of the signal from Sato	r10	-10,0°C	10,0°C	0.0
StarUstop of refrigeration	r12	OFF/0	On/1	On/1
Alarm				
Upper deviation (above the temperature setting)	A01	0	50 K	5.0
Lower deviation (below the temperature setting)	A02	0	5 0 K	5.0
Alarm's time delay	A03	0	1 80 min	30
Regulating parameters				
Actuator max. temperature	nO1	41°C	140°C	140
Actuator min. temperature	n02	40°C	139°C	40
Actuator type (1=CVQ-1 to 5 bar, 2=CVQ 0 to 6 bar, 3=C VQ 1.7 to 8 bar, 4= CVMQ 5=10/Q 6= ICM)	nO3	1	6	2
P: Amplification factor Kp	n04	0,5	50	3
I: Integration time Tn (600 = off)	nO5	60 s	600 s	240
D: Differentiation ti me Td (0 = off)	nO6	Os	60 s	10

Transient phenomenon 0: Ordinary control 1:Underswing minimised 2:No underswing	n07	0	2	2
OD – Opening degree – max. limit – ICM only	n32	0%	100%	100
OD – Opening degree min. limit – ICM only	n33	0%	100%	0
Miscellaneous				
Controller's address (0-1 20)	o03*	0	990	0
ON/OFF switch (service-pin message)	o04'	–	–	
Define output signal of analog output: 0: no signal, 1: 4 – 20 mA, 2: 0 – 20 mA	§	0	2	0
Define input signal of analog input 0: no signal, 1: 4 – 20 mA, 2: 0 – 20 mA	10	0	2	0
Language (0=english, 1 =German, 2=French, 3=Danish, 4=Spanish and 6=Swedish.)When you change the setting to an other language you must activate o04 before the new language can be visible from the AKM program.	011'	0	6	0
Set supply voltage frequency	ol 2	50 Hz/0	60 Hz/1	0
Select of running display value	o17	Au/0	Air/1	Air/1
(Setting for the function o09) Set the temperature value where the output signal must be minimum (0 or 4 mA)	o27	-70°C	160°C	-35
(Setting for the function 009) Set the temperature value where the output signal must be maximum (20 mA)	o28	-70°C	160°C	15
Service				
Read temperature at the Ste, sensor	u01	°C		
Read regulation reference	u02	°C		
Read temperature at the S sensor	u03	°C		
Read valve's actuator temperature	u04	°C		
Read reference of the valve's actuator temperature	u05	°C		
Read value of external current signal	u06	mA		
Read value of transmitted current signal	u08	mA		
Read status of input DI	u10	on/off		
ICM opening degree. (only at ICM)	u24	%		

*) This setting will only be possible if a data communication module has been installed in the controller.
Factory setting
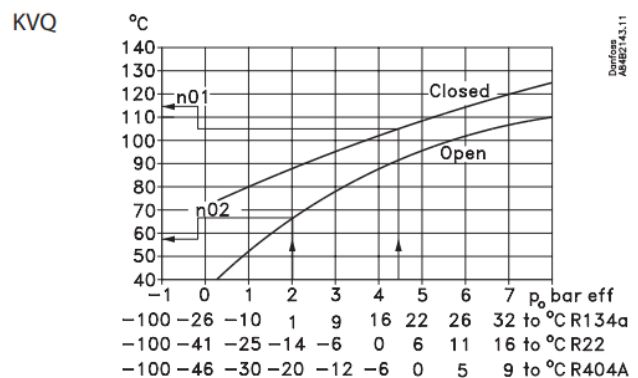If you need to return to the factory-set values, it can be done in this way:
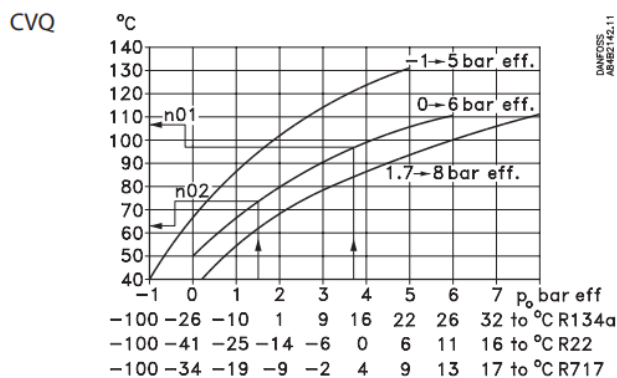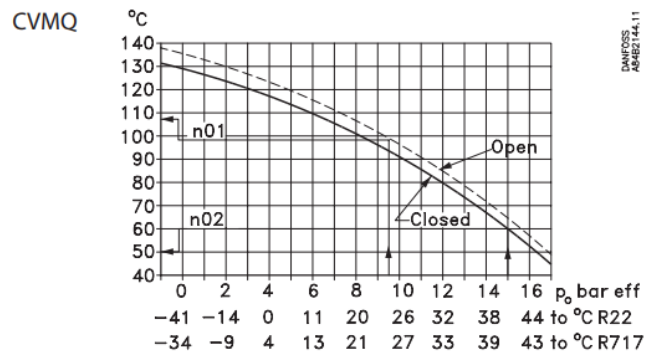
- Cut out the supply voltage to the controller
- Keep both buttons depressed at the same time as you recon nect the supply voltage

n01 and n02

Connection between the evaporating temperature and the actuator's temperature (the values are approximate).
n01: The highest regulated room temperature will have a be longing to value which in turn indicates the value of the n01 setting. Due to tolerances in the actuator, the setting value must be 10 K higher than shown in the curve.
n02: The lowest occurring suction pressure will have a belonging to value which in turn indicates the value of the n02 setting. Due to tolerances in the actuator, the setting value must be 10 K lower than shown in the curve.

CVMQ °C

p_o bar eff	0	2	4	6	8	10	12	14	16	to
°C R22	−41	−14	0	11	20	26	32	38	44	to
°C R717	−34	−9	4	13	21	27	33	39	43	to

(Graph labels: n01, n02, Open, Closed; DANFOSS AB482144.11)

CVQ °C

(Graph labels: n01, n02, 1→5 bar eff., 0→6 bar eff., 1.7→8 bar eff.; DANFOSS AB482142.11)

p_o bar eff	−1	0	1	2	3	4	5	6	7	to
°C R134a	−100	−26	−10	1	9	16	22	26	32	to
°C R22	−100	−41	−25	−14	−6	0	6	11	16	to
°C R717	−100	−34	−19	−9	−2	4	9	13	17	to

KVQ °C

(Graph labels: n01, n02, Closed, Open; Danfoss AB482143.11)

p_o bar eff	−1	0	1	2	3	4	5	6	7	to
°C R134a	−100	−26	−10	1	9	16	22	26	32	to
°C R22	−100	−41	−25	−14	−6	0	6	11	16	to
°C R404A	−100	−46	−30	−20	−12	−6	0	5	9	to

Start of 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 of 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 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 ex ansion valve, the two setting values for the actuator temperature (n01 and n02) can be set to the belonging 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. (On terminals 2 and 5 a current signal can be transmitted which represents the room temperature. Connect a data collection unit, if applicable, so that the temperature performance can be followed).

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

Documents / Resources

[Danfoss EKC 361 Media Temperature Controller](#) [pdf] Installation Guide
EKC 361 Media Temperature Controller, EKC 361, EKC 361 Temperature Controller, Media Temperature Controller, Temperature Controller, Controller