Menu operation via AKA 21

ADAP-KOOL®

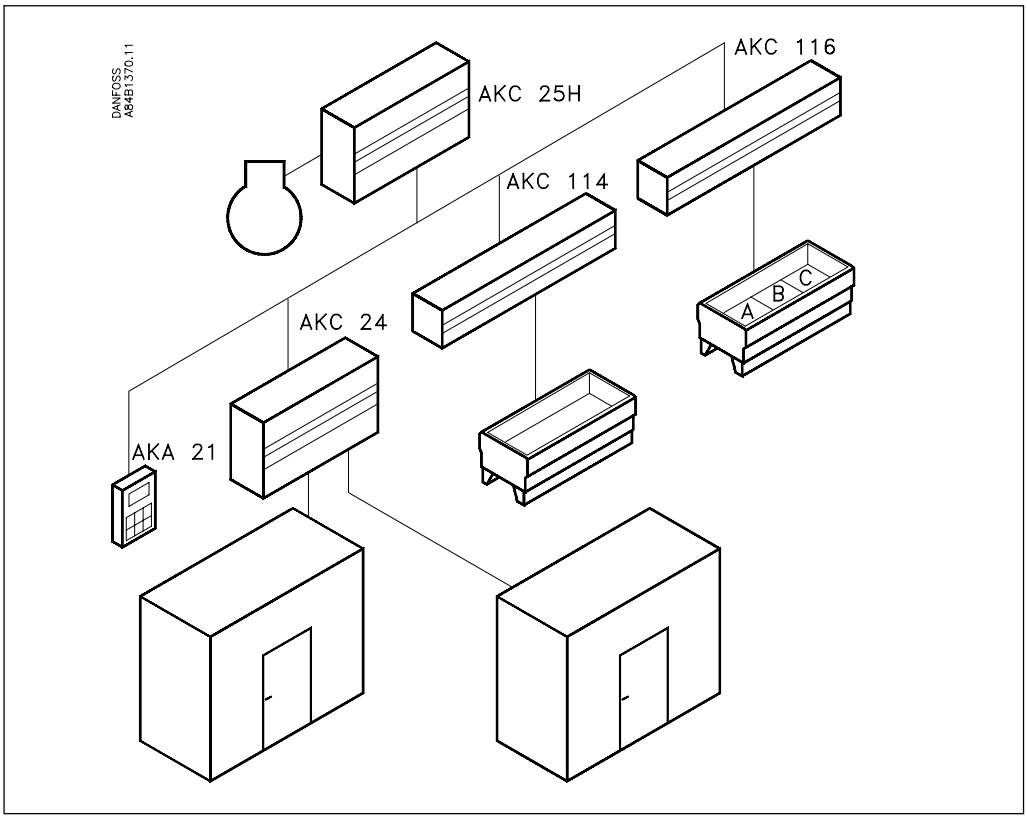


Controller for industrial evaporators

AKC 24P2

Software version 1.1x

System survey



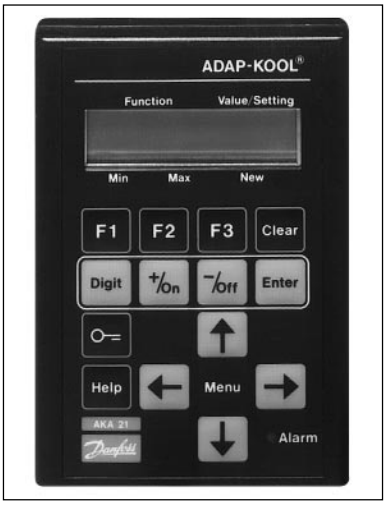
A refrigerating plant fitted with ADAP-KOOL® refrigeration controls will mostly consist of several controllers where each controller will regulate its own refrigeration appliance/cold room.

The system has been designed in such a way that contact can be made to each and every controller via a data communication system. One specific controller is selected, and it will now be possible to make settings and readouts for this unit.

Operation

The individual controllers can be operated in two ways:

1. With control panel type AKA 21.
   Use this document when operation takes place in this way.
2. With PC and system software type AKM. Use another document with literature number RC.1N.D-.02.



Validity

This menu operation was worked out in January 1999 and applies to AKC 24P2 with the following code number: 084B2028 that are fitted with software version 1.1x.

Select a controller

All controllers that are connected to the same network can be operated with the control panel. There may be as many as 125 controllers, and they are shown in groups of 16 on the display.

```
1   <   1   > 16
AEAAAAAAAAEEgg A
```

A system is shown here which consists of more than 16 controllers. The meaning of the letters is, as follows:

A: AKC controller
E: Controller with active ERROR (on addresses 2, 11 and 12 in this example)
g: Gateway (to addresses 13 and 14 in this example)
G: Gateway with connected printer
: A blank field indicates that there is no unit with this address.

```
1   <   4   > 16
AEAAAAAAAAEEgg A
```

Select the unit that is to be operated by using the “+/On” or “-/Off” key, and push “Enter”. In this example you select the controller with address 4.

```
17  <   17  > 32
AAA
```

If the system comprises more than 16 units or units with an address code higher than 16, you may change to the next group by pushing “→”.

Settings of a controller

When a controller has been selected, you can make settings in it. This setting is performed, as follows:

```
                5
  -50 to +50    5
```

```
                ON
  OFF / ON      ON
```

Shown in the upper right corner of the display is the setting with which the controller is operating. Below that value a new setting may be made. Use the three keys “+/ON”, “-/OFF” and “Digit” for setting the new value. This new value will not govern the regulation until you push the key “Enter”.

```
          >>
```

To protect important settings, individual menus are equipped with a “key-function”. To enter these menus it is necessary to press both “key” and “→”.
In the following menu list, the key-functions are indicated by the symbol >>.

How to localise an error

When an error appears in a system, it can be seen on the control panel’s display which will show an “E”. If the control panel shows a text from a selected controller, the LED at the word “Alarm” will furthermore flash.

```
1   <   2   > 16
AEAAAAAAAAAgg A
```

```
DANFOSS AKC 24P2
E           Mon-11:27
```

```
Standby mode
```

When an error has occurred, first select the controller on which the error is registered. Continue through the several menus and follow the menus to the right when these indicates an "E". Thereafter read the alarm text in the menu "Alarm message".
At the end of the document there is a list of all the error messages and a description of how to acknowledge an alarm.

Functions of a controller

When one controller has been selected from the total system, the following display will appear (the display is the first one shown when you have selected an address from the total system):

e.g.

DANFOSS AKC 24P2
E Mon-11:27

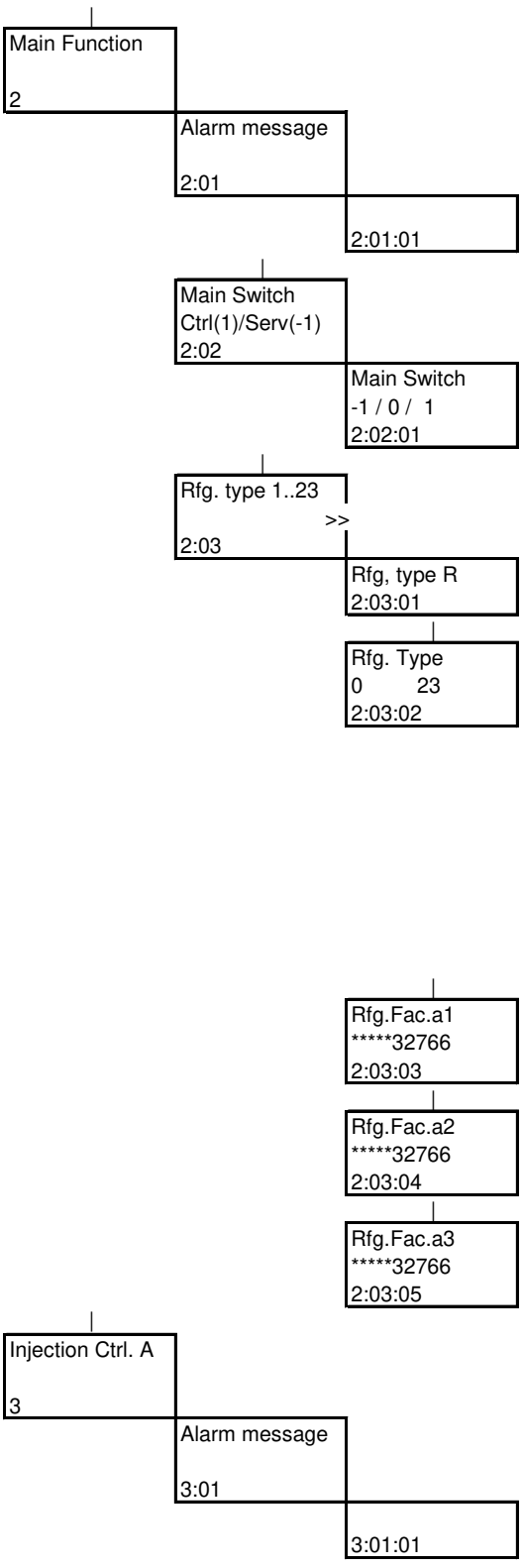
Move to and from the individual functions by pushing the four arrow keys.
On page 3 you can see how a setting is changed.

List of functions on level 1:

1. Controller's access display and access to system information
2. Interruption of regulation and refrigerant
3. Injection control function for regulation A
4. Injection control function for regulation B
5. Forced control function for service and initial setting

Below and on the following pages the individual functions are shown together with a brief description:

Level 1	Level 2	Level 3	Description
DANFOSS AKC 24 P2 1			Shows controller type, weekday and time An E on the display means an error has been recorded.(See page 11)
	Clock: Day (Mon)1 (Sun)7 1:01		Setting of week day (1 = Monday, 7 = Sunday)
	Clock: Hour 0 23 1:02		Setting of hours
	Clock: Min. 0 59 1:03		Setting of minutes
	Code No. Prog.Ver. 1:04		Reading of the actual controller code no. and programme version
	System Address Addr. yyy xxx 1:05		Reading of the actual controller system address yyy=network no. and xxx=address. The system address can only be set via PC
	Address xxx 1:06		Reading of the actual controller's address (Setting on the controller's DIP-switch)
	Alarm report to Addr. yyy xxx 1:07		Reading of the system address (receiver) the alarms are to be sent to. The system address can only be set via PC
	Gateway Address xxx 1:08		Reading of the address on the nearest gateway which has to effect alarms (see 1:07). The address can only be set via PC



Main function

Error log. The menu is only visible in case of an active error
(At alarm, an E is shown on the display)

See page 8 for list of alarm messages

Access to the main switch.

Main switch: 1: Regulation
0: Controller stop
-1: Service mode

Access to selection of refrigerant

Reading of set refrigerant type

Refrigerant selection: 0: No refrigerant selection 12: R142b

1: R12	13: User-defined
2: R22	14: R32
3: R134a	15: R227
4: R502	16: R401A
5: R717 (ammonia)	17: R507
6: R13	18: R402A
7: R13b1	19: R404A
8: R23	20: R407C
9: R500	21: R407A
10: R503	22: R407B
11: R114	23: R410A

Refrigerant selection No. 13. Special function, please contact DANFOSS.

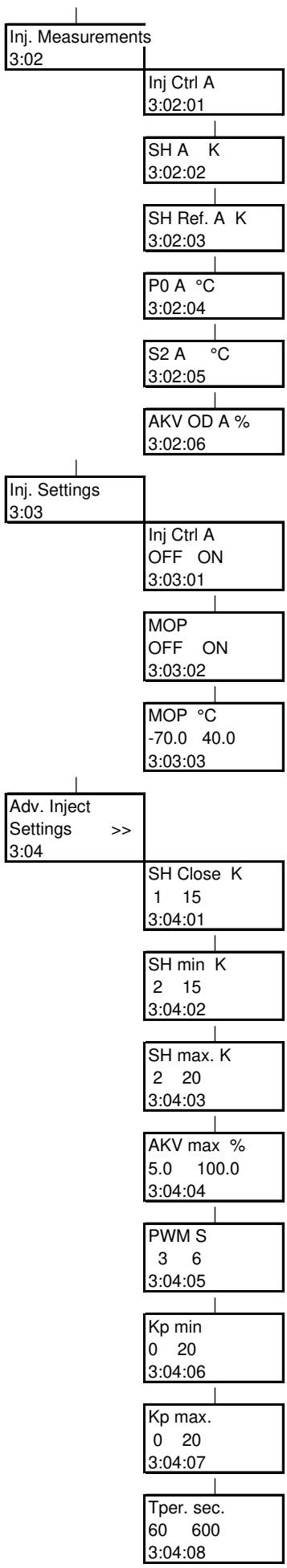
Refrigerant selection No. 13. Special function, please contact DANFOSS.

Refrigerant selection No. 13. Special function, please contact DANFOSS.

Expansion valve function A

Error log is only visible in case of an active error.
At alarm an E is shown on the display.

See page 8 for list of alarm messages



Reading of measurement values related to expansion valve function A

Statement of expansion valve ON/OFF

Superheat of evaporator measured with the sensors P0A and S2

Actual superheat reference of the control

Evaporating pressure or temperature at evaporator inlet

Refrigerant temperature at evaporator outlet

Actual valve opening degree

Setting of expansion valve function A.

Choose expansion valve function ON/OFF

Choose MOP function ON/OFF

Value of MOP point

Setting of special parameters

Min. value of superheat reference at loads below 10%
(The value must be lower than SH min.)

Min. value of superheat reference

Max. value of superheat reference

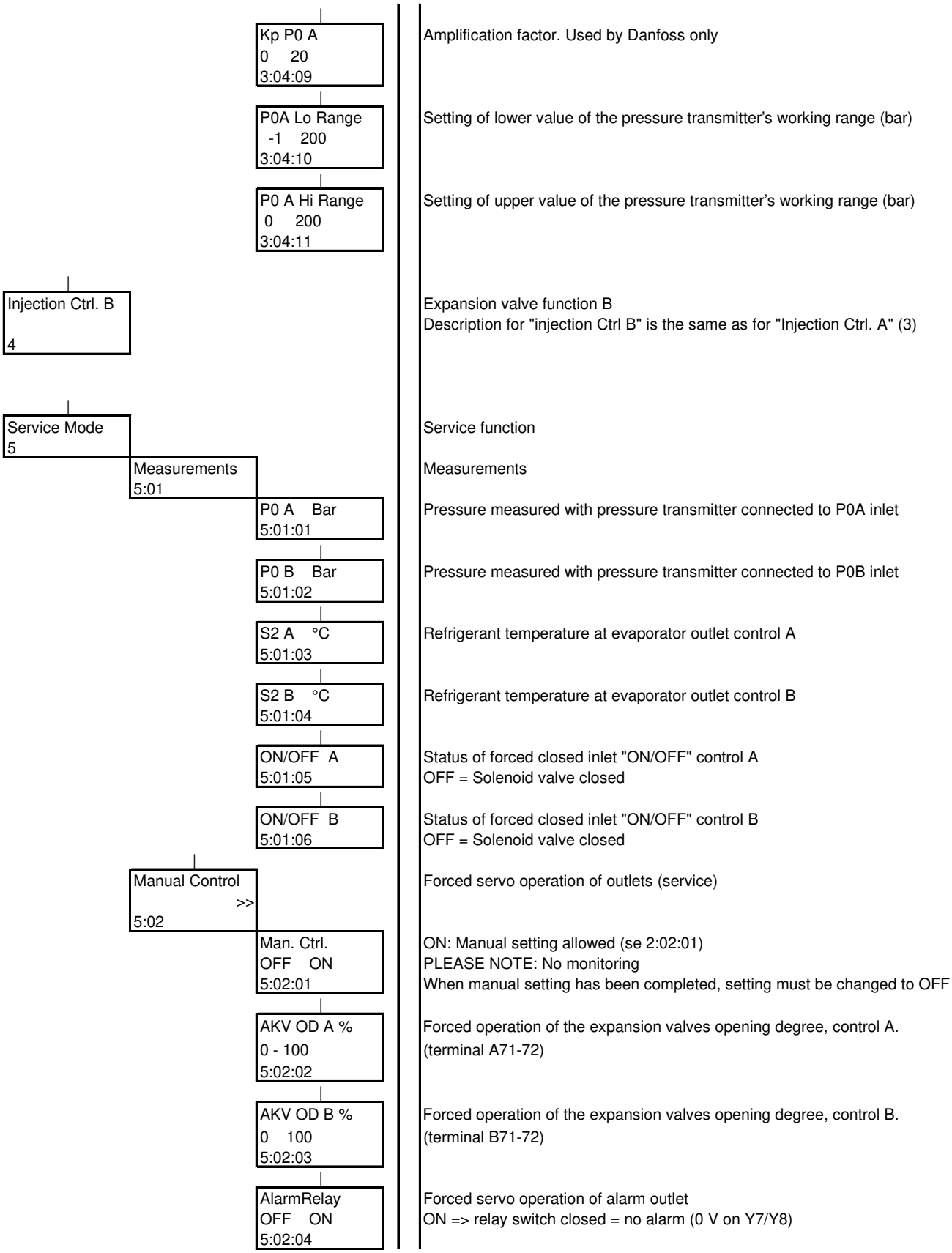
The AKV valves max. permissible opening degree

Period time for AKV in seconds

Amplification factor. Used by Danfoss only

Amplification factor. Used by Danfoss only

Integration time. Used by Danfoss only


Kp P0 A
0 20
3:04:09
Amplification factor. Used by Danfoss only
P0A Lo Range
-1 200
3:04:10
Setting of lower value of the pressure transmitter's working range (bar)
P0 A Hi Range
0 200
3:04:11
Setting of upper value of the pressure transmitter's working range (bar)
Injection Ctrl. B
4
Expansion valve function B
Description for "injection Ctrl B" is the same as for "Injection Ctrl. A" (3)
Service Mode
5
Service function
Measurements
5:01
Measurements
P0 A Bar
5:01:01
Pressure measured with pressure transmitter connected to P0A inlet
P0 B Bar
5:01:02
Pressure measured with pressure transmitter connected to P0B inlet
S2 A °C
5:01:03
Refrigerant temperature at evaporator outlet control A
S2 B °C
5:01:04
Refrigerant temperature at evaporator outlet control B
ON/OFF A
5:01:05
Status of forced closed inlet "ON/OFF" control A
OFF = Solenoid valve closed
ON/OFF B
5:01:06
Status of forced closed inlet "ON/OFF" control B
OFF = Solenoid valve closed
Manual Control
>>
5:02
Forced servo operation of outlets (service)
Man. Ctrl.
OFF ON
5:02:01
ON: Manual setting allowed (se 2:02:01)
PLEASE NOTE: No monitoring
When manual setting has been completed, setting must be changed to OFF
AKV OD A %
0 - 100
5:02:02
Forced operation of the expansion valves opening degree, control A.
(terminal A71-72)
AKV OD B %
0 100
5:02:03
Forced operation of the expansion valves opening degree, control B.
(terminal B71-72)
AlarmRelay
OFF ON
5:02:04
Forced servo operation of alarm outlet
ON => relay switch closed = no alarm (0 V on Y7/Y8)

Alarm messages

The following readouts are only visible if there is an active error

A or B in brackets show in which regulation an active error is recorded.

When the error is corrected, the error message can be removed by pressing ENTER.

S2 Error ( )	S2 sensor error	Check sensor connection/sensor resistance
P0 Error ( )	Pressure transmitter error	Check connection
Standby Mode	Control stopped	Function switch (Main switch) is either in pos. "Controller stopped" or "Service" (cf. 2:02:01)
Rfg. Type change after pow_up	Changed refrigerant	Check chosen refrigerant. Regulation with changed refrigerant not possible before the controller has been de-energized
Rfg. Type Not selected	No selection of refrigerant	Select refrigerant (2:03)
Inject ( ) Ext. Switch OFF	Control is stopped	The ON / OFF inlet is in position OFF.

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