System software for control and monitoring of refrigeration plant
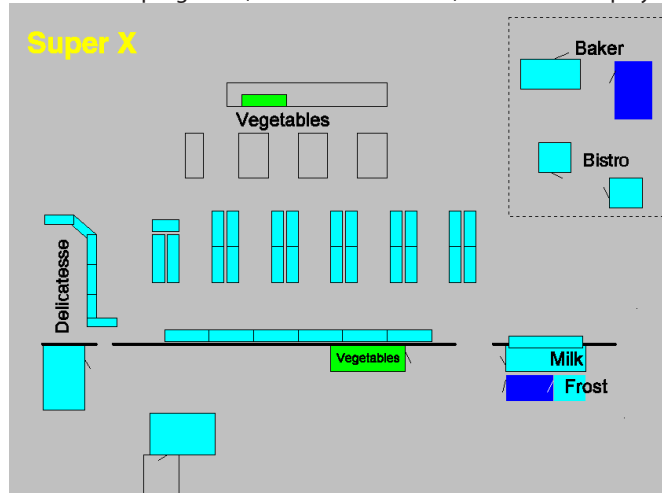
AKM

Release 7.0x

Manual

Introduction

AKM is for control and monitoring of refrigerating plant fitted with an ADAP-KOOL® Refrigeration controls system.

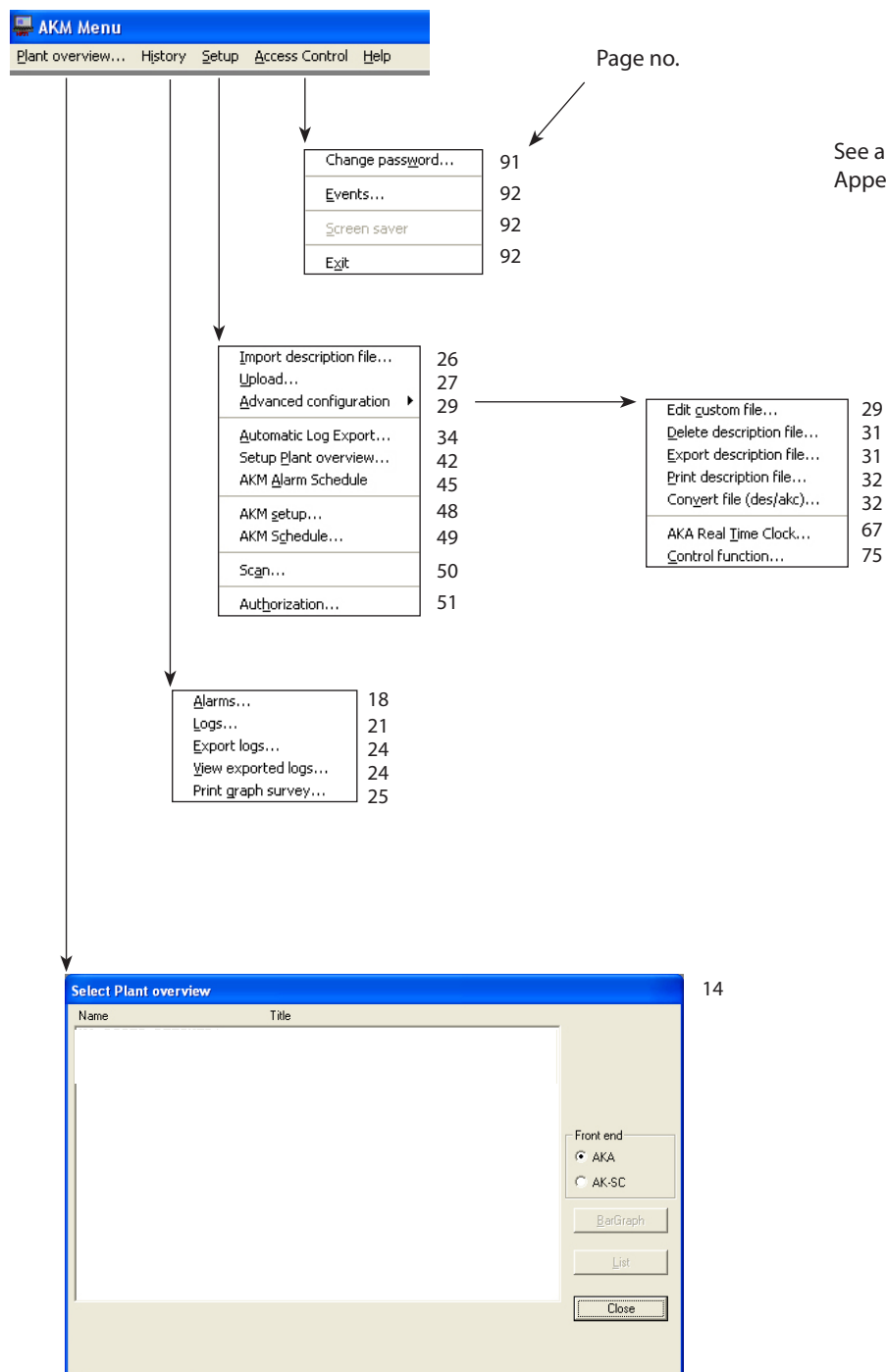Depending on operating needs, AKM is available in four versions:
• AK-Monitor
• AK-Mimic
• AKM4
• AKM5

Two of these programs (AK-Mimic and AKM5) can show a display of a supermarket's cooling sites.

Placed opposite each refrigeration point are names, symbols and temperatures, so that the operating situation of the plant can be followed from just one display.
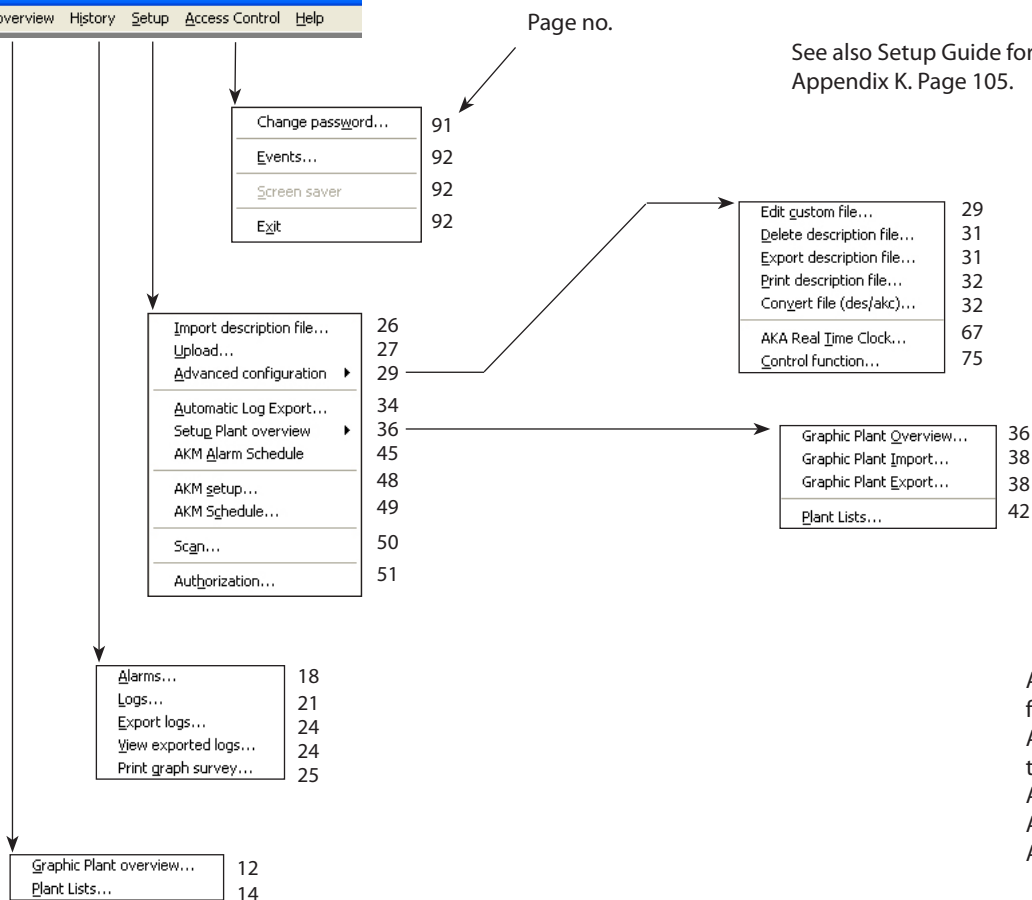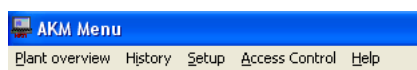
Contents and function survey

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x	x	x	x
		x	x
x	x	x	x
x	x	x	x
	x		x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
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x	x	x	x
x	x		
		x	x
	x		x
x	x	x	x

Function survey for AK-MONITOR, version 7.0x

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AK-Monitor has access to frontend type AKS 245.
AK-Monitor has not access to frontend type:
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AK-CS
AK-SM

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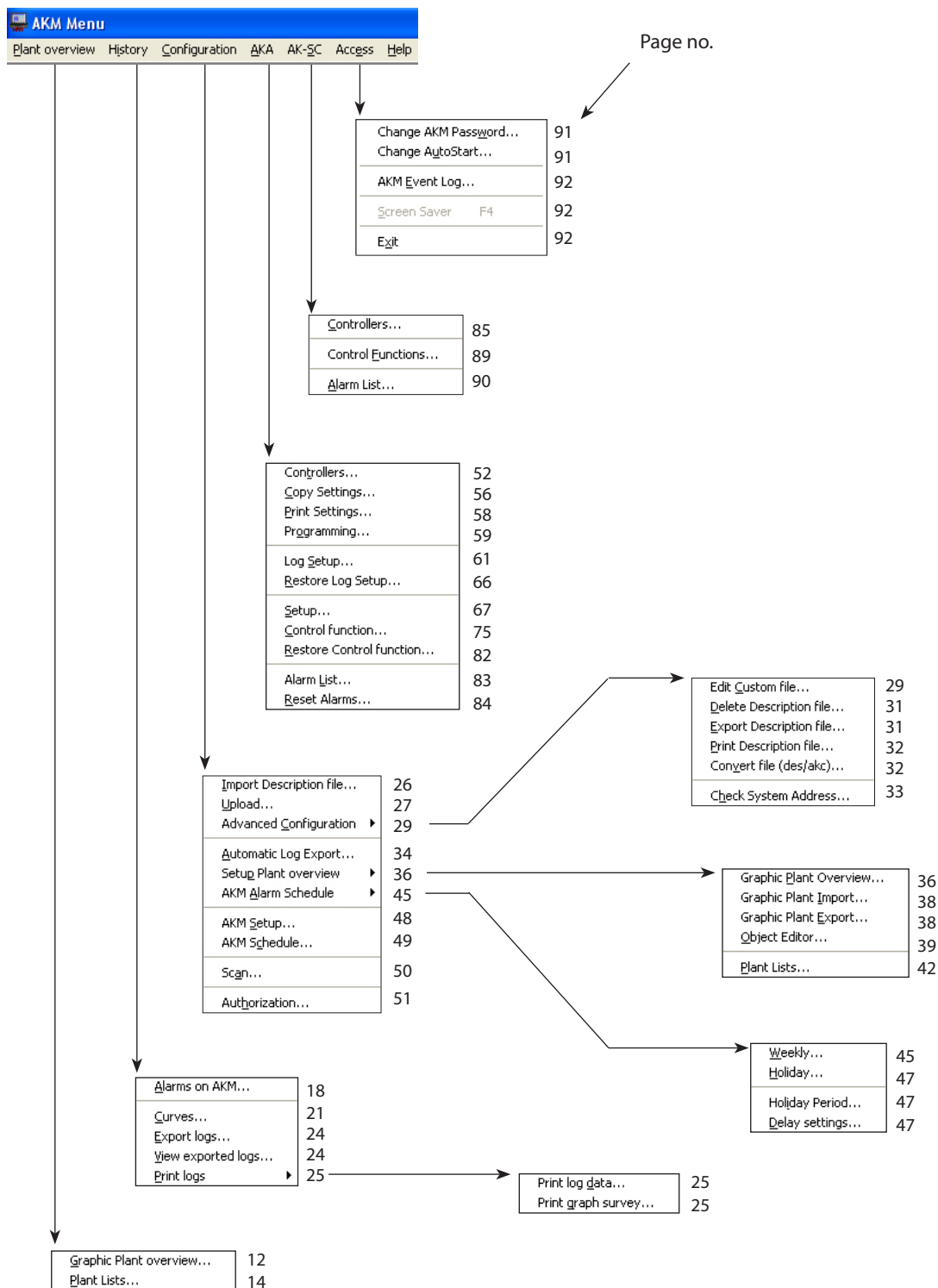
Name   Title

Front end
◉ AKA
○ AK-SC

BarGraph
List
Close

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Function survey for AK-Mimic, version 7.0x

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Function survey for AKM 4, version 7.0x

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Select Plant overview　14

Name	Title

Front end
- ○ AKA
- ○ AK-SC

BarGraph

List

Close

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Introduction

Description of system   System software type AKM is a programme that can be used with the ADAP-KOOL® refrigeration controls.

System layout
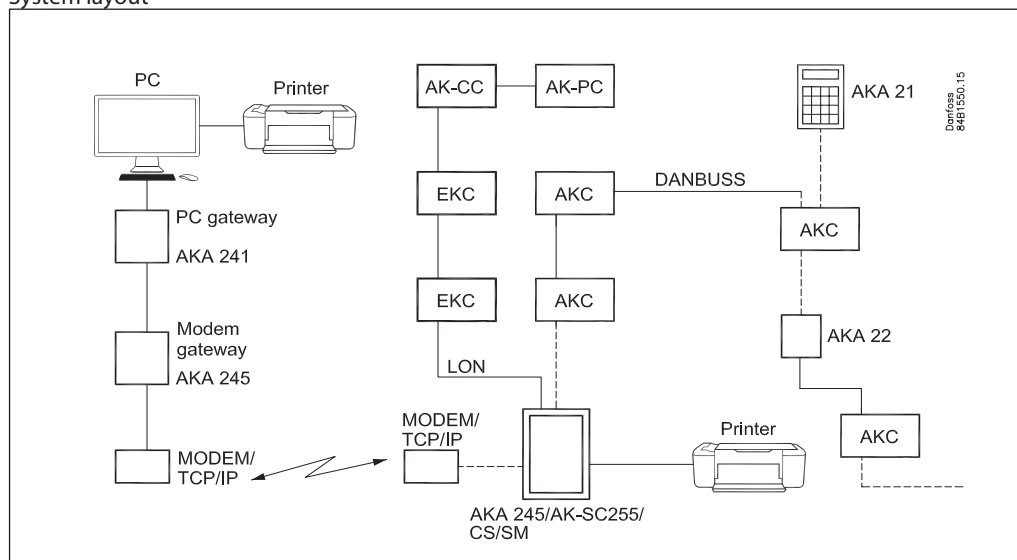
The individual controllers are connected in a network with a two-core data communication cable. To gain access to this data communication, a gateway type AKA 245 or a system manager AK-SM or a system controller AK-SC or AK-CS has to be connected.
There are two types of gateway with different functions:
- PC gateway (AKA 241)- the controllers' connection to a PC.
- Modem/PC gateway (AKA 245) / TCP/IP - the controllers' connection to the telephone network.
The other units can be connected via TCP/IP.

When the programme is installed, the following functions will be available:
- Daily user interface with alarm reception, alarm history, overview lists and log presentation.
- Technical user interface with controller settings and registration of actual temperature performance.

Operation   The programme has been designed with a graphic user interface in the MS Windows programme. It is a requirement that the computer is a Windows-based PC. The requirements are mentioned in the installation guide.

Users of the programme may be authorized to carry out all functions or only selected functions in the programme.

This manual provides an overview of the various menus. Sections that are somewhat longer than others have been included at the end of the manual as appendices. References to the respective appendices can be seen in the table of contents and the current menu sections.

Logon / Logoff

Logon to AKM

When the programme is started, access is given to a number of defined control functions, but not until the user's identity has been defined in the programme.
At logon, initials and password are entered.

A user with the initials **AKM1** and keyword **AKM1** has now been established. Use it for the establishment of a new "superuser" having access to all functions.
Delete the "**AKM1**" user when general access to the system is no longer required.

When Logon has been activated the user is allowed to operate the functions that have been authorized in the "Authorization" menu.
By selecting the "Auto start" function, it is possible to initiate a specified function directly from Logon (see. later in the section "Change autostart"). When Logon is used, the user's name and the Logon time are entered in the "AKM Event log".

Logoff

When logoff is used, the user's name and the logoff time are entered in the "AKM Event log".
Log off by pressing F3 or the button at the bottom right-hand corner of the screen. The program will then continue to run in the background of the PC.
Use the "Access"/"Exit" function to completely stop the program.

Plant Archive

This function maintains the contact to a defined network, even if you change around between the different menus in the AKM programme. A telephone connection will for example be kept open when you change from one function to another function in the AKM programme.
The contact will be interrupted in connection with one of these events:
- operation of "Disconnect"
- "Logoff"
- if the programme registers that there has been no data transmission for two minutes (can be set) to or from the network in question. If the contact is interrupted for this reason, a new contact will automatically be established when a function requiring communication is started.
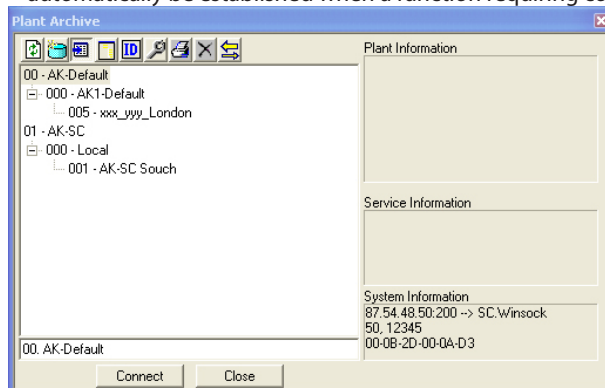
En system address / DSN address is buid up in 4 levels:
aa =   **D**omain (0-64)
bbb = **S**ubnet (0-255)
ccc = **N**etwork (0-255)
dddd = address (0-1023), Gateway=0125 or System manager=1001
Example on a address 12.010.255.0125

There is access to the structure via the "spanner button' on the top bar.

Select the required network and click "Connect".

It is the same image that is used to establish connections to frontend via TCP/IP. See Installation Guide

Info: The buttons on the top line have the following functions:

Refreshes the plant overview and compresses the plants, so that only Domain and Subnet are displayed

Updates the window with the refresh plants

Displays extra information entered in connection with the plant setup

Displays the controllers that are connected to the plants setup in the plant overview

Sorts the plants by name or the DNS information with which they are programmed

Opens the setup window to establish or modify plant information

Print function, which prints out information for the selected unit or group

Erases a selected plant in the overview

Activate/deactivate Callback when connected to a plant. With Callback the selected plant will establish the connection and thereby pay for the telephone connection.

Alarms

Alarms can be received from the different controllers in the system which may be due to:
- Regulating problems
- Connection of new controllers
- Removal or failure of a controller

All alarms are first transmitted to the network's front end e.g. master gateway and other system units which contains information as to how the alarm is to be dealt with.

If a PC with the AKM program is defined as an alarm receiver, the programme will receive <u>all</u> alarms. When an alarm is received, it is immediately shown on the screen. The alarm is at the same time entered on a list.

New alarms
When an alarm is received, a bell will appear on your screen. A click on the bell will provide you with an analysis of the alarm.
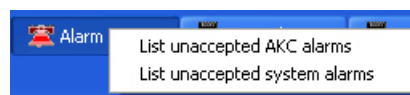
A right-click on the bell in the process line displays:

The different menus for the alarm bell are, as follows:

Alarm accept picture
This function brings the alarm message to the front position on the screen. It will then be possible to accept the alarm. "Accept" is <u>only</u> an indication that the user has seen the alarm. The alarm is <u>not</u> cancelled.
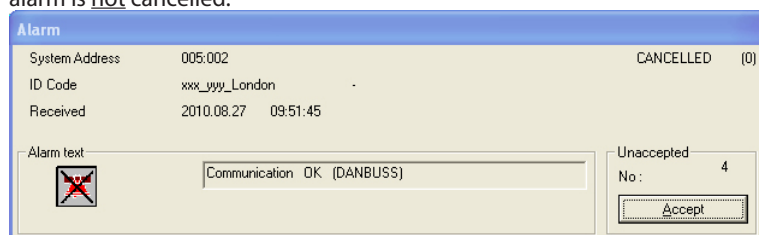
If the alarm is accepted, the time (PC-time) of the acceptance and the user's identity will be entered on the alarm list.
If you do not want to accept the alarm at the present time, the picture of the accept menu may be hidden behind the other picture displayed on the screen (click the picture that is to be active).

The different fields in the alarm message have the following meanings:

System Address
Here see the sender of the alarm. If it is a system alarm, an AKM programme will always be the sender of the alarm.

Active / cancelled
The status of the alarm is shown here. (The "History - Alarms" section explains the meaning of status value). An active alarm is displayed in red.
A cross over the alarm bell signifies that the alarm has been cancelled.

ID code or type
For controllers an ID code may have been added. This ID code can be shown as additional information, when there are alarms from the controller in question.
In connection with system alarms the line will provide information about the type of the alarm.

Received
Indicated here is the time the alarm is received in the system unit (e.g. gateway-time) or system alarms has appeared in the AKM programme (PC-time).

Alarm text
The error message with a text is indicated here.
Controllers: Please refer to the literature for the relevant controller.
AKM programme: System alarm. Error for recipients, etc.

Custom text
For the controllers, a language-based text for the alarm message may have been entered.

List unaccepted AKC alarms
If this menu is selected, you move directly into the complete list of unaccepted alarms. Operation of the alarm list is shown in the section History.

List unaccepted system alarms
If a system alarm is to be accepted, it must first be selected and then accepted by click "Accept".
Several alarms can be selected at the same time by.

Plant overview

Graphic plant over-view - Mimic
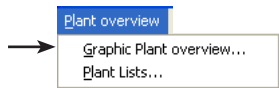
If you have installed AKM5 or AK-MIMIC on your PC, you can choose to see the plant overview in two ways, either as a graphic presentation of the plant overview or as plant lists. If your version is AKM4 or AK-Monitor, you will see the plant lists only.
If applicable, consult Appendix M as well.

In this section we have a look at the functions that are available for the Daily operation.
Before you can use the function, it must be prepared, as described in the section "Configuration" / "Setup plant overview".
The functions moreover require that you have contact to the plant - either directly on the plant or via a modem connection or TCP/IP.

Procedure
1. Start the "Graphic Plant overview" menu
2.
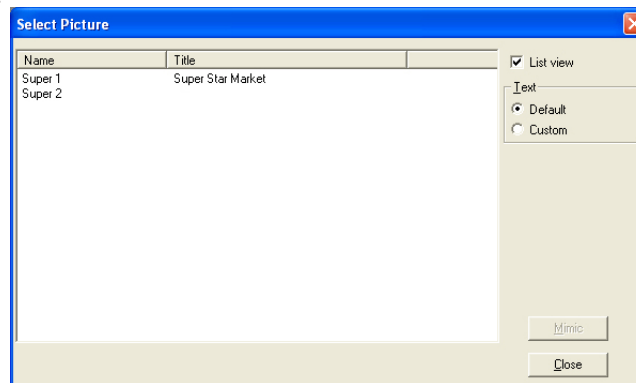
When you open a plant you will have two approaches, depending on how the setup has been defined. Either there is a display as under point 2, where you have to select one of the plants yourself, or the setup may have been made in such a way that you skip this selection and the plant overview is shown directly (See "Setup" - "Start Picture").

3. Select the plant you want to see, then click "Mimic".

4. You will now see a drawing of the plant, and at the bottom there is a number of buttons you can operate.

Logs: Here you can see curves of the collected temperature values.
Alarms: Here you can see the alarms there have been, and when. And whether they are still active.
Service: Here you delve right into the controller's function. Only use this function if you have refrigeration-technical experience. (The use of this button may have been opted out when authorisations were assigned).
Change: Here you will have access to the functions that are represented with a symbol. You may for example correct a temperature setting here.
Zoom in: Here you can have some of the plant enlarged on the screen.
Fit: The drawing is adapted to the screen.
Print: Here you obtain a printout of the actual screen display.
Back: This function is only used, if you have a short-cut function to another drawing. From this drawing you may then return to the overview picture.
Log off: Here you can log off, so that no one else can change the settings without being authorised to do so.
Close: Closes the picture.

(right-click on the Mimic image for easy access to the first four functions)

5. A normal situation at this place would be that temperatures are displayed at the individual refrigeration points - maybe also a symbol with a couple of water drops. "Water drops" indicate that defrost is going on. An "ice crystal" indicates that there is refrigeration on the section. If an "alarm bell" is shown the alarm must be investigated. But otherwise the principle of this display is that symbols are only shown when the plant's operating situation is abnormal.

If there is a refrigeration point you would like to study more closely, first select the icon with the mouse key, then use one of the buttons at the bottom of the display.

Shown on the next page are some examples of operation.

Operation

If you want to have a closer look at one of the regulations, you must first select it. You will then have the following options:

Refer to earlier temperature performance
Select Logs
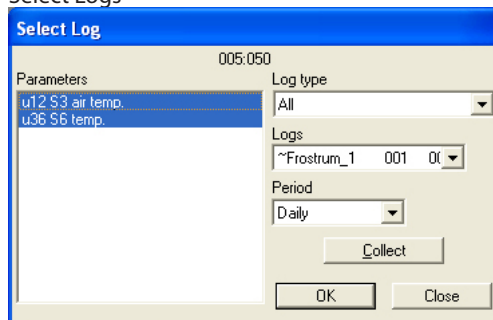
Select the data collections you wish to see, then click "OK". You will now see the curves. (The log function has been described in the section History.)

To see alarms
Select "Alarms"
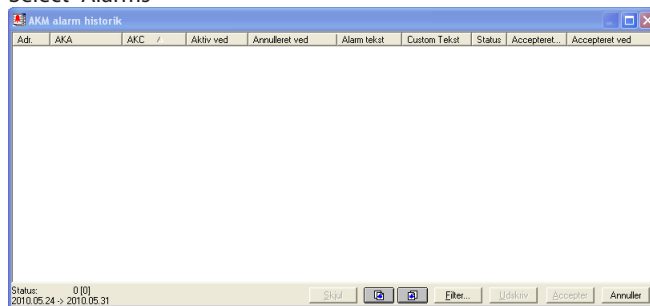
Select the alarms you wish to see, then click Alarm.
You will now see the list of alarms. (The alarm function has been described in the section History.)

To access settings in the controller
(The function may be blocked from the authorisation menu). Select "Service".
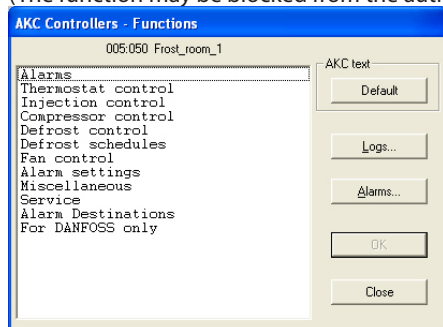
Instruction in further operation functions may be obtained from the controller's documentation: "Menu operation via AKM".

To change a temperature setting or start an extra defrost cycle
Select "Change"
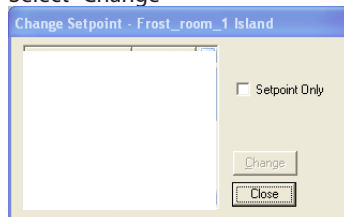
If you highlight the 'Setpoint Only' function, the only parameters that will be displayed are the ones in which a change can be made.

Select the parameter you want to change and move on to the function by click "Change".
Now correct to the required value.

Plant lists
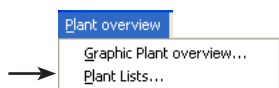
A setup must be performed before you can see the display below. This is outlined under "Configuration"/"Setup plant overview".

Here you will - with the setup selected here - have three approaches for the status of the refrigerating plant, e.g. **Overview, Defrost and Setting**. You choose between them by click on the required line with the mouse. All types of information can be shown either in the shape of lists or bargraph (there is a button for either option). If you select "List" you will receive a presentation of texts where it is possible to react to the information, whereas "BarGraph" will provide you with a purely graphical display.
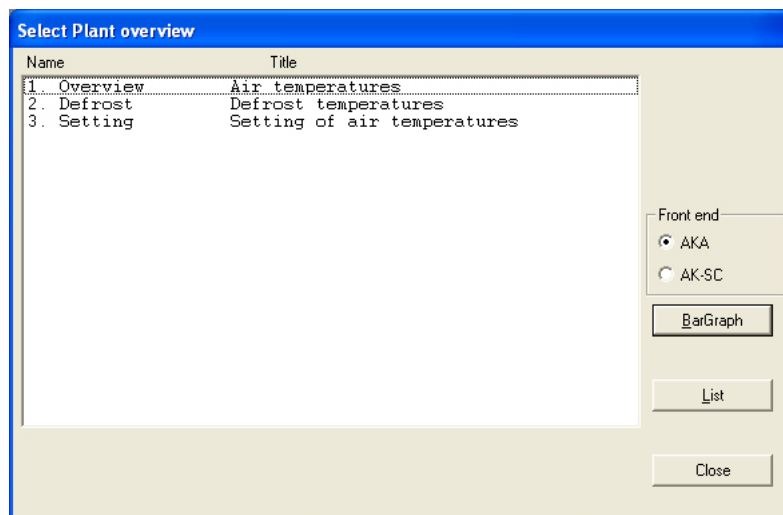
The three lines shown here are examples. In your plant there will probably be other names and texts than the ones shown here. In this document the three approaches will guide you in the principles:
- Display of temperature
- Start of defrost and
- Change of temperature setting

1. Overview of air temperatures and alarms

Click on the line "Overview" and activate one of the buttons, BarGraph or List.

"BarGraph"
If you select "BarGraph" you will obtain an easy-to-grasp, graphical display of the current temperatures at all points of refrigeration, and alarms from the controllers (high-temperature alarms) will likewise be indicated. This is a display you could typically have on all the time. The bargraph will have the colours that were defined during the installation.

The display automatically changes bargraph every two seconds, but if you want to see the status of a special bargraph, all you have to do is to indicate the bargraph with the mouse and click the left mouse key.

When you release the mouse key again, the programme will return to automatic display. You may also change between the parameter name and appliance/room name under the columns by click with the mouse on the horizontal text key.

"List"

If you select "List", you will obtain the same data as above, but now in text form. This window will at the same time enable you to see the trends of the refrigeration process for the connected refrigeration points, and you can make printouts of the information and make changes of the settings.
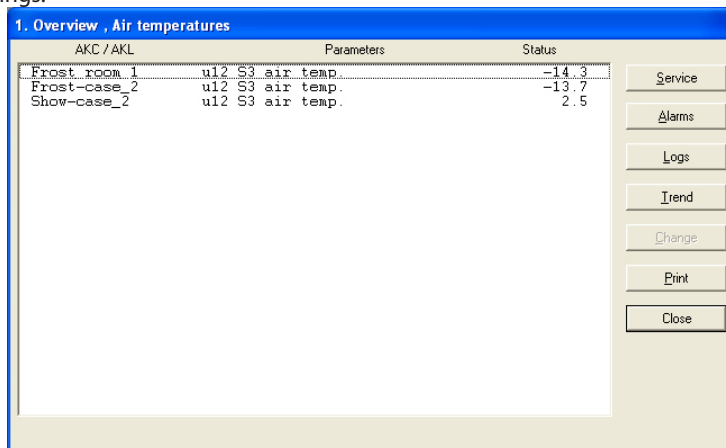
"Service"

The service button is for radical changes of the plant, so it should be reserved for the service engineer.

"Alarm"

With "Alarm" you obtain a list of the alarms from the controller in question. You can adapt the filtration of alarms to this approach.

"Logs"

With "Logs" you get access to the logs of this controller.

""Trend"

With "Trend" you obtain an overview of the temperature.

Select the line or lines for which you require a trend curve. You may select as many as eight, either by drawing the mouse across the lines or by activating individual lines by keeping down the Ctrl key and click on them one by one.
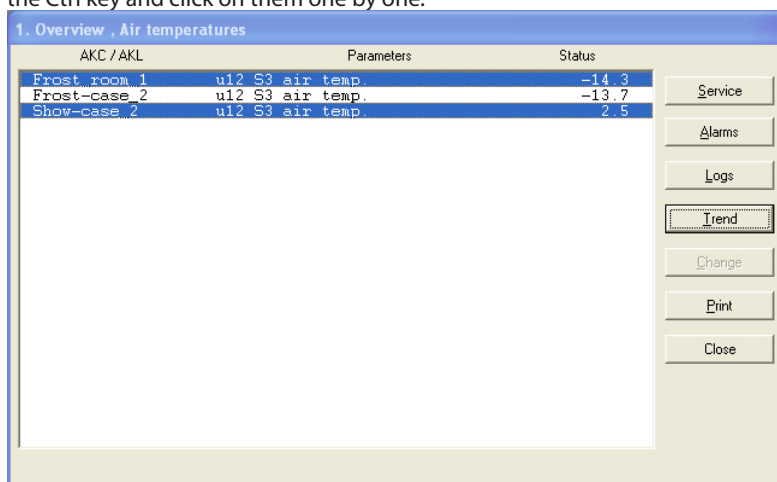
Now activate "Trend".
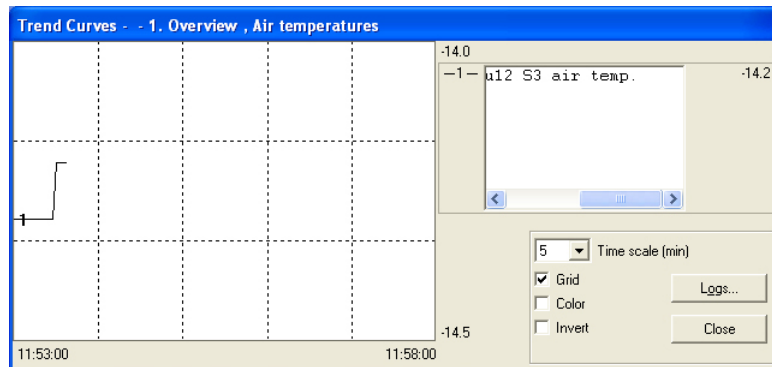
That will set up a new window on the upper half of the screen where you may choose to have curves drawn into the graph at 5 to 90-minute intervals. The chosen period of time is marked with start and stop times at the bottom left and right, respectively. (You may select a new period of time in the "Time scale" field).

It is possible to remove the graph's grid. Also the colours can be removed. In that case the curves will instead be numbered. And if you prefer a black background and white curves, you can invert the display.

At whichever point of the curve you click the mouse, the time will be indicated under the graph. This means that you are able to identify the exact time of any deflections within the two "time extremes" at either side.

The Trend window furthermore contains a scroll bar which can be used for changing between the name of the refrigerating point and the temperatures that are being measured.

The Logs button must be used to save a Trend curve.

"Change"
With "Change" you can change a parameter. See the next section.

"Print"
Print the curves in the display screen.

2. Defrost - times and extra defrost

By activating this line in the Plant overview you will obtain - in bargraph or table shape - an overview of the location of the individual refrigeration points during defrosts. You will furthermore be able to see how much time has been spent on the last defrost at each individual point. Among other things, this function can be used for identifying abnormal ice formations on an evaporator or defects in the heating element carrying out the defrost. If you use the bargraph display, you obtain a very clear picture where you can all the time see how the defrost is proceeding.
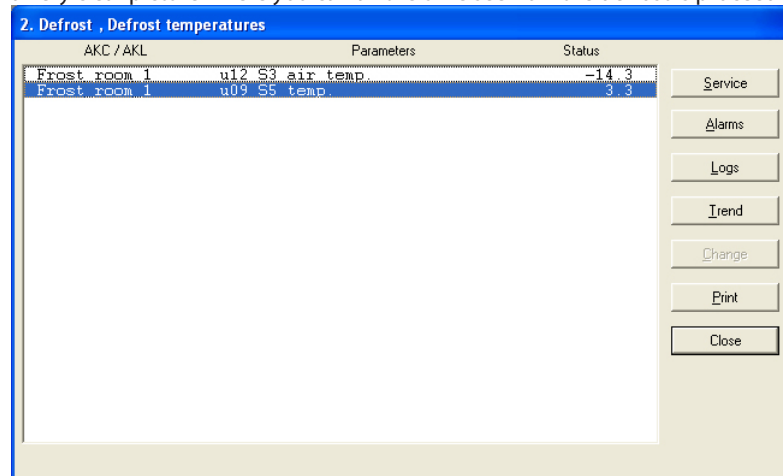
With this function you can also override the automatic defrost, if a refrigeration point should require it. This is done by click the line for the current cooling site. Next, click Service, then Defrosting control, and then start defrosting:

(it is normally in position OFF). Now click the "Change" button.

A small window will now appear in the middle of the screen which confirms the OFF setting, but makes it possible for you to change to ON. When you click "OK", the extra defrost cycle will be started. This is confirmed by the figure 3 in the status field on the "Defrost cond." line. (The setting returns to OFF, but the defrost has been started).

3. Setting of air temperatures in refrigeration appliances

Here you can see how the actual air temperature at each individual refrigeration point in relation to the set value - and you can change the setting.
With the Trend button you can see the relation between the required temperature and the actual temperature - either in graphical shape or as a table. This is a good control that the plant is running the way you want it to.
If you want a temperature setting to be changed, first click on the line "Setting of air temperatures" opposite the relevant refrigeration point. Now click the "Change" button. A small window will now appear on the screen.

When the desired value has been set, click "Ok".

History

In this section saved information pertaining to the refrigerating plant can be seen. This information may for example be used for the veterinary authorities requiring documentation for a refrigeration process during a period of time, or for the refrigeration engineer who has to see what happened in a specific show case two weeks ago.

Alarms on AKM
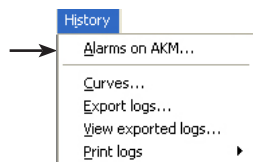
When you select "Alarms", a picture appears where you can view alarms from the complete list of alarms. The display shown below will appear after the first filtration. **See the display on the next page. Here, the "Views" button has been activated.**
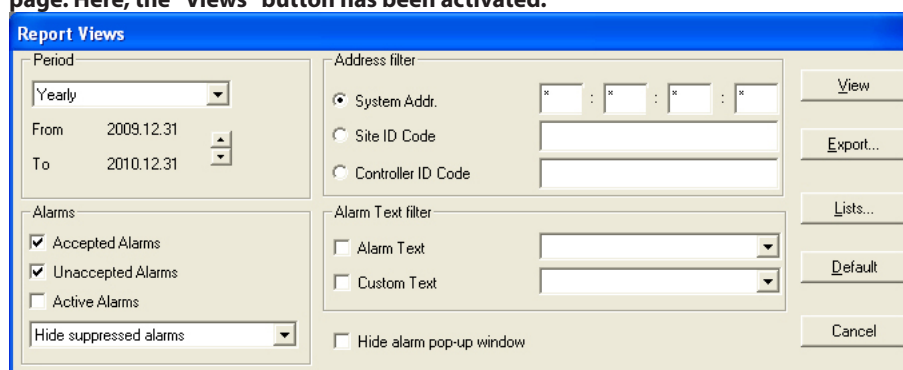
The complete list of alarms will be displayed, if you select "Total" in Period and then "View".

If you only wish to see part of the list, you may create a view.
The view may be based on the following four parameters:

1. "Period"
    Select either year, month, week, day or hour.
    Now select the beginning or end of the period.

2. "Address filter"
    Choose between one of the following three selections:
    a) System addr.
        Settings in this field are entered in four fields.
        aa =   Domain (0-64)
        bbb =   Subnet (0-255)
        ccc =   Network (0-255)
        dddd =   (0-1023). 0125 for AKS 245. 1001 for AK-SM 720, AK-SM350, AK-SC 255 and AK-SC
        Example of an address: 12.010.255.0125. See "Plant archive", page 9.
    b) Site ID Code
        A network may be described with a name (enter the name in the field. E.g. "Supermarket-03").
    c) Controller ID Code
        A group of controllers in different networks may be described with a name (enter the name in the field. E.g. "Cold-showcase-xxx").

3. "Alarms"
    Select accepted or unaccepted alarms, or both / or just all the active alarms.
    The selection function for "Still active" is only adequate if the alarms are received and accepted from the same PC (if alarms are routed to different recipients, the programme cannot perform a correct selection).
    Alarms from the alarm list can be "hidden". See next page.

4. "Alarm Text filter"
    Here you can filter identical alarm texts, e.g. high temperature alarms, that may either be the controller's own texts or texts addressed to a user defined description file.

5. When there is an alarm a pop-up window with the alarm text appears on the screen. If the function is not required it may be removed.

After the filtration, click "View".
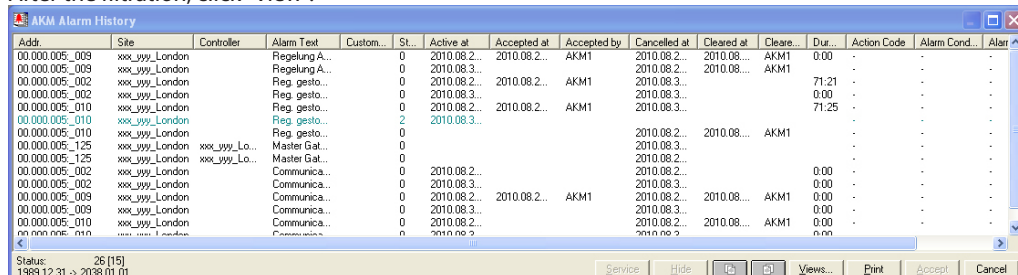
Note the heading in the display. If the depicted period has been filtered further, it will appear from the heading in the picture.
For each alarm the following information is given:
- System address (network and address numbers).
- Site ID Code
- Controller ID Code
- The alarm text
- A customer defined text, if applicable
- Alarm status
  (The colour of the alarm text is related to the status value).
- The time when the alarm has appeared and cancelled
- Time of acceptance (PC time)
- User who accepted the alarm

You may sort in the selected period by click in the heading of a column.

• If an alarm is to be accepted, you first have to select it, and then click "Accept".
• You can update the displayed alarm list at any time by click function key F5
• If there are one or two alarms you wish to remove from the list temporarily you can select them
   and then click "Hide".
   Upload them on the list again via "Views" and the "Show suppressed alarm" function.
• If you wish to see another period of time, click one of the change of period buttons at the bottom
   of the display [ ] [ ] , or you can push Ctrl + Page Up or Ctrl + Page Down
• By click "Print" the complete list of alarms will be printed by the printer.
• The button "Service" will take you to the functions in a controller. If applicable, see page 52.

List of status messages: (For AKA 245 only)

Status	Alarm (AKC, AKA, EKC)	Communication
0	Cancelled	See alarm text
1	Alarm, Gateway relay operating	See alarm text
2	Alarm, Gateway relay not operating	
3	Important alarm as 1, but relay not operating	

Action code
From AK-SC 255 action codes 0 through 15 can appear.
0 = cancelled
1-15 is user defined. See AK-SC 255.

"Export" (display on page 18)
   If you have to provide documentation for alarms in a certain system during a given period, you can
   use this function. The procedure is, as follows:
   1. Indicate time period and address
   2. Click "Export"
   3. Give the file a name (max. eight characters) and continue exporting the file. The file will be given
      the extension CSV.
   You can now open the exported file on a spread sheet where the alarms will then be shown in
   sequence.
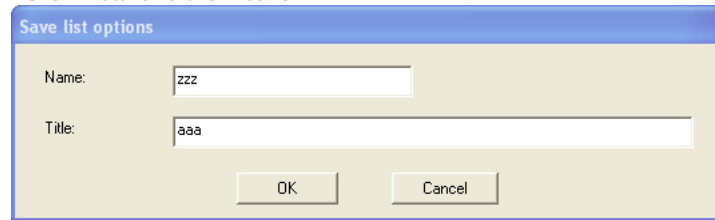
"Lists"

If a special kind of filtration is often used, it may be saved under a name.
The procedure is, as follows:
- Make the settings in the four filtration groups
- Click "Lists" and then "Save"
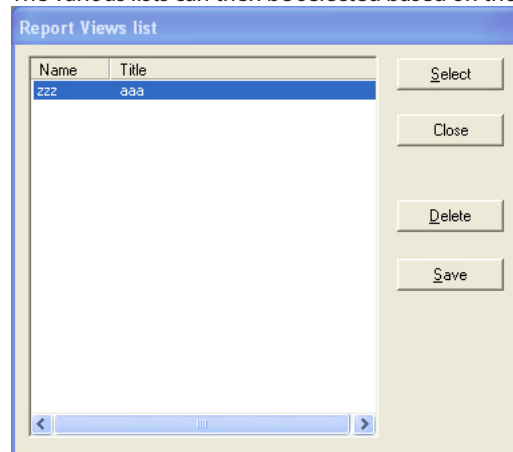
Save list options

Name:	zzz
Title:	aaa

OK   Cancel

- Give the filtration a name and supplementary text, if required
- Click "OK".

The various lists can then be selected based on the display.

Report Views list

Name	Title
zzz	aaa

Select

Close

Delete

Save

Logs / Curves
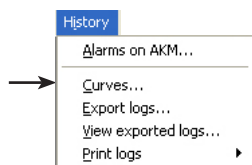
General

The function can treat the data collected from the different logs. There can be several types of logs that originate from several different collection points or different collection methods.
They are saved in three data bases.
• AKA LOG has data from a gateway AKA 245
• AK-SM LOG has data from a System Manager, AK-SM
• AK-SC LOG has data from an AK-SC 255
In the respective displays it is necessary to select one of the three data bases.

The log function is discussed in Appendix E:

To display the very latest pieces of collected data, a manual data collection must be performed, and the data must be saved in the AKM program.
The manual collection must be performed using the icon at the bottom of the display screen:

Data base	Right-click	Then click
AKA log	AKA Log — Save Logs / Cancel Auto Collect / Manual Collect…	1. Manual Collection 2. Next, click "Save"
AKM log	AKM Log — Save Logs	1. Save
AK-SM/SC log	AK-SM/AK-S… — AK-SM Log collection… / AK-SC Log collection… / Cancel Auto Collect(AK-SM) / Cancel Auto Collect(AK-SC)	1. Select the current log

Curves

This function enables the PC display in graph form of the different data collections in the log function. They can also be printed out as graph curves or in table form.
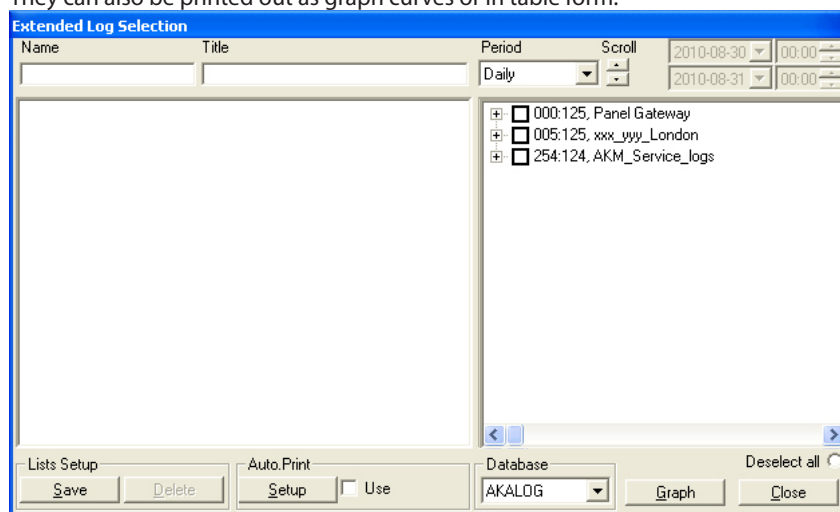
The established logs can be seen in the right field.
The various logs can be marked and then given a name and title as a means of help. This name and title can then be seen in the field to the left. Here, several lists similar to the actual desired logs can be created.

Use this order when you wish to see log readings:
1. Select the data base with the reading, e.g. "AKALOG"
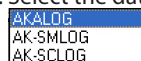
2. Select which readings are to be shown by marking them in the right field.
3. Select period, e.g. "Daily"
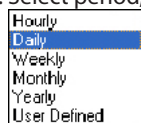
4. Select the time using the scroll function (date and time can also be used, but only if you have selected "User Defined" as the period)

5. Click "Graph"
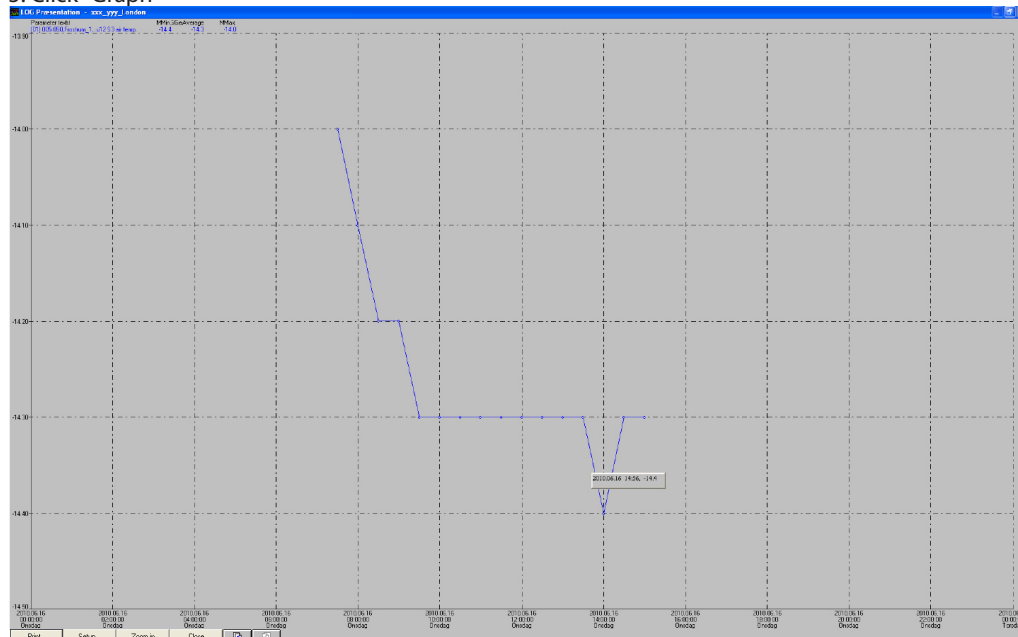
The buttons at the bottom of the display have the following functions:

Print: Starts a printout of the displayed screen.
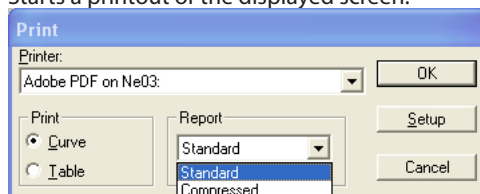
Date/Time	[01]	[02]
2010-06-14 10:30:00	120.0	120.0
2010-06-14 11:00:00	-14.1	2.6
2010-06-14 11:30:00	-14.3	120.0
2010-06-14 12:00:00	-13.8	120.0
2010-06-14 12:30:00	-14.0	120.0
2010-06-14 13:00:00	-14.3	120.0

Setup: Help functions for graph display
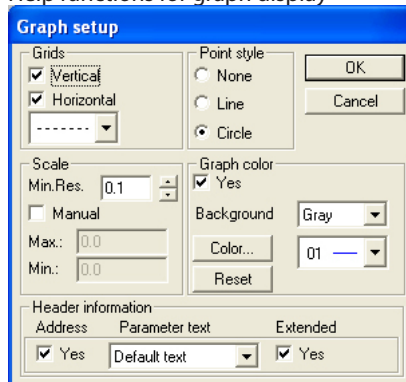
Zoom in (out): Zooms in on the desired area

Arrow buttons: Moves the displayed period. See date and time, below on the graph.

6. Exit graph display by click "Close".

Loglists/autoprint

All of the collected values can also be printed out in table form.

The printout can be defined to be printed out at set times, e.g. every Tuesday at 10 am.

The setup must be performed from the previous log display
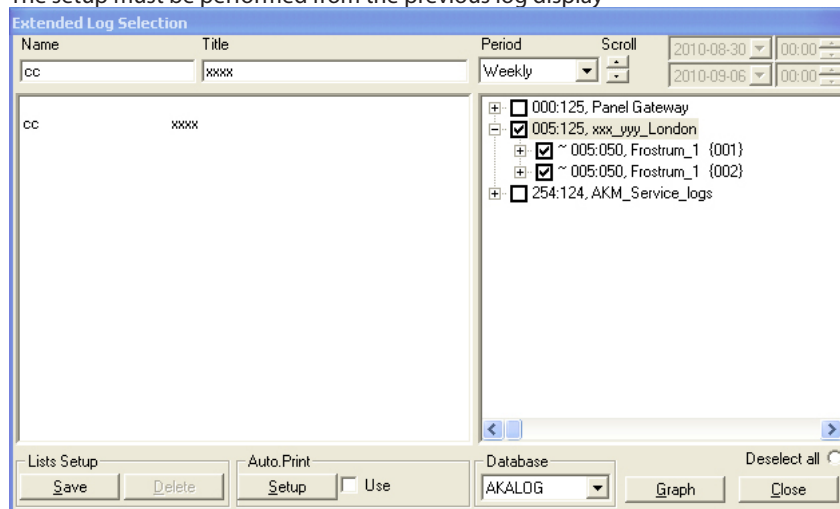
1. Select the actual logs

2. Give it a name, title and then save it

3. Select "Setup" at the bottom of the display
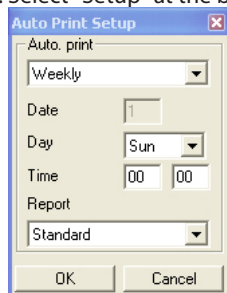
4. Indicate when the printout is to take place.

5. The printout can be defined as standard or compressed. For compressed printouts, the font size is smaller to allow for more measuring value columns.

6. After entering the settings, the automatic printout starts by selecting the current list and marking the "Use" field.

Export logs
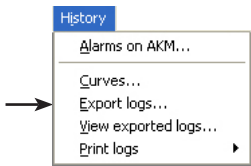
This function makes it possible to transfer a data collection to a CSV file. The file can then be opened later as a graph in Excel.

Only data which have been stored can be transferred. New data that still lie in the memory (RAM) must first be stored on the hard disk before they can be transferred (data can be stored manually by click the icon "AKA Log" / "AK-SC" or "AK-SM" in the process line and then click "Save logs").
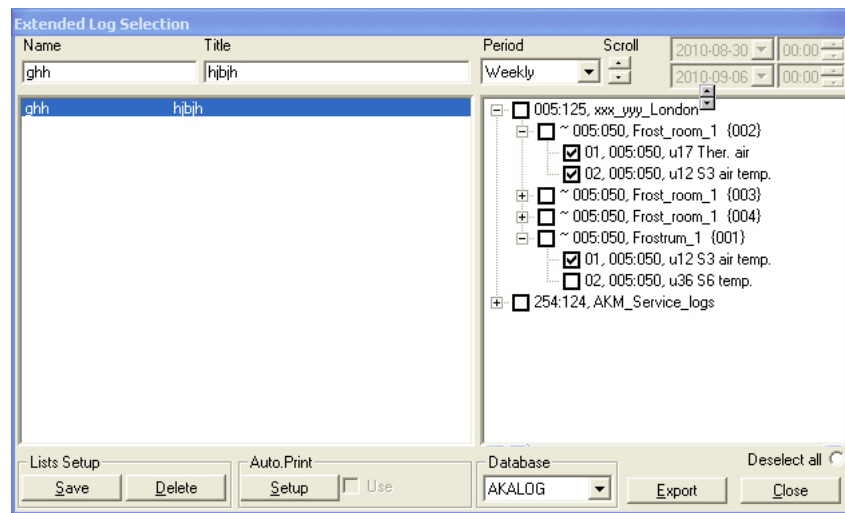
The display will show all the established log lists.

Select the data base on the bottom line or click "A name on the left" to select the group of readings (in the field to the right you can see which readings have been selected).

If it is a specific reading, it can be selected.

The "Deselect all" function will remove all markings of the readings.

The time period for data collection is limited and "Export" must be clicked.

(A maximum of 128 logs can be selected for the same "Export").
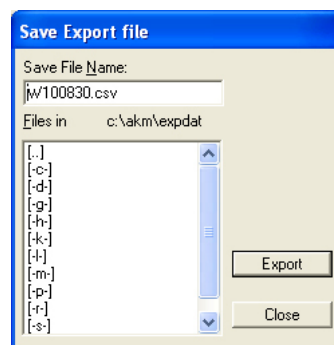
The programme itself will propose a file name that will be determined by the selected period of time.

D + date, if a day has been selected (yesterday's date)

W + date, if a week has been selected (last full week. The date indicates the start of the week).

M + date, if a month has been selected (last full month. The date indicates the start of the month).

Y+year if year has been selected (all last year. Year indicated is start year)

U+date if "User Define" has been selected (date will indicate the start of the selected time period).

Click "Export" and the data will be copied in the file (the display shows the path and name of the library where the file is saved).

View exported logs
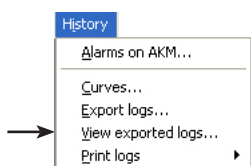
With this function you can see the log collections that have been saved in a file. See earlier section.
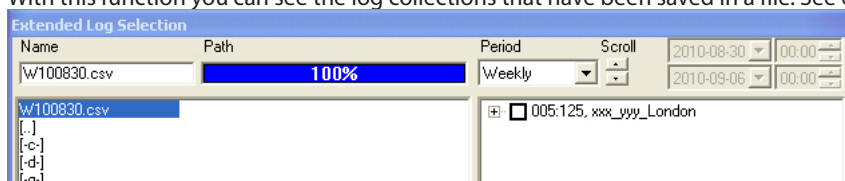
Find the file you wish to open. Next, click "Graph".

Print logs
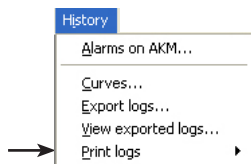
Print log data
The function sends collected data values to the connected printer. The printout is in table form.
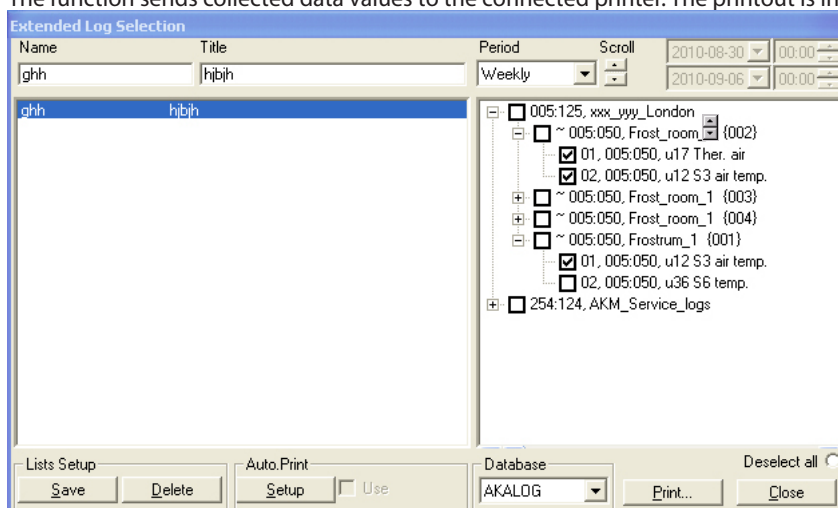
The display will show all the established log lists.
1. Select the data base on the bottom line.
2. Click "A name on the left" to select the group of readings (in the field to the right you can see which readings have been selected).
   If it is a specific reading, it can be selected. The "Deselect all" function will remove all markings of the readings.
3. The time period is limited and click "Print".
   If the selected period of time is a day, week or month, it will be the last <u>full</u> period that will be printed.

Print graph survey
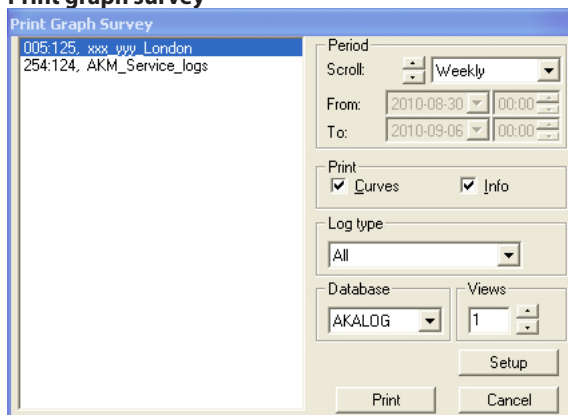
1. Select data base
2. Select the desired time period
3. Select "Info" to receive text on the curves
4. Select log type
5. Select the number of curves per page
6. End by click "Print". All logs in the selected plant will then be printed.

Configuration

This section describes the setup of the system, i.e. how the AKM programme gets to know the individual controllers in the network, how the individual controllers' different functions will be presented on the subsequent displays and how the AKM program's functions must be set.
There can be contact to various system units (front-end), e.g. Gateway AKA 245. System controller AK-SC 255, C-store AK-CS, system manager AK-SM.

Import Description file
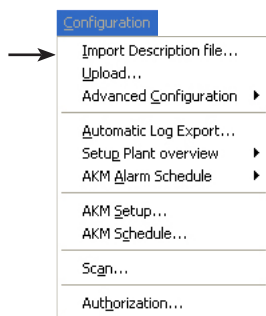
A description file contains information on a controller's functions. The file can be imported if there is a processed file from a previous plant. If there is no file available, go on to the next function, "Upload". A standard description file will then be uploaded from the controller. (Description files are described in Appendix D).
The function copies an already made description file into the system.
The description file must be transferred from another AKM programme to e.g. an USB-key.
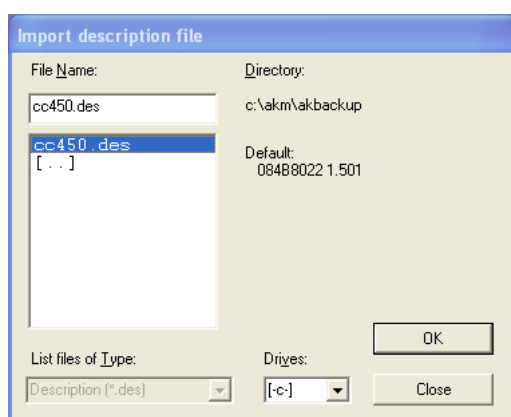
Change to e.g. USB-key, select the relevant file and click "OK".
The file will now be copied into the library shown.

If other description files are available from an earlier setup, they must be imported before you can proceed to the next point: "Upload".

Upload
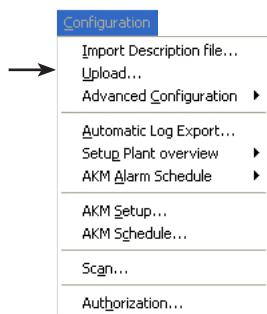
This function "takes a look" at the DSN-Network to see which front-end and controllers (addresses) are in the network. It will subsequently obtain data from the different controllers for a file in the PC. It is the contents of this file the AKM programme uses for showing texts in the different displays.

Note!
If description files have been imported before this upload function is started, the texts from these imported files will be used by the programme.

It is a requirement that router lines are set in <u>all</u> the affected gateways, <u>before</u> the upload function is performed. Otherwise the function will not be able to communicate with all the controllers in the network (see AKA setup, if necessary).
Other front-end (e.g. AK-SC 255) must be entered in "Plant archive" before the upload function is used. This is described in the installation guide.
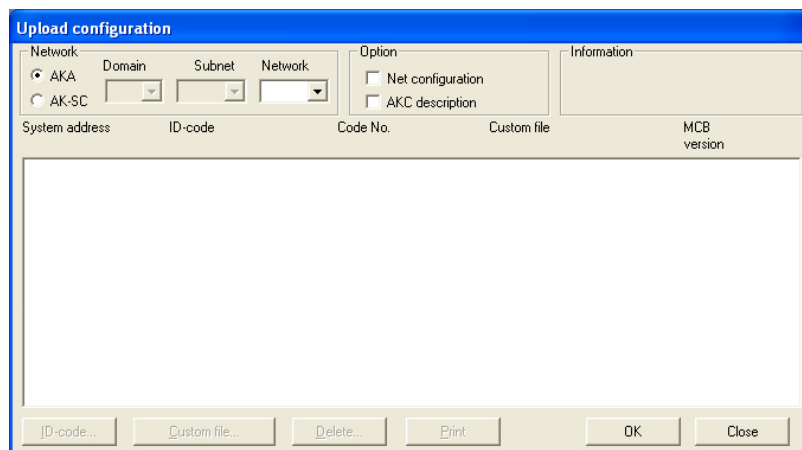
A system address/DSN address consists of four levels:
aa = **D**omain (0-64)
bbb = **S**ubnet (0-255)
ccc = **N**etwork (0-255)
dddd = address (0-1023), Gateway=0125 System manager=1001

An example of an address is 12.010.255.0125

Only the network must be set for "AKA".

- Enter network number in "Network" field.
  For AK-SC 255, AK-CS and AK-SM, the Domain and Subnet must also be entered (click AK-SC to open the settings).
- Decide whether information is required from the network (unit's system address, code number or software version).
  Tick then "Net configuration" check box.
- Decide whether information is required from the controllers (standard description file with the texts that appear in the controllers menu description). If yes, the "AKC Description" field must be ticked off. If the file is already saved on the PC it will not be downloaded, as the existing file will be used instead.

  If there is a difference between the new upload and the one already known by the programme, the programme will ask if the new upload is to be stored in the PC instead of the earlier upload.

  If no selections are made in the two fields, the earlier uploaded configuration will be used for the coming settings.

  Note! If a new controller is installed in the network, a period of up to five minutes may lapse before it is registered by the master gateway. When the master gateway has registered the new controller, a new upload must subsequently be performed for the AKM program.

  As large quantities of data are exchanged during uploading, there may be a waiting period of up to several minutes before the programme is again ready for use (the time depends on the size of the system, and on whether a modem connection is used).

- Click "OK".
  Depending on the selection made, data from an earlier uploaded network list or from a file which just has been generated will now be shown.

Note
If an asterisk (✳) is shown next to a system address it means:
- That the address is new, or
- That there has been an updating of the unit's software

If an exclamation mark (!) is shown next to a system address, it means that the attached ID code is also used by another unit (system address). Correct the ID code, if you like, but the programme is perfectly able to accept identical ID codes.

A code number indicated as UNKNOWN TYPE may be:
- a control panel type AKA 21 (it is automatically assigned an address No. 123, 122, ...)
- a unit with a software version not supported by the programme
- an error in a router line
- a conflict between a set system address in the unit and the master gateway's system address (net-
    work number).
<u>Only</u> when UNKNOWN TYPE is an AKA 21, can it be accepted. In all other cases the error must be cor-
rected.
The numerical value in the MCB column is for your information and is only used in conjunction with
older controllers and the "Override" function (appendix N).

ID code
To help you in the day-to-day operation, the different controllers may be assigned a name. Based on
this name it will be easier to operate the various settings than if the controller has only been defined
with one system address.

When the system address has been selected, click "ID code". (The function is not possible for AK-SC, CS
and SM).
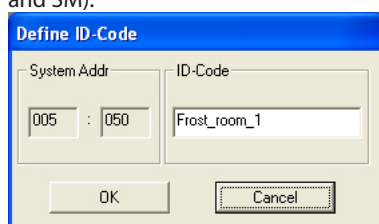
Enter an ID code, e.g. the name of the refrigeration appliance. Click "OK", and the ID code will be stored
in the master gateway.

Custom file
Customer-adapted description files are used for entering customer-specific texts as a supplement to
the factory-coded text.
Later in the programme you may choose between two texts in the menus where the texts can appear.
Select one of the two texts by click "Default" or "Custom".

Before a customer-based text can be added, this text will first have to be entered. This is done in the
"Advanced configuration" menu.
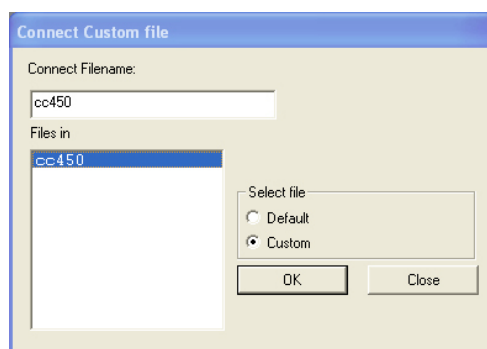
In the "Select file" field you may choose between the factory-coded text (Default = fx. English text) and
the custom-defined text (Custom).
If a language-based text is selected, you must also select a file name where the text has been entered.
When a file name has been selected, it will be displayed in the "Connect file name" field. Now click "OK".
(A file describing the factory-set English text will have the name "Code number + software version").

If it is required that a custom file has to be removed from a controller again, it can be done, as follows:
Select the relevant controller and attach the factory-set file (Default) to the controller.

Delete
If there is an address that is not to be dealt with in the AKM programme, it can be deleted from the upload
picture. Select the address and click "Delete".

Advanced configuration

This section contains the special functions that are not necessarily used, but which are present when you have to:
- edit customer-adapted description files (see also Appendix J).
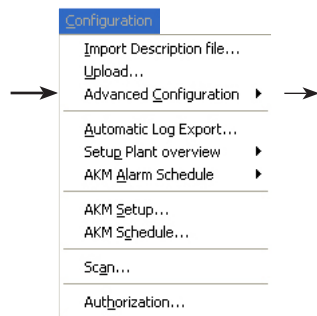
The following functions are available:
Edit Custom file
Delete Description file
Export Description file
Print Description file
Convert file (des/akc)
Check System Address

Edit Custom file
Customer-adapted description files (hereafter referred to as custom files) are used for entering customer-specified texts as supplements to the factory-encoded text.
Later in the programme you may choose between two texts in the menus where the texts may appear.
Here you select one of the two texts by click "Default" or "Custom".

Start by selected a network; select AKA or AK-SC.
You can then see which files are available.
Here you may choose between two types of files

a) if you click "Default":   b) if you click "Custom":
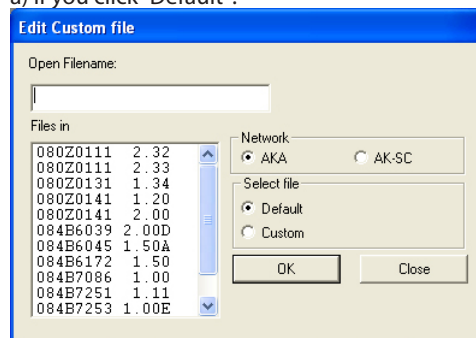
Shown here are all the description files in the system known by the programme (up-loaded with the function "Upload configuration"). The identification of each file consists of the controller's code number and version number;
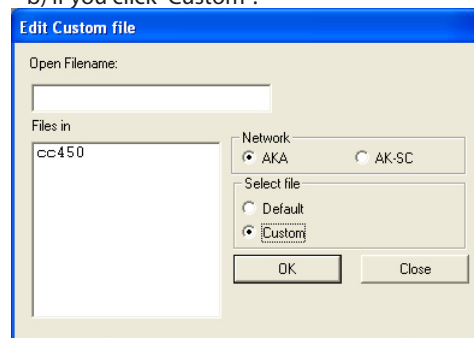
Shown here are all the description files that have already been customer-adapted and stored as custom files.
If the programme uses one of the indicated files, it can only be seen at one place: in the "Upload configuration" display. The file name will here be shown in the Custom file column, if it is attached to a controller.

Select the description file you want to work with.

Level 1 of the selected file (controller) will now be shown.
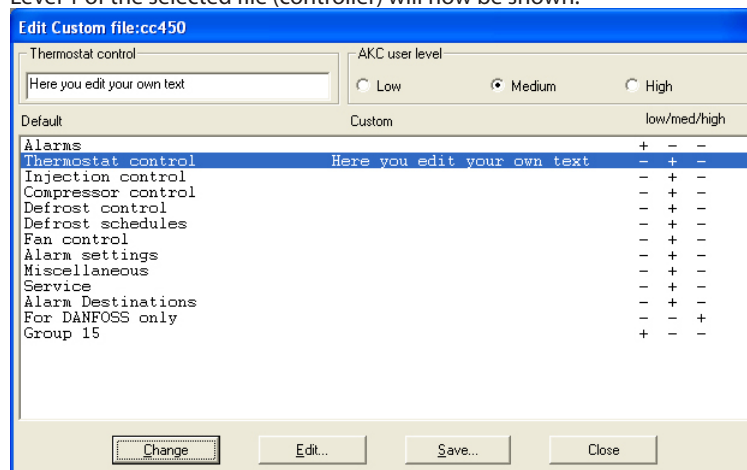
On this level it is possible to carry out two types of editing:
 a. You may enter a supplementary text for each line (menu group). When the text has been written, click "Change" and the text will be shown in the Custom column. (These are the two texts on the line you may alternate between during operation later).

b. The factory-set user limitation can be changed for each line. Select "Low" for functions that may be operated by many users. And "High" for functions that may only be operated by very few users, e.g. service engineers.

Also correct the texts on level 2.
Each of the lines shown indicates a number of parameters where a supplementary text may also be entered. It must at the same time be defined whether this parameter is to be included in the plant overview. For alarms, a priority may also be defined.

Select a line and click "Edit".
The line "Thermostat control" has been selected here.

```
cc450: Thermostat control

--- Night setbck                          Parameter in
┌─────────────────────────────┐           ☐ Plant overview
│more text                    │
└─────────────────────────────┘

Default                      Custom                    Plant
r14 Therm. mode                                          –
--- Cutout °C                                            –
r01 Differential                                        –
r02 Max cutout°C                                         –
r03 Min cutout°C                                         –
r15 Ther. S4 %                                          –
--- Night setbck            more text                    –
r13 Night offset                                        –
--- Forced cool.                                        –
r21 Cutout2 temp                                        –
o17 Disp. S4 %                                          –
r04 Disp. Adj. K                                        –
r16 MeltInterval                                        –
r17 Melt period                                         –
u90 Cutin temp.                                         –
u91 Cutout temp.                                        –
u56 Display air                                         –

        Change          OK          Cancel
```

Now perform two edit operations:
a. Enter the customer-specified text.
b. Put a tick in the "Plant overview" field against the parameters to be displayed in a bar chart or in table format.

When a line has been edited, you must update the display by click "Change".

When all lines have been edited, you must finish by click on "OK".

When the "Alarm" group has to be changed:

```
cc450: Alarms

--- High t.alarm              Parameter in        Alarm priority
┌─────────────────────────────┐ ☐ Plant overview  ◉ 1  ○ 2  ○ 3  ○ 4
│Own text                     │
└─────────────────────────────┘

Default                      Custom                   Plant/Alarm
--- Contr. error                                       – ✓ 1
--- RTC error                                          – ✓ 1
--- S3 error                                           – ✓ 1
--- S4 error                                           – ✓ 1
--- S5 error                                           – ✓ 1
--- S6 error                                           – ✓ 1
--- S3 error B                                         – ✓ 1
--- S5 error B                                         – ✓ 1
--- S6 error B                                         – ✓ 1
--- High t.alarm            Own text                   – ✓ 1
--- Low t.alarm                                        – ✓ 1
--- Door alarm                                         – ✓ 1
--- Max HoldTime                                       – ✓ 1
--- High temp S6                                       – ✓ 1
--- Low temp S6                                        – ✓ 1
--- DI1 alarm                                          – ✓ 1
--- DI2 alarm                                          – ✓ 1

        Change          OK          Cancel
```
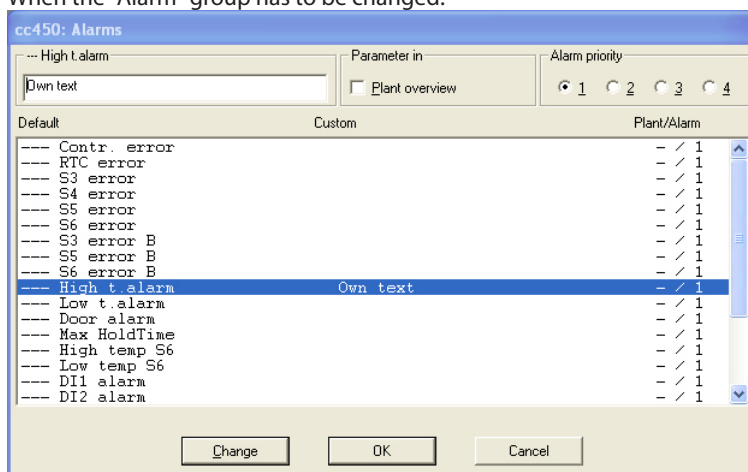
Alarm priority
The priority of a given alarm is defined here. Priority 1 is assigned to all important alarms requiring quick action, e.g. sensor errors or too high media temperatures. Priority 2 is given alarms on the next level, etc. In the later setting of alarm routings (in AKM Alarm schedule) , different alarm priorities can be routed to different receivers.
Alarms given priorities 2, 3 or 4 will not be shown by the programme "AK Monitor".
(The default setting for all alarm priorities = 1)

Save Custom file.
When you have finished editing the texts, click "Save".

Save Custom file

☐ Save As Default file
Save As:
[cc450]   [OK]
                 [Cancel]

Save Custom file

☑ Save As Default file
Save As:
[084B8022 1.501]   [OK]
                   [Cancel]
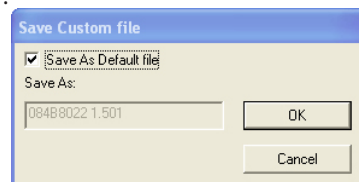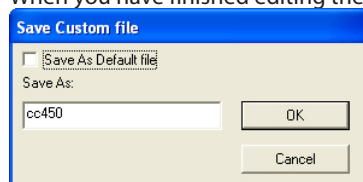
You may now save the revised file in two ways:
    a. You can give the file a name which you determine.
    b. You may choose to save it as a default file (it will update the existing default file which is used by all controllers of this type).

Click "OK", and the file has been saved.

Delete description file
The function deletes a description file found in the system (Appendix D contains an explanation of a description file).

Delete description file

Delete Filename:
[cc450]   084B8022 1.501

Files in
[cc450]   ┌Network────────────────┐
                 │ ⊙ AKA   ○ AK-SC   │
                 ├Select file─────────────┤
                 │ ○ Default   │
                 │ ⊙ Custom   │
                 │ [OK]   [Close]   │
                 └────────────────────────┘
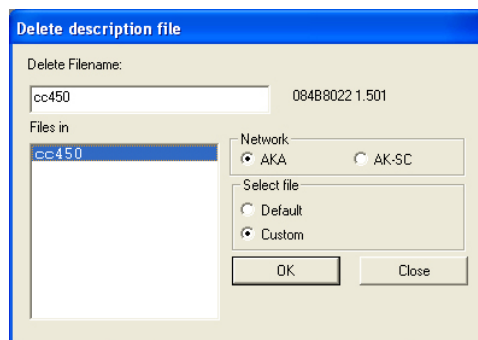
Select the description file to be deleted and click "OK". (If the file is attached to controllers, a warning will appear before the file is deleted. If you still wish to delete the file, it will be removed from the controllers which will subsequently use the "Default" texts).
If a Default description file is deleted by a mistake, it can be recovered by means of a new upload.

Export description file
The function copies an already made description file onto, say, a USB key

Export description file

Export Filename:
[cc450]   084B8022 1.501

Files in
[cc450]   ┌Network────────────────┐
                 │ ⊙ AKA   ○ AK-SC   │
                 ├Select file─────────────┤
                 │ ○ Default   │
                 │ ⊙ Custom   │
                 │ [OK]   [Close]   │
                 └────────────────────────┘
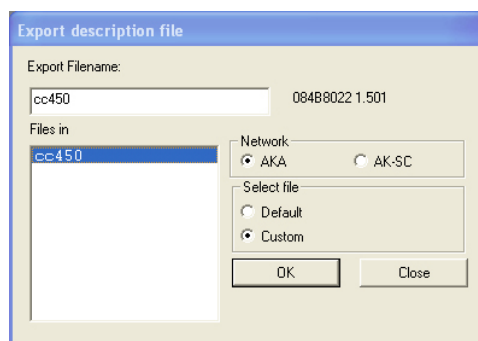
Select the description file to be copied and click "OK".
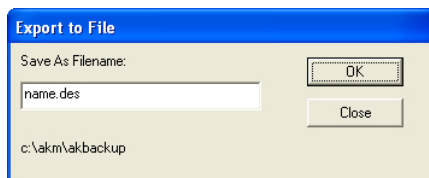
Indicate where the file has to be copied and the name it will be given, e.g. A:NAME", and click "OK".

Print description file
This function prints all the parameters in a description file.
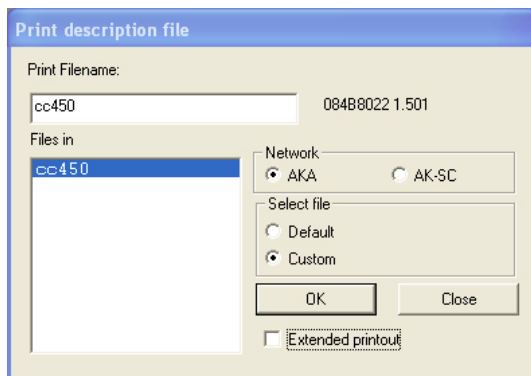
Select a description file and click "OK". The text in the file will now be printed. Printouts can be made of both "Default" and "Custom" files.
e.g.

Parameter name	Custom	Priority
Alarms		
Standby Mode	- -	4
S1 Error	- -	1
S2 Error	- -	1
S3 Error	- -	1
S4 Error	- -	1
S5 Error	- -	1

Convert custom/setpoint file
The function can transfer "custom texts", "priority", "parameters selected for plant overview" and "user level" from one description file to another, even if the two description files belong to different unit versions or code numbers. It is advantageous to use this function when custom texts are found for a controller, and this controller has to be updated with a newer software (fx AK-CC 450 version 1.40 to AK-CC 450 version 1.50).
Texts can be transferred when the two basic texts are identical (identical "Default" texts), e.g.:

Custom file 1			Custom file (2)	
Standard 1	*Custom text 1*		*Standard 2*	*Custom text 1*
xxxxy	Text for xxxxy	→	xxxxy	Text for xxxxy

A Custom file has now been made which is not complete. The file only contains the known texts from Custom file 1, and must now be adjusted. Open the new file in the "Edit custom file" menu and adjust it for deviating and missing texts.

See the display on the next page.
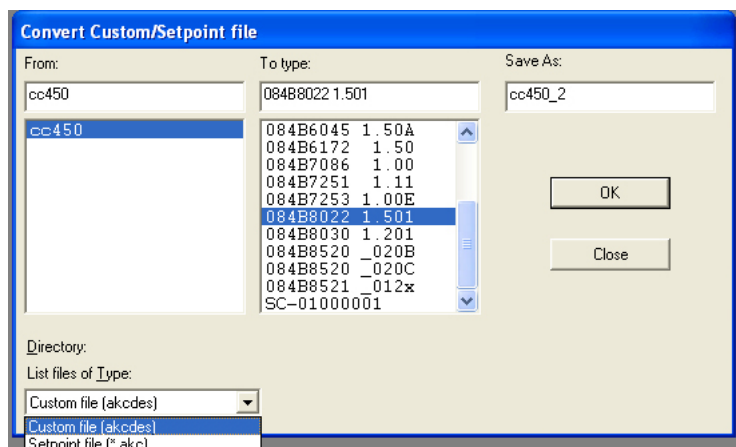
Use the following procedure:
- Select a file in the "From" field
- Select the code number and software version the new Custom file is to be used with in the field "To type:"
- Give the new Custom file a new name in the field "Save As"
- Click "OK", and the conversion is carried out
- Change to the "Edit Custom file" menu. In this menu you now have to go through the new Custom file, point for point, and the required corrections must be made and new texts added.

The function can also convert a setpoint file from one software version to a newer one. The procedure is as described above, but "Type" must be selected as "Setpoint file" instead of "Custom file".

Check system address (addresses on AKA 245 only)
This function is used for checking whether there is a communication line to the established system addresses, or whether the "System address" menu has been set in a controller. Lines for several controllers can be checked at one go. The function is chiefly used when new installations are made or in situations where you check whether all controllers are present in the network.

Select one or more controllers
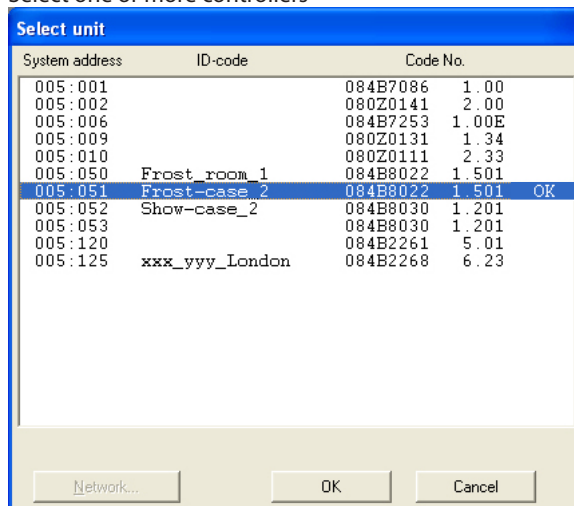
Activate one or more controllers and check them by click "OK". The system will react by showing either "OK" or "-".
"OK" means that there is a connection, and a system address has been given.
"-" means that it cannot be found in the network, or that it has not had its "System address" menu set.
   If the controller is not connected in the network, a "-" will appear after approx. 70 to 140 seconds.
   If a "-" appears after a few seconds, the "System address" has not been set.

Automatic Log export
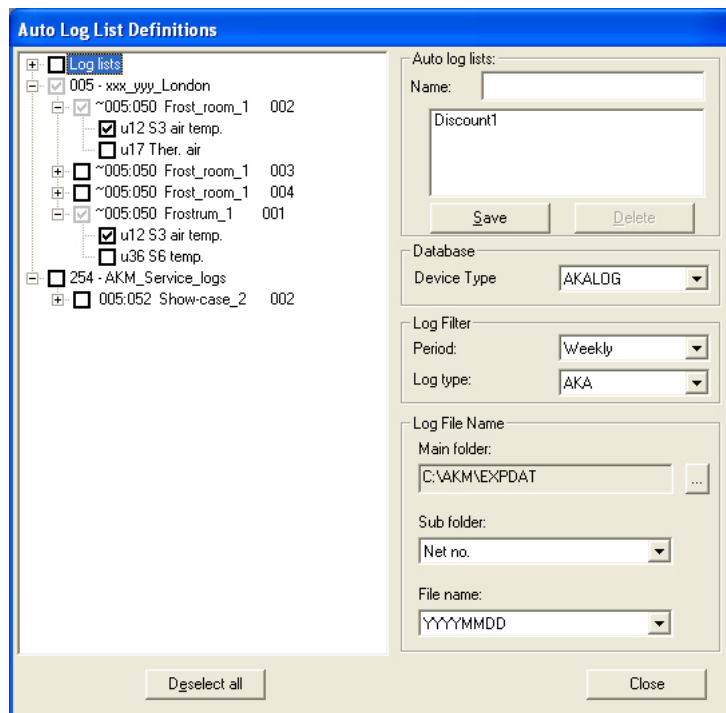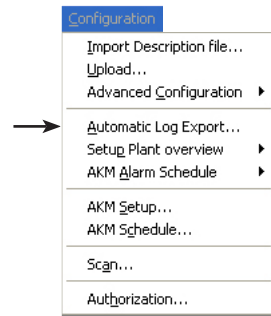
The overview is built up in the following way:

Network 1 / Store 1
    Log 001
        Parameter 1
        Parameter 2
    Log 002
        Parameter 1
        Parameter 2

Network 2 / Store 2
    Log 001...

Function
This function automatically exports a number of data collections from logs to a file. The quantity of data and the export time are determined in the setup. The file will be a CSV file and can be read via the "View exported logs" function or via the "Excel" programme. The file contents will be a "window of data" for the final full period, from which an export is received.

Prerequisite
A number of logs must be established which continuously upload data from given measuring points. This is the data that is retrieved when the auto-collect function is activated in log setup.
 (All the logs established can be seen in the field on the left-hand side of the display. It is on the basis of this total list the individual export files have to be generated).

Setting
When an "Automatic export log" has to be defined the following points have to be carried out:
1. Give the file a name.
2. Selecting a data base: AKA log, AK-SM log or AK-SC log.
3. Select one or more of the mentioned data collections on the left-hand side of the display. If you select a network, the entire contents of the network will be marked off and any later establishment of a log or parameter in the same network will automatically be included in the export file. If you instead select on log level, any changes in the selected logs will be registered, but the establishment of a new log, if applicable, will not automatically be included.
4. Set the time of the exported data.
   The time (period) will often be a week or a month, but you may choose shorter or longer periods of time.
   • The data exported each time will always be data from the entire previous period from which an export is received.
   • It is only the data available on the PC at the time of the export that will be exported.
   • To ensure that all data from a log are included, a period of time must be selected which is longer than the time between two consecutive measurements (longer than the measuring times for the individual parameters).
5. Set the types of logs that have to be exported.
   If you select "AKA" / AK-SC, CS or SM all the marked measurements on the left-hand side of the display will be uploaded. If "Service" is selected, only part of the marked measurements will be up-loaded (those defined as service log). If "Food safety" is selected, only part of the marked measurements will be uploaded (those defined as authority log).
6. Set where and how the exported files has to be placed.
   a. Set the path and folder.
   b. At the time of export, time stamping and DSN number will be available and the file will be saved in a site established as one of two. The other one will be the file name.
     Set how you want this to be arranged:
     • either where the site is a network number or the file name is the export time,

• or where the site is the export time and the file name the network number.

7. Press "Save" to save all the settings for the relevant file.
   (If you wish to change some of the settings for an already established file, you can double-click on the name to have the settings shown).

8. Now set the export time.
   This takes place in the "Configuration / AKM Schedule". See page 49.

9. The definition has now been accomplished. Start/stop of the export must take place from the schedule function mentioned under point 8.

Setup Plant overview
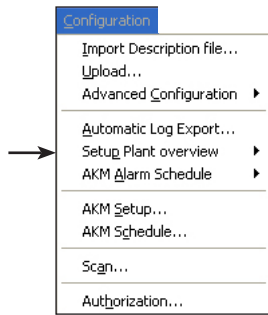
The following functions are available:
Graphic Plant Overview
Graphic Plant Import
Graphic Plant Export
Object editor
Plant Lists

Graphic Plant Overview
Before starting, ensure the following:
- There must be a drawing of the plant.
- The drawing must have BMP format.
- It must be placed in the folder with the other BMP-files (C:\AKM\AKLAYOUT\...)
- You must perform an upload on the plant, so that the programme recognizes the controllers by their
  respective individual address.

1. Start the Graphic Plant Overview menu.

2.
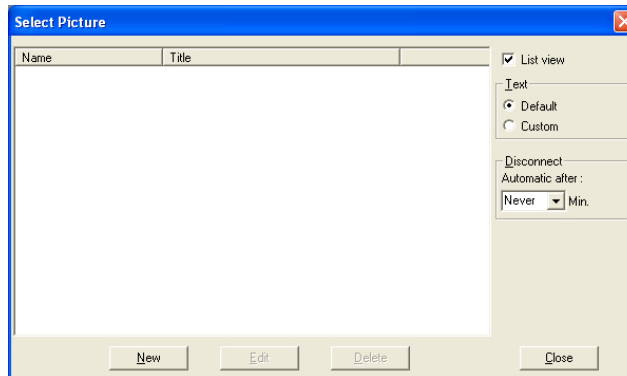
Marking a name (first visible when the plant and name are defined)
If you mark a plant, this will be the plant that will pop up when you later open the function from the "Plant Overview" user menu.

Edit
If you have already been through the setup procedure once and want to make a few corrections, use this function.

Delete
If you have a setup which is no longer required, delete it here.

3. Select New and you will obtain a display with this number of buttons at the bottom.

Load Pic...	Browse	Delete	Start Test	Fit	Back	Save...	Close
Load Pic...	Edit	Delete	Start Test	Fit	Back	Save...	Close

Browse   You use this button when you check your setup. The button changes text between Browse and Edit, depending on the function you are able to change to.
Start test: Use this button when you check the setup. The button will alternate between the texts Start test and Stop test.
Fit: This button will adapt your picture to the size of the screen. If there is a great difference between the size of the drawing in the two situations, you risk that some of the contents of the drawing will be missing when it is displayed. This is because Windows is forced to delete/stretch the individual pixels in the drawing when it changes size.

4. Use the "load picture" button at the bottom left and continue by selecting a picture for the plant.

5. Once you have a picture of the plant, your next job will be to place the appropriate control functions opposite the given refrigeration points.
   From "Edit Toolbox" you select: database (AKA or AK-SC) and here after:
   a. The network number.
   b. The controller's address.
   c. A controller's code number - if you do not have direct contact to the plant. If you do have contact, the programme will show it.
   d. Object Name
      Some controllers will have several control sections, (evaporator) e.g. an AKC 116 which has three of them. The sections will be named A, B and C.
   e. Reference
      Select a name here if you want to create a short-cut key to another drawing or to an object which is linked up with a drawing (also known as "application object").
   f. Give the control a title
   g. Now move the cursor to the drawing and place the icon at the refrigeration point to be controlled by the controller section.

6. Repeat 5d to 5g, if the controller has several sections.

7. Repeat points 5 and 6, until all refrigeration points have been assigned an icon.

8. Save the chosen setup with name and title.

Control 1
You now have to check whether the symbols actually show up in the drawing, the way you expect it to.
1. Click the "Simulate" button at the bottom of "Edit Toolbox".
2. Click the Browse button at the bottom of the display.
3. Click "Start test"
   You will now observe that the different symbols will be flashing at the different refrigeration points.
   Take a look now at the location of the individual symbols, can they be seen clearly? If they are correctly placed, you may proceed, otherwise you must move back and move the icon a little.
4. Conclude this control by click "Stop test".

Control 2
Now you must check whether there is connection to the controllers.
1. Return to the picture where you place the icon on the plant. (If you come from the above mentioned point 4, click "Edit").
2. Click the "Connect" button at the bottom of "Edit toolbox".
3. Click "Browse".
4. Click "Start test".
5. The programme will now upload data from the individual controllers, and this may take a minute or so, depending on the size of the plant. The uploaded data will now be shown at the individual refrigeration points in the shape of, say, a symbol and/or a temperature display.
6. Conclude this control by click "Stop test".

Closing down
Conclude the setup by click "Close" and return to the programme's main menu.

Edit Toolbox
   This is where you select data from the individual controllers. If it is in your way, you may move it around on the screen by grabbing hold of its top line.
Network
   Here you select the network number you have assigned to the plant.
Controller Address
   Here you select the address assigned to the individual controller. If you have given the controller a text via the "Customer-defined text" function, you will be able to see the text here.
Controller
   Here is a list of all the controllers and software variants that are supported by the programme. When you have contact to a plant, you will be able to see directly what kind of a controller is installed in the plant.
Object Name
   Here you will see some groups of parameters the controller can make use of. An AKC 115 will for instance have two groups - one for the A-section and another for the B-section.
   Each of the groups will have some selected parameters, but you cannot see these here. These parameters may be, say. alarm, temperature, defrost, etc. - and they have been established beforehand.
Reference
   If you select something from this box, you will create a short-cut icon that will connect you to another picture (which you will of course also have to set up, like this picture) or to an application object. In this way you may have a shop layout on the screen with, say, a short-cut to a picture of the compressor room.
Object title
   Here you may give the icon a name, if you have not already written a name directly on the drawing.

Oops!
   If you have clicked the mouse key once too much on the drawing, you will place an extra icon there with exactly the same functions as the first one. Click "Delete" to remove the extra icon.
Which is which?
   If you want to know which controller belongs to which refrigeration point, click the icon at the refrigeration point. The contents in the "Edit Toolbox" will now show the given data.
Correct
   If you wish to correct the contents of an existing icon, first select the icon, then carry out the change in "Edit Toolbox", and finally complete the change by click the icon again.
Limitation
   You can max. establish 200 icons (refrigeration points) in an overview picture.
Reaction time
   If you have many icons on your overview picture, you will similarly have a long reaction time - it may be up to five minutes before all the data have been uploaded.
Subsidiary lines
   If you require subsidiary lines for placing your icons in the drawing, activate the function by means of the right-hand mouse button.

Import Object

If you have a graphical plant overview from a previous plant, you can download it to the PC with this function. (The file must be exported with the function mentioned below)
You may for instance use the copy:
- as safety copy, if the shop's PC suffers a breakdown.
- for your own PC, if you require service via the telephone network.
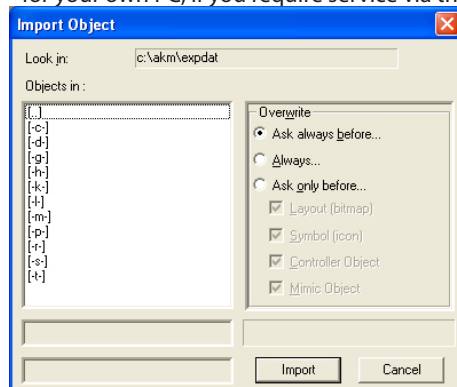
Before starting the import function you must decide whether some of the files on the PC are to be overwritten, if the import function comes up with a corresponding file.
1. Select the current file and click "Import"

Export Objects

1. Select the setup that is to be copied,
   e.g. Super 1
2. Select the object types to be included
   (all of them or only part of them)
3. Give the copy a name
4. Select where the copy is to be placed, e.g. A:
5. Press Save
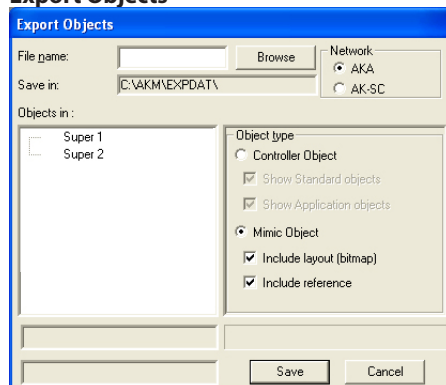
Controller object
This is a generic term for
- Standard object and
- Application object

Standard object
This is a collection of the, say, 5 to 10 functions that are required, if the controller is to show them graphically. So both the functions and the icons will be depicted on the drawing of the plant.
There is at least one standard object for each software version of a given controller. (A factory-defined standard object will be named "Default").

Application Object
This is an extended function of the above - a function where the object is linked up with a drawing of, say, a refrigeration appliance.

MIMIC object
Both standard objects and application objects of the entire plant are collected here. The drawing of the plant and any references (shortcuts) are also included, if you have used several drawings.

Object editor
1. Start the programme from the Object Editor menu
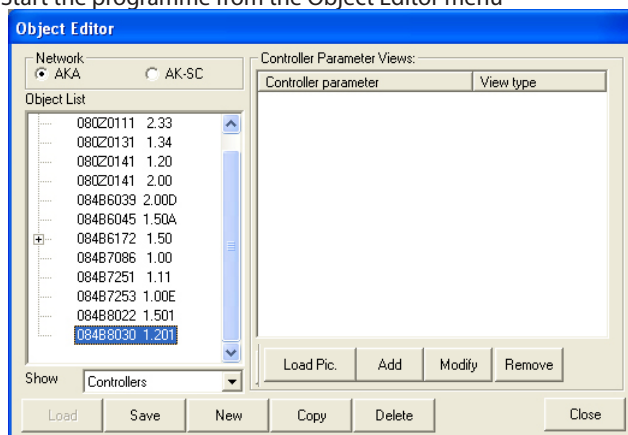
All controllers in an ADAP-KOOL® refrigerating system have a description file. This description file is either uploaded from an AKM programme via the Upload function or imported to the programme via the Import function. This is the description file you will see in the field to the left. The description file shows all the parameters that can be set and read in a controller.

Load
Used when you make corrections in an existing object.
Select an object in the field to the left and click "Enter". The contents of the object will now be entered in the field to the right.

Save
Saves an object you have been working on.

New
Used when you wish to construct a new object.

Copy
Used when you wish to construct a new object based on an already known object.

Delete
If you wish to delete an object, select it in the field to the left and click Delete. (You cannot delete an object from the list if its parameters have been entered in the right-hand field).

Close
Switches off the display.

2. First you must identify the required controller with the relevant software version. Then it will be possible for you do one of three things by click:
- Load
- New or
- Copy

In connection with New or Copy you must state the name of the new object
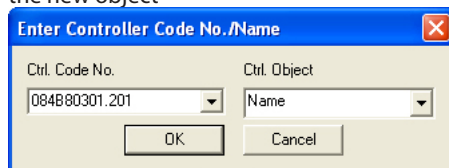
Finish the display with OK.

3. You now proceed with the object in the field at the right-hand side

(segment of the above display)
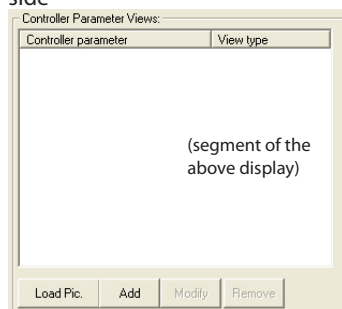
It is via this display you have to select the various parameters for the object.

Give the object a name
You do this by selecting the code number and software version, or write it yourself if it is not found on the list.
Also give the object a name, so that you can recognise it - or you may select a name from the list, if the object is to be given an already existing name.

An object will consist of all the parameters placed by you in the field. You can see whether the parameter has been defined to be shown with a value or with a symbol.

Limitation
You may have up to 26 different parameters to choose from. If some of the parameters are used for displaying both a value and a symbol, you will have a corresponding number of additional values over and above the 26. If you try to define more than the 26 different parameters, the last ones will disappear when you finish the function.

Load Pic
Here you select a picture if you wish to construct an application object.

Add
Starts the definition of a new parameter for the object.

Modify
Used if you wish to make corrections in one of the shown parameters.

Remove
If there is a parameter or a picture you no longer require in the object, select it and click "Remove".

4. - If it is standard object you are constructing, skip this point.
   - If it is an application object you are constructing, you have
     to add a picture to the field.
     Click "Load pic" so that you may select one from the menu
     below.
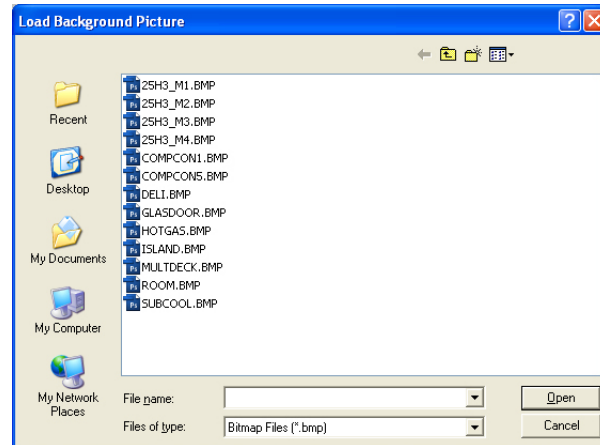
Select a picture and finish with "Open".

5. Click "Add" so that you can add a new parameter. -
   Or you may select an already existing parameter and then
   click "Modify".

   You can now see the functions and parameters found in the
   controller for which you are now making an object.
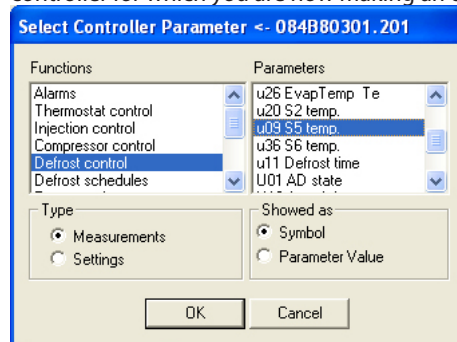
   It is from this menu you must select the parameter you wish
   to define for the object.

6. First, select a line in the "Functions" field.

7. Then select one of the two parameter types - either mea-
   surements or settings (there will be a choice of different
   parameters in the right-hand window).

8. Now select one of the parameters in the right-hand window.

9. Finally select how you want the numerical values belonging
   to the parameter to be shown - either as a symbol or just as a
   value.

   - If you have selected value:
     Define the text you want to be shown before and after the
     value.

   Finish with OK.

We have drawn some general background pictures of various refrigeration appliances. You can use the picture that best suits your application, or you can make a new one. If you make a new picture, it must be in BMP format.
If you have drawn another background picture, move the file into the folder with other background pictures by using Windows Explorer.
Path: C:\AKM\AKLayout\AKAppl

When you have selected a picture and concluded this menu you will see that the drawing appears as a parameter in the earlier menu.

In a measurement you are only allowed to follow a value which is transmitted from the controller.

In a setting you also follow a value from the controller, but here it will furthermore be possible for you to change the setting in the controller.
When you later change this value from the plant overview, the controller will register this and subsequently send the changed value to the programme.

Show as
- If it is a temperature or pressure measurement, select "Parameter value".
- But if it is an operating condition in the controller that has to be shown as a symbol, select "Symbol".
(An operating condition may also be shown with a numerical value, if you prefer it this way).

If you wish to use the texts already found in the controller, put a cross against the two fields "Use parameter text". But if you require your own text, write it here. Example: **"Air temperature" -21 "degrees".** Or you may select:
"Air temperature" -21 "°C".
If you require a display with another fount than the one suggested by the programme, you can change the fount from this picture.

- If you have selected Symbol:
    Define a symbol for a given value which the programme receives from the controller.
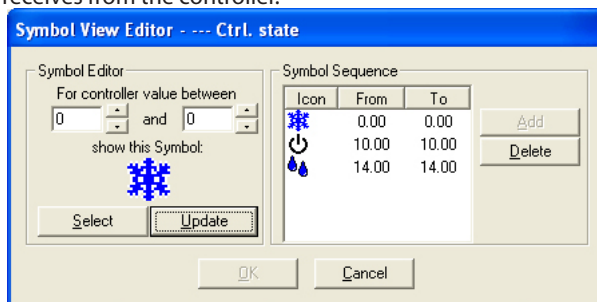
a. Click "Add" to start the definition of a display.

b. Select a lower value and an upper value (that may be the same value).

c. Click "Select" to define the icon to be shown for the selected values.
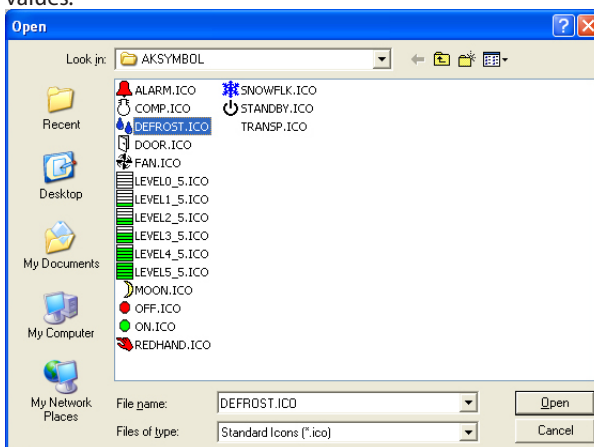
Select an icon and finish the display by click "Open".

d. Click "Update"
    You will now be able to see the selected settings in the field to the right.

e. Repeat points a to d, if there are other symbols that have to be shown for other values for this parameter.

f. Finish the definition of this parameter by click "OK".

10. Repeat points 5 to 9 for each parameter you wish to include in the object.

11. The object is now ready to be placed in the plant overview. See the "Setup" section.

You have to define the symbol you wish to see for a given operating condition.
If the parameter value is to be between 0 and 10, you can define different symbols for different values, e.g.:
Symbol a: for 0 and 1
Symbol b: for 2
Symbol c: for 3 to 7
Symbol d: for 10

If it is a compressor capacity you wish to output, for example, you may choose to have it output both with a measurement and an icon.
-The measurement will show the capacity in percent.
-The icon will show that the compressor is operating.
(This will require two parameter selections - one where you select measurement and another where you select an icon. In selecting the icon you then define that a compressor is to be shown for the values between 1 and 100).

When such a value is subsequently received from the controller the programme will show the icon you have selected.

Plant lists

A plant overview is a display showing selected measuring values or other relevant situations for the plant. It may for instance be the temperature at the various refrigeration points, HACCP information, whether defrost cycles have started, or whether there are alarms of a certain type.

You must now define this overview, and it is depicted either as a bar chart or as a number of lines with current values.

You may also define additional overviews, so that one display for instance shows temperatures, another defrosts, a third settings, etc.

If the plant is a small one, all these things may be shown in one overview, but that will require that max. 50 displays be selected.

1) In the menu, select "Plant Lists".

2) Click "New"
   - If the programme knows several networks, a display will appear where you have to select a net-work. Do that and proceed to point 3.
   - If the programme only knows one network, it will automatically move on to the next display.

3) From this display you may now establish one or more plant overviews:

All controllers on this network are now shown for the selected system.

a. Start by defining name and title on the list.

b. Then select the text to be shown for the controllers.
   - Select "Default", if the original text in the controllers is to be used.
   - Select "Custom", if a number of user-defined texts are to be used.

c. Now select a controller, and after that the measurement or function to be displayed.

Shown to the right are the measurements and functions you may choose between. If a tick has been placed in the "Parameters used in all func." field, an additional number of selected parameters will be shown from the controller in question. These parameters were not defined when the user-defined description file was set up, but are determined by the controller type. Select also one or more of these parameters, if required.

d. The various measurements and functions are selected by click "Add".

Parameters used in all functions

☐ Few parameters. Only the parameters selected in the Custom file.

☑ More parameters. Only the common group of parameters available in all the controller's menu groups.

☑ All parameters.

The measurements selected for the overview are shown in the middle of the display. You may select as many as 50. (In the plant overview they may subsequently be shown as 50 columns or as 20 lines).
Useful hints
If another sequence is required for the selected lines, you may move lines or insert new lines, as follows:
1 Select a line
2 Click the right-hand mouse key
3 Move the cursor to the place where the line is required
4 Click the right-hand mouse key once more

e. Select colour for display of bargraph

Select one or more lines that are to have the same colour, and click "Color". Now the display will appear where colours can be selected. Select colour and click "OK".
(You may for example select light blue for refrigeration temperatures, dark blue for freezing temperatures, and red for temperature alarms).
The chosen colour will now be placed on the lines selected on the previous display.

f. Click "Save" to save the overview.

4) A plant overview has now been defined.
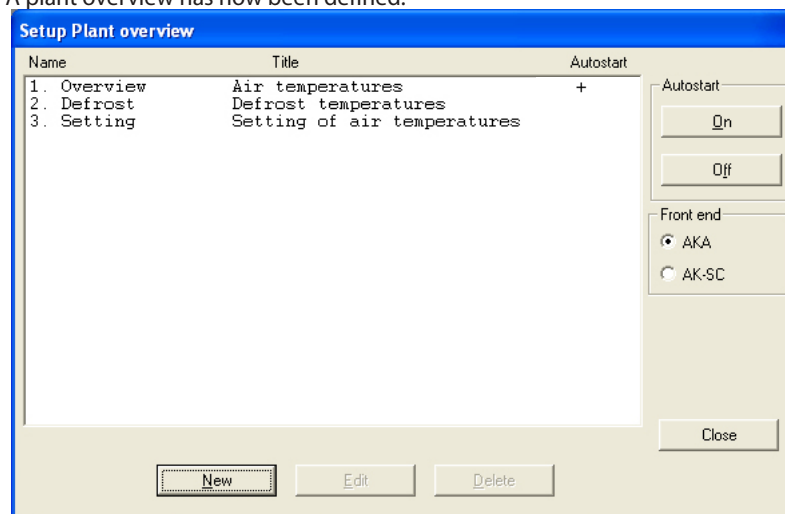
Repeat point 3 until all plan lists have been defined on this network.

5) Autostart
A plant overview can be defined for autostart. This means that the selected overview will be shown directly after log-on when the programme is started. You may choose autostart for one overview by selecting it and subsequently click "On" under Autostart. A cross at the right-hand side of the line now indicates that it has been set for autostart.
(In the log-in display the function must also be selected for it to work)

6) If there are several networks, the whole section is repeated for each network.

AKM Alarm Schedule

This function is used for routing of alarms via the AKM programme.
Defined here are the receivers, times and alarm priorities that are sent to the individual receiver.
One router table can be set up for a normal period of time, and another router table for "Holiday/Holiday period". (Changes between the two router tables can be made by indicating start and stop times, or by making this change manually. See "Holiday period".

Note!
Alarms can be routed to an other AKM program, to gateways, to mobile telephone with SMS and to an e-mail address.
The alarm routings set here are "copy alarms". The AKM programme itself receives all types of alarms.
A system alarm cannot be rerouted.
The routing stops if the AKM program or the PC is stopped.

If an alarm is not transmitted to the defined user for one reason or another, a repeat routine will be started. The routine will repeatedly try to deliver the alarm, and if it does not succeed in it, a system alarm will be generated (this system alarm will also be entered in the "AKM Event log"). Appendix F contains a description of the repeat routine.

The following functions are available:
Weekly
Holiday
Holiday period
Delay settings

Configuration
Import Description file…
Upload…
Advanced Configuration ▶
Automatic Log Export…
Setup Plant overview ▶
AKM Alarm Schedule ▶
AKM Setup…
AKM Schedule…
Scan…
Authorization…

Condition
To be able to send alarms as e-mails a Windows component called "Internet Information Service" must be installed. See Appendix L.
In Windows 7, Outlook or Outlook Express must be installed.
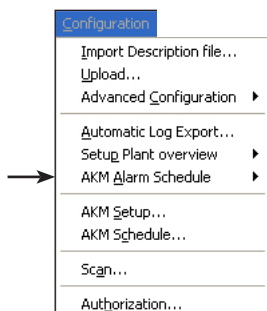
Define Weekly
The function is used for setting the alarm routing table for a normal period. The setting is on a weekly basis, and the set data are repeated week after week.

Settings in this field can be made in points 1 to 4.

bbb = Subnet 0-255)
ccc = Network (0-255)
dddd = address (0-1023) Gateway =0125,
AK-SC, CS=1001)

(The program itself will set the arrow in between the two areas)
Example of an "address interval (window)" that includes all networks and regulators for a plant.
12.010.000.0000->12.010.255.1023

The final result is displayed in this field.

This field displays the entered data that applies to the line selected in the field above.
The values are not shown until they are set in the next display. This is performed in the points on the next page.

Add: Starts the creation of a new router line.
Change: Selects an existing router line if it needs to be changed. Perform the change. End by click "OK".
Delete If an existing router line is to be deleted, select it and click "Delete"
Print: If you click "Print", the whole router table will be printed on the connected printer.

Setting up an alarm schedule:
1. Name the schedule in question
2. Set the period of time in which the schedule is to apply (For overnight periods between Sunday and Monday, two router lines must be set: the first with a stop time of 23:59, and the second with a starting time point of 00:00)
3. Select the alarms to be forwarded based on their indicated priority levels. Priority 1 is the most important, 2 is the next most important, etc. (This setting is entered in the "Edit custom file" menu.) Under "Priority" tick off this or the alarm priorities that must be routed in the given time period.

4. Select the plants (address interval) from which the alarms are to be forwarded
   DSN numbers can be seen in "Plant archive".

After pressing "Add" or "Change", a display appears in which the alarm recipient is defined. The recipient can be: Other AK plants - Alarm receivers - Mobile phones - E-mail address.

Info

E-mail
To send an e-mail, the SMTP gateway must be configured.

Outlook/Outlook Express is installed and configured on the PC on which AKM is installed.
Here it is only necessary to install the virtual server, as described in the following pages.
AKM will use the settings entered in Outlook/Outlook Express to send the e-mail.

Outlook/Outlook Express is not installed on the PC on which AKM is installed.
Here the SMTP gateway must be configured based on the information entered in the virtual SMTP server. The gateway must be configured by pressing the "SMTP Gateway Configuration" button.

Here the user must enter the IP address of the server and the port being used (usually port 25).
It must also be indicated whether a user account is needed for this server. This is done either by selecting "Anonymous", if no account information is necessary, or "Basic, if account information is needed. This information must be entered in the "User name" and "Password" fields. The settings described on the following pages must also be made.

"Primary": Enter the address of the alarm receiver here. Please also consult the Installation Guide.

"Alternative": If the system cannot get in touch with the primary alarm receiver, the alarm is sent to the alternative receiver shown here.

"Copy": This address always receives a copy of the alarm.

"Local AKA": If this field is selected, a copy of the alarm is returned to the local master gateway. It can only deal with the alarm, if a printer is connected to it.
A printer must be connected to the master gateway, when alarms are sent to it.

"Auto accept": If this field is selected, the alarm will automatically be accepted.

"Only alarm status": Select the alarm status that is to be forwarded.

"SMS": If a GSM modem is connected to the PC, a sms message can be sent to a mobile phone. The sms content will be the alarm text.
   Note.
   The AKM programme will check that the sms message is transmitted, but it *cannot* control whether it is received. An acknowledgement of "Set alarm" is not possible via the GSM modem.

"e-mail": If an e-mail program has been installed on the PC, an e-mail can be sent to a given recipient. The contents of the e-mail will consist of the alarm text.
   Note.
   The AKM programme will check that the mail is transmitted, but it *cannot* control whether it is received. An acknowledgement of "Set alarm" is not possible via mail.
   E-mail installation on the PC is described in Appendix L.

By means of the above procedure the required number of router lines can now be entered. When all lines have been entered, click "OK", and the table is ready for use.

The information will then be saved, and the next time an alarm is activated (and meets the requirements in the schedule), it will be processed by the Alarm Router or be automatically accepted if it is defined.
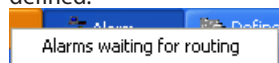
(Appears at the bottom of the display in the Windows line)
You can see the content by right-click the display and selecting "Alarms Waiting for Routing".

Define holiday
Settings are made in the same way as in the previous section.

Holiday period
This function diverts alarms during a specified period (holiday period).

1) Definition of alarm receivers and times is performed under the above mentioned item "Define holiday".

2) The alarms will now be redirected, if:
   - A tick is put in the "Manual" field.
   - A start and stop period is set in the time fields.
    (The settings are compared with the PC's time, day, month and year).
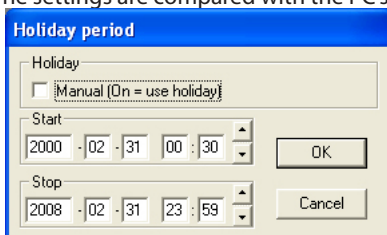
Delay
If you have a system where you know from experience that a generated alarm will normally disappear again after a couple of minutes, you can omit routing this alarm.
For the given system you set the number of minutes by which an alarm has to be delayed. If the alarm remains active when the time has elapsed, then the alarm will routed in a normal way, but if the alarm has been cancelled within this period of time, it will not be routed.
You will always be able to find an alarm that has been generated and cancelled again without your having been informed of it in the "AKM Event Log" overview.
If you at any given time wish to check if there are alarms awaiting their time delay, you may activate the alarm routing icon on the screen's process line.
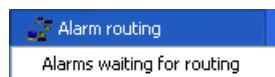
The delay function only applies to alarms routed via the AKM programme.
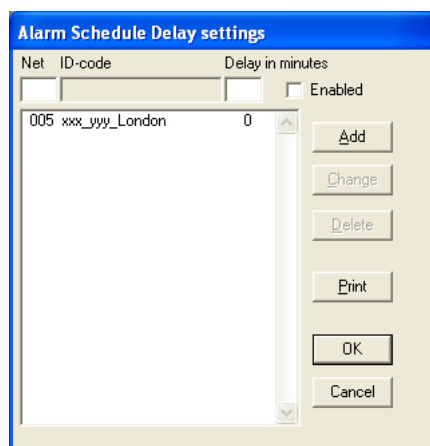
The display will show all the networks known by the programme via the upload function (Upload).
Select the network you wish to make changes in, set the number of minutes by which an alarm is to be
delayed, and now click "Change".
When you have made these changes for all the networks concerned, they are ready for use; but the
time delays will not become active until you have selected the "Enable" field. The Enable field applies
to all networks at the same time.

If you wish to use the function on a network you have not uploaded, but have access to neverthe-
less, write the network number in the field and click "Add". The network will now appear with the text
"Unknown network", but this is only because the programme has no knowledge of the stated network
configuration.

The time indicated for such an alarm will always be the time the AKM programme was received plus
the set time delay. In other words, the time at which the alarm becomes visible to the receiver.

AKM Setup

The functions in the AKM programme are set.
This is done during the installation.
See also the Installation Guide.
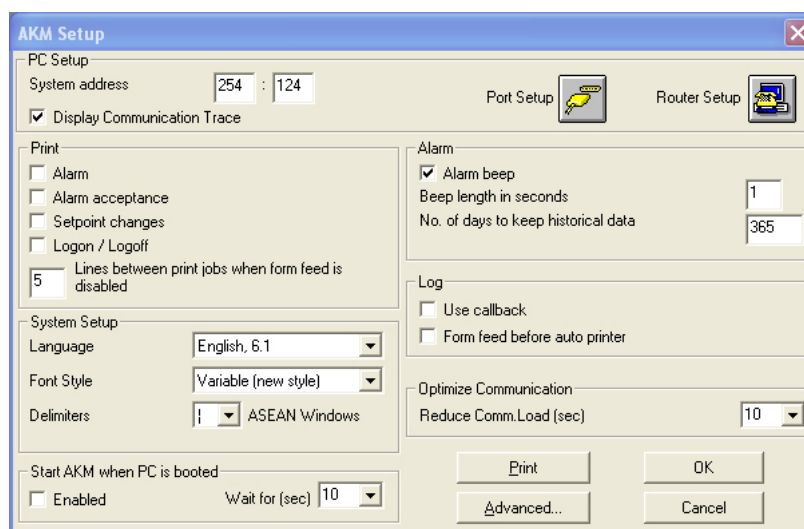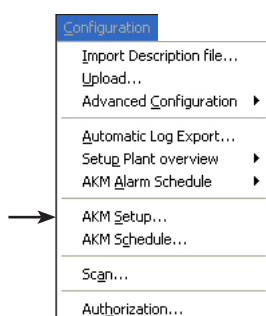
AKM Schedule
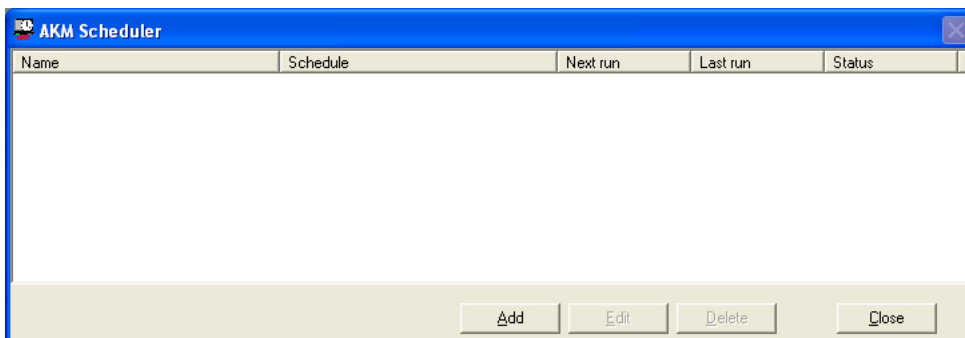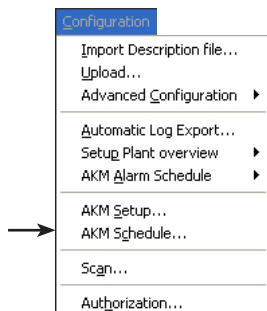
The function is used for starting a function based on time and must be carried out regularly. Export of a log list, for example.

In this display you can see:
- The name
- Text explaining the name
- When the function is to be started next
- When the function was last activated.
- Function status. Normally the text will be "Success", but if the function was not carried out satisfactorily it will be seen here. "Error" will for instance be shown if data collection of a parameter is stopped without the export function having been changed.

Setting
An activity in the schedule must be defined, as follows:
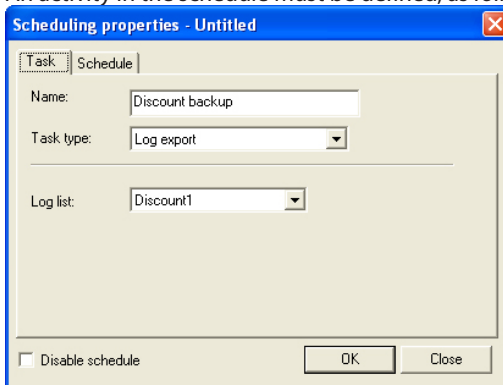
A "Log list" must be defined before it can be selected in this display.
The definition takes place in the function: "Automatic log export".

1. Give the function a name.
2. Select function (at the moment, only the "Log export function" can be selected).
3. Select a list from the bottom field.
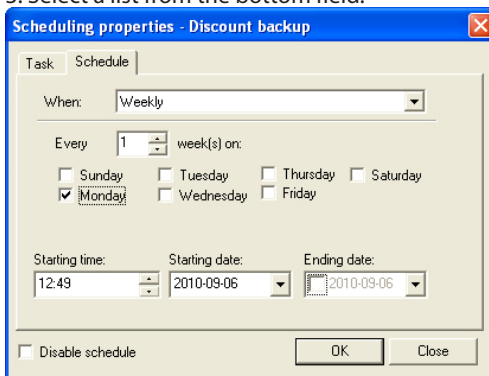
4. Via the other field set how often the function is to be activated and when, if applicable REMEMBER that the period of time between two activations must be the same as the log export list's period of time.
   If a start-up date and/or final date is required, this may also be set.
5. Finish with OK.

If the function has to be stopped temporarily, this can be accomplished by placing a tick in the field at the bottom left.

Scan

Configuration
Import Description file...
Upload...
Advanced Configuration ▶
Automatic Log Export...
Setup Plant overview ▶
AKM Alarm Schedule ▶
AKM Setup...
AKM Schedule...
→ Scan...
Authorization...
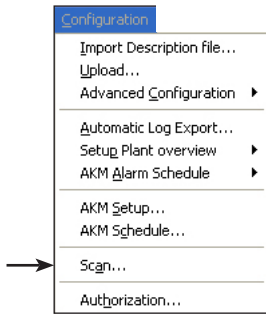
This function checks whether there is a connection to all the AK plants (the gateways, SM, SC, CS etc.) which the AKM programme must have. If this contact is not established, the AKM programme will give an alarm. The control is carried out automatically by the AKM programme and performed at the defined times.
When the scanning function has been started, it is indicated with the following icon:

Network Scan

When scanning is performed via a modem connection, this is shown with a "earth icon". Here you can see which network you are calling.

The function is set and started, as follows:

Setup Network Scan

FrontEnd
Select FrontEnd :   ⊙ AKA   ○ AK-SM   ○ AK-SC

Scan On	Scan time	/ Callback time	Status
00:000:005:125 xxx_yyy_London			

<< Remove   Add >>
Selected / left   1, 0 / 1
00:000:005:120

Next --> 00:000:005:120 Fri Oct 01 14:32:00
Frequency
Scan every ▼   5   Minutes
Day :   Date :   Time :
Sun ▼   1   00   32
Time between retry :   1   Minutes
Retry attempts :   2
30   Seconds delay when busy
Options
Send Alarm as   System alarm ▼
☐ Scan via Callback
☐ Scan Disabed
Print   OK   Cancel

In this field, the system addresses for which the AKM program controls the connection can be seen.
Scan time: Time of the last scan performed and found to be OK.
Status: "-" means that no connection has been established.
     A number indicates the number of scans found not to be OK.

     Next: Here it is displayed when the next scan is performed and for which address.

     Use the "Add" or "Remove" functions for placing the system addresses in the respective fields.

In the bottom left-hand field, the system addresses that are not controlled by the AKM program can be seen.

Below, in "Scan disabled", the scan function can be temporarily disabled without changing the setup.

By click "OK" the new settings are saved and the process is restarted.

- Activate the Front-End that is to be set.
- In the "Scan on" field you place all the system addresses that the scanning function is to control (select, and click "Add").
- In the "Send alarm as" field, set how an alarm is to be sent. There are two options.
  • System alarm
    Here the alarm will appear on the PC with the message "System alarm".
  • Alarm
    With this setting you enable the alarm to be routed on to the receiver defined in the AKM alarm routing function (see Alarm table section).
- In the "Frequency" field you set how often the scanner is to control the relevant system addresses, and when the first scanning has to be performed.

If you also want to check whether the external master gateway can call the AKM programme, select the function "Scan via Callback".

In the key diagram you can see the times when the connection was last controlled and found to be in order.
(Until the first control has taken place, ??????? are shown).

If the scanning function does not obtain contact with the system address at the given time, it will repeat the scanning later toestablish whether there is contact nevertheless. The number of repetitions and the intervals between them are determined by the frequency set for the control. The following applies to the set frequencies:
Hourly: two repetitions at 15-minute intervals
Daily: four repetitions at 60-minute intervals
Weekly: six repetitions at 240-minute intervals (4 hours)
Monthly: six repetitions at 480-minute intervals (8 hours)
Custom defined: An alarm is activated after the final repeat attempt.

In the key diagram under status you can see the number of repeated attempts made without obtaining contact:
AKM programme repetitions / expected callbacks.

If no contact is established at the last repetition mentioned, an alarm will be given about two minutes after the attempt.

Authorization
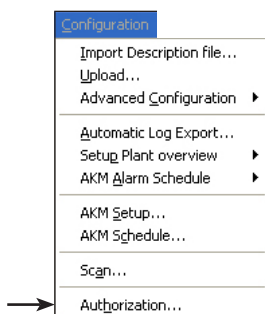
This function is used for establishing new users of the programme and for changing the authorisation of existing users.

1)
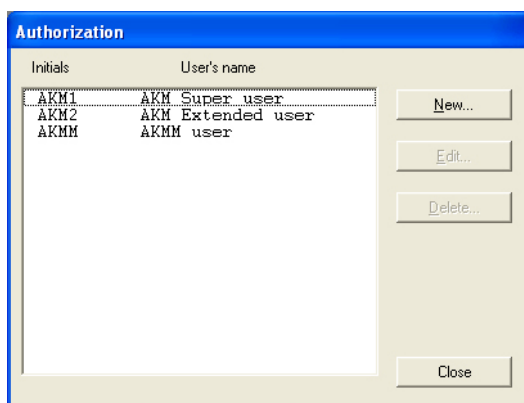
Click "New".

2)
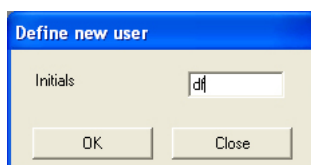
Enter initials of the new user and click "OK".
(Be aware of capital letters and small letters).

3)
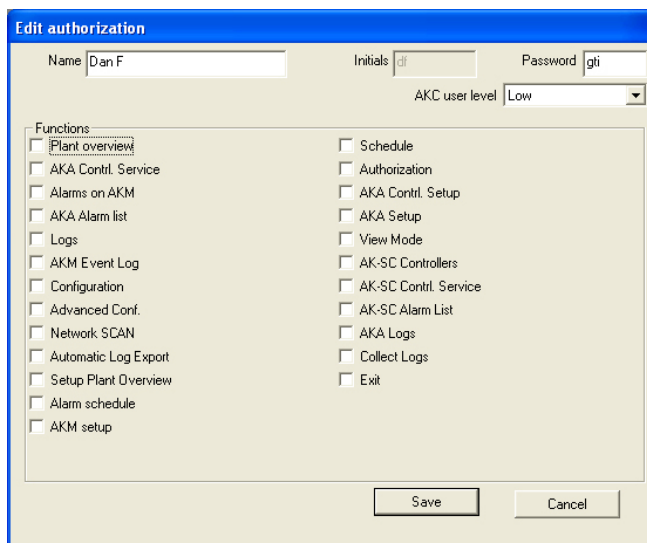
Info

- AKSC Controllers
  Determines whether the user can access the regulators connected to an AK-SC 255.

- AKSC Control Functions
  Determines whether the user can modify the Master Control functions entered via AKA 65.

- AKSC Alarm List
  Determines whether the user can view, accept and clear alarms from an AK-SC 255.

a) Name and Password.
   Enter name and password of the new user (the user may then personally change the password at a later date).

b) Select user level for operation of controllers.
   The user levels for various functions have been defined in section "Advanced configuration" and custom defined files. These user levels can now be used, so that important functions are kept invisible to the users who are not authorized to use them.
   At this point, when you establish the user, you decide how many functions the new user may use when he/she is to operate the system at a later date. E.g. whether a temperature may be set, or whether it may only be read.
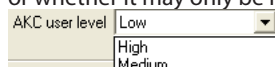
   - "Low" is defined for users who are only allowed to operate a few functions.
   - "Medium" is defined for users who have access to almost all functions
   - "High" is defined for users (e.g. service engineers) who in addition to all the other settings also have to set functions requiring special knowledge.

c) Functions
   Here you select all the functions the user may operate.

d) Click "Save" to save the new user authorization.

AKA

This section contains settings and functions for system unit AKA 245 and controllers connected to this System unit. See manual for AKA 245.

Controllers

The function is used for monitoring and setting parameters in the controllers.
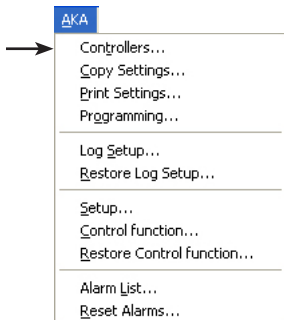
Select a controller (network and address).
The controller's function groups will appear.
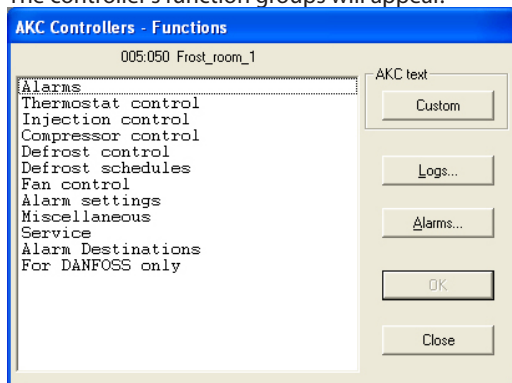
Customs
If user defined texts (Customs) has been defined they will replace the text shown in this and the next display. Otherwise the button has no function.

Logs
The button is described on one of the next pages.

Alarms
The button is described on one of the next pages..
(The button can not be used if came directly from the "Alarm history".)

Select the required function group, e.g.
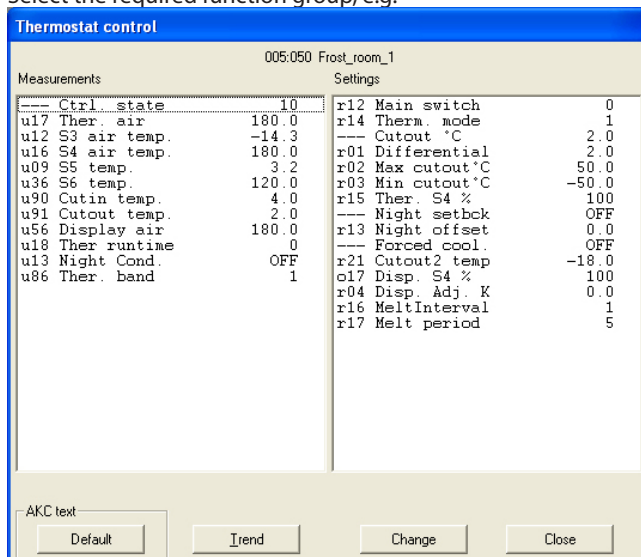
A group has been selected here, where both measurements and settings can be made.

Measurements
The different measurements are constantly updated and can be read in the "Measurements" field. If a graphic display or a data collection of the measurements is required, select the relevant measurements (max. 8) and click "Trend".

The trend function is a simple display following the selected temperatures, but only while the picture is shown on the screen.

On the picture can be seen:
- The period of time during which the measurements are shown (time for full graph width can be set)
    Note! If the time scaling is altered while data are being collected, all collected data will be deleted
    and data collection will begin anew.
- Temperature range for all measurements
- A grid, so that it is easier to follow the curves, (the grid is activated by selecting the "Grid" function
- The different measurements can be shown in colours, (activate the colours by selecting the "Colour"
    function). Numbers are shown in black/white.
- Invert switches black and white in the graph display.
- If the word "Logging" appears at the bottom right of the display, the measurements shown will be
    stored on the PC's hard disk.
- By placing the mouse cursor on one of the curves, and activating the mouse button, the value of the
    curve at this point will be shown in a field under the graph.
- With the "Logs" button, a number of data collection functions can be started that are required in a
    service situation. Data can only be collected as long as the trend function is on. The collected data
    can later be displayed via the function "Curves".

• Give the log a name.
• Set how long the log is to be stored on the PC hard disk. When this period of time has expired, the
    log is automatically cancelled.
• Set when the data collection is to start. (If the starting time is not filled in, collection of data will
    start as soon as "Add" is clicked).
• Set the period data are to be collected.

When the four settings have been made, click "Add", and the data collection can start. There will now
be one data collection for all the parameters selected for the trend function. When the collection
of data has started, this is indicated with an asterisk opposite the log number. If a data collection in
process is to be stopped before the specified time has elapsed, it can be done by click the "Stop" but-
ton. (The word "Add" is changed to "Stop").

Collection of data is discontinued, if you leave the trend function!

Certain log names, for which there is no collection of data, are older files (named "demo" here). If you
no longer wish to store them, select them and remove them with the "Delete" function.

In the "Interval" field you can see how often data are collected. The length of the interval is determined
by a setting in the earlier display for the trend function. There is the following relation between the
two times:

Time scale (min.)	Interval (sec.)
5	2
10	4
15	6
30	12
45	18
60	24
90	36

Settings (from display page 52)
Select the required function:

Functions with ON/OFF setting will give the following menu picture:
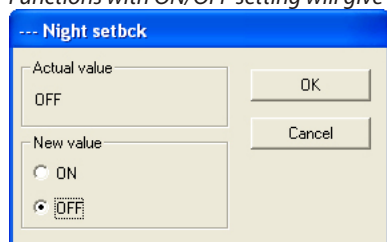
Change to the new setting and click "OK".

Functions with variable settings will give the following menu picture:
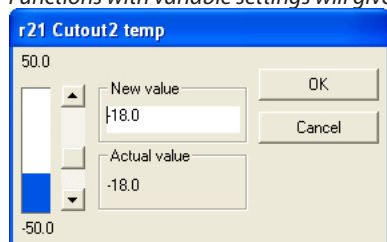
Change the new value. The new value will apply, when you have clicked "OK".

Logs (from display page 52)
You will see a display from the controller that can show which parameters have been defined, so that they can be gathered in a log. (Both started and stopped logs, if applicable, will be shown).
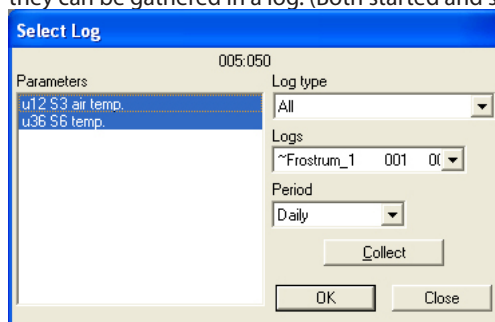
1. Log type
   May be data collection in either the AKM programme or the gateway. Here you may choose whether you want to see logs from one or the other, or from both. The following log types are available:
   All, AKM, front-end, service, authority and trend.
2. Logs
   Select one of the available logs. Now the parameters defined in this log will be shown.
3. Parameters
   Select one or more parameters to be presented.
4. Period
   Select the period of time you want displayed on the screen. If you select "weekly" you may then later advance or move back by weeks in the data collection.
5. Collect
   If you want to include the latest data in the presentation, you can do this by click "Collect". When the data have been obtained, you can have them presented.
6. OK
   When you have selected one or more parameters for presentation, you can click "OK". The log presentation will now be shown.

In this display you can study the collected data in more detail.

- "Print" enables you to print out log data in either curve or table shape.
- "Setup" enables you to remove/change the grid, to change between colours and black-and-white, and to indicate measuring points.
- You may use the "Zoom in" function when you want to have a closer look at a specific area.
- With the "Page up" and "Page down" buttons you can move up or down in the log data.

Alarms (from display page 52)
If the selected function is "Alarms", a menu will appear that shows the active alarms.
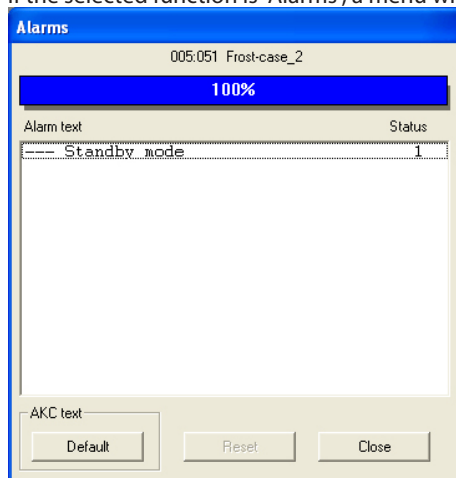
List of status messages:

Status	AKC, AKA
1	Alarm, Master gateway relay operating
2	Alarm, Master gateway relay not operating
3	Alarm, Master gateway relay not operating
0	Cancelled

Alarms may be cancelled one by one: select one and click "OK". The alarm message will now appear, e.g.:
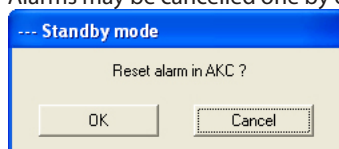
Click "OK" to accept.

Copy Settings
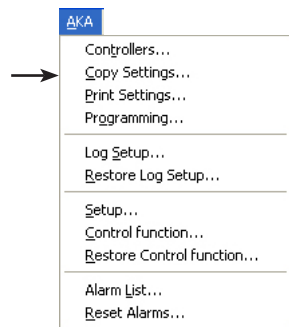
The function copies set parameters from one controller to another controller **of the same type and with the same software version.**

AK controllers with extension modules must be treated differently. The function here will only copy a limited part of all settings.
To copy between these controllers Service Tool AK-ST 500 has to be used.

Note! As large amounts of data are exchanged during the copying process, there may be a waiting period of up to three minutes before the programme is ready for use again.

There are three ways of copying a set of settings:
1) from one controller to a file in the PC
2) from one controller to one or more controllers
3) from a file in the PC to one or more controllers
Select one of the three options in the "Option" field.

1) from one controller to a file in the PC
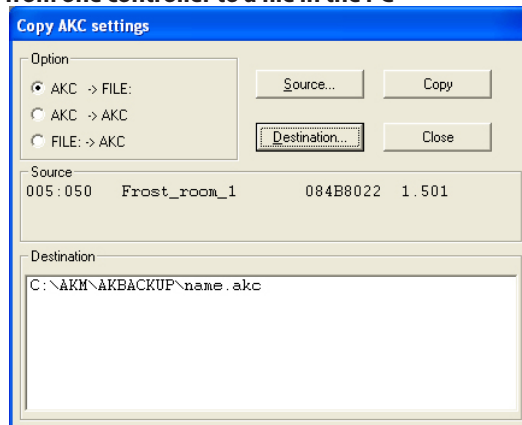
Select AKC -> FILE in the "Option" field.
Click "Source" to select the controller from which the parameters are to be taken.
When the selection has been accomplished, the relevant controller's address, name, code number and software version will be shown in the "Source" field.

Click "Destination" to indicate where the parameters have to be copied.
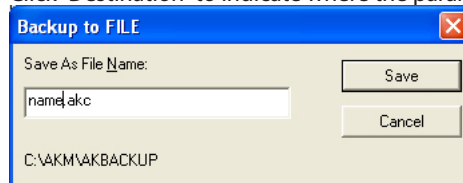
Type in "NAME.AKC", and click "Save".
Drive and name will now be seen in the "Destination" field.

When the two fields "Source" and "Destination" have been established, click "Copy", and copying will commence.

2) from one AKC controller to other AKC controllers
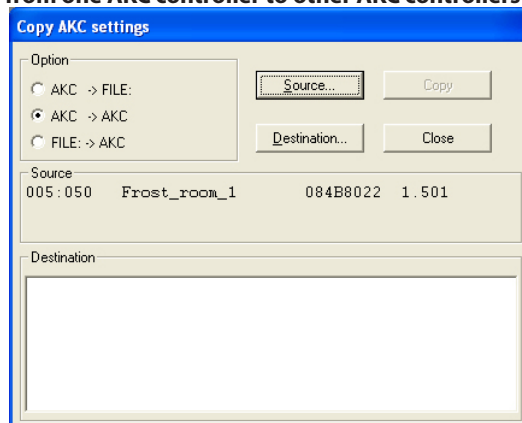
Select AKC -> AKC in the "Option" field.

Click "Source" to indicate the controller from which the parameters are to be obtained.
When the selection has been accomplished, the relevant controller's address, name, code number and software version will be shown in the "Source" field.

Click "Destination" to indicate where the parameters have to be copied.
After the selection, the relevant controller's address, name, code number and software version will be shown in the "Destination" field. Several addresses may be shown in the "Destination" field, before copying is started.

When the two fields "Source" and "Destination" have been established, click "Copy", and copying will commence.

3) from a file in the PC to controllers
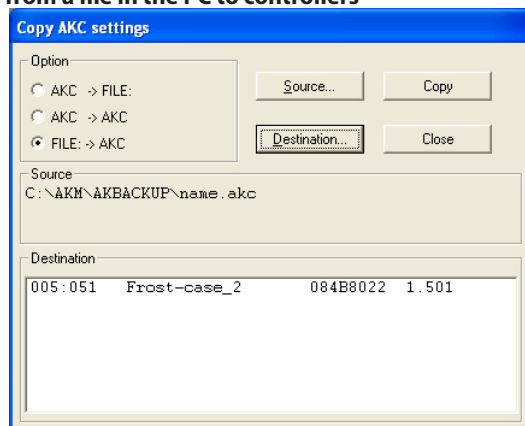
Select FILE -> AKC in the "Option" field.
Click "Source" to select the file from which the parameters are to be obtained.
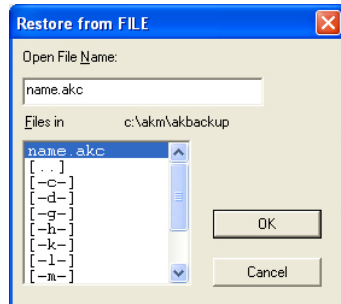
After the selection, the drive and name of the file in question will be shown in the "Source" field.

Click "Destination" to indicate where the parameters have to be copied.
When the selection has been completed, the relevant controller's address, name, code number and software version will be shown in the "Destination" field. Several addresses may be shown in the "Destination" field, before copying is started.

When the two fields "Source" and "Destination" have been established, click "Copy", and copying will commence.

Print Settings

The function obtains settings from the selected controller and shows them on the screen or transmits them to the printer.
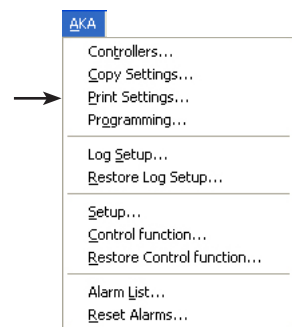
Select one or more controllers.
After the selection, the controller's address and name will be shown in the upper left field.
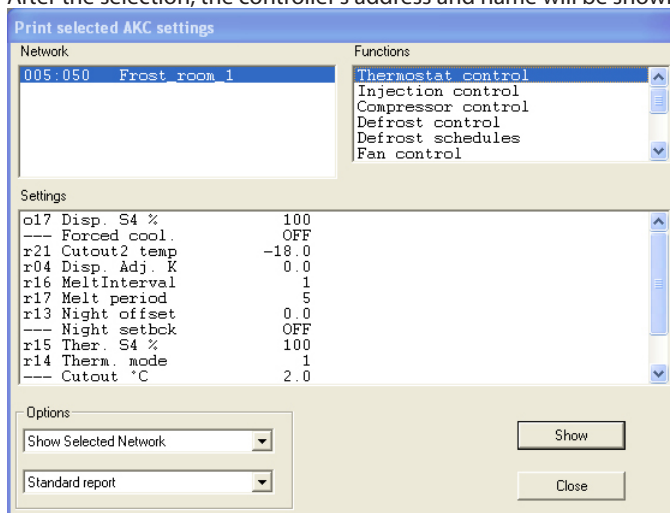
At the bottom of the picture you select whether the settings are to be shown or printed. (display selected here).
A printout can be selected either for a standard report or a compact report. The standard report will provide data in one column, and the compact report will show data in several columns. The number of data will be the same.

Programming
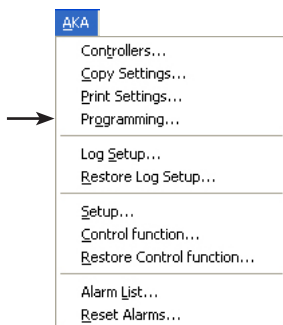
The function is used for making all the settings for a controller before the controller is installed.
The settings are stored in a data file which will later be copied into the relevant controller.

The procedure is as follows:
- Before programming is commenced, the AKM programme must be connected to a network with the relevant controllers and the relevant software versions
- Carry out a complete upload. The AKM programme will then make a description file for the controllers in question. (You are now able to continue your work with the file without there being any connection to the controllers)
- Perform a programming, as described in the following section
- When the programming has been completed, store the file with a name
- Copy the file to a USB key
- Copy the file's data from the USB key to the new controller via the "Copy settings" menu. (two previous functions)
- Carry out a new upload on the other system, so that the AKM programme on this system too knows the controller's data (code number and software version)
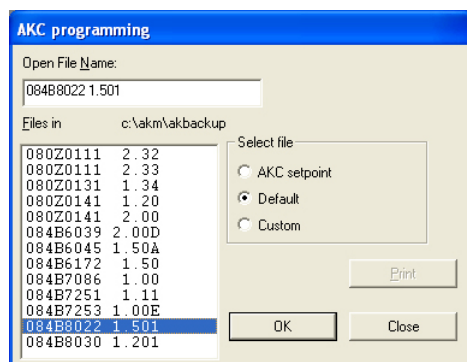
Print
To print out a given file, select it and click "Print".

Now select the controller (file) to be set.
Your decision will depend on the file on which the setting will be based. This decision is made via the "Select file" group:

"AKC setpoint" is selected when programming has earlier been made via "Default" or "Custom". The stored file can now be reopened, after which corrections can be made. When the new settings have been entered, the file is stored with its earlier name (if it is a revision), or with a new name if a copy is required with the corrections made. (If the file is given a new name, the original file name with the original contents must be kept).

"Default" is selected when the function is used for the first time, and a custom file has not been made. Select a code number with the relevant software version.

"Custom" is selected when a custom file has already been made via the "Edit custom file" menu. This custom file may for example contain language-defined texts or other information entered by the user.
Collection can only be performed from one network at a time. Select the name of the relevant file.

When a file has been selected, click "OK", and programming can be made.
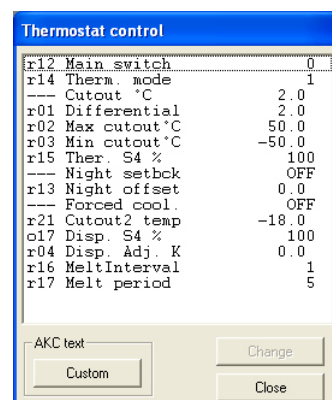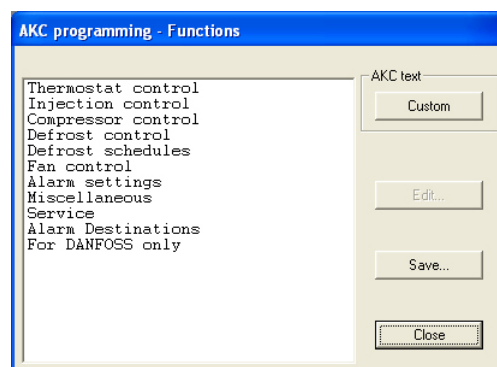
Go through the individual functions now and make the required settings. When all settings have been made, click "Save".
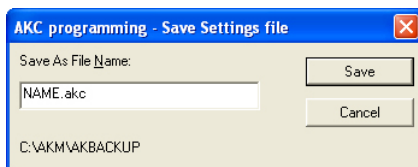
Indicate the name of the file, e.g. "NAME.akc", and click "Save".

If no new path is indicated, the file will be stored as shown at the bottom of the menu picture. The file may now be uploaded by selecting the function "Copy Settings".

Log Setup
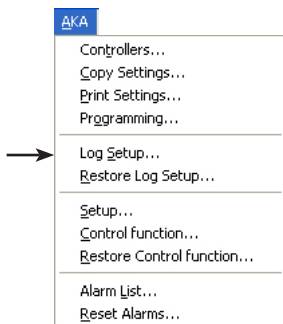
Two types of logs can be defined. In principle it does not matter which type is selected, but the decisive thing is whether the PC is switched off for periods of time, or whether the AKM programme is stopped. If that is the case, select the type where data collection takes place in the master gateway.

- Collection of data in the PC
This type will from now on be called "AKM_Service_logs". It is therefore a requirement that the PC is switched on and in constant touch with all the controllers. Neither the AKM programme nor the PC, must be stopped. Collection can only be performed from one network at a time.

- Collection of data in the master gateway
This type will from now on be called "AKA log". This type collects data in the master gateway, where the data are stored for a defined period of time.
All data will at suitable intervals be transferred to the PC (the programme itself calculates when transfers are to be made but only if the "Auto collect" function has been selected). If you wish to determine when the transfer is to take place, e.g. on a given weekday, you can set this via the "AKM Setup\Advanced" menu. (Remember to set the time period in the gateway high enough for it to contain all the data before the transfer takes place). **(Select 210 hours to obtain one week** (210 x 80% = 168))).
If the PC is switched off, for example during a weekend, the programme will start picking up log data about one minute after the programme has been re-started.
(Please note: If the network contains both a PC gateway and a modem gateway, the modem gateway should be the master on the network. In that case the data communication will not be disturbed unduly when large amounts of data are sent out on the telephone network).

Log setup
This function
- defines new logs
- makes alterations in existing logs
- starts and stops data collection (log on/log off)
- update a created log or a new log in a master gateway

1) Start function
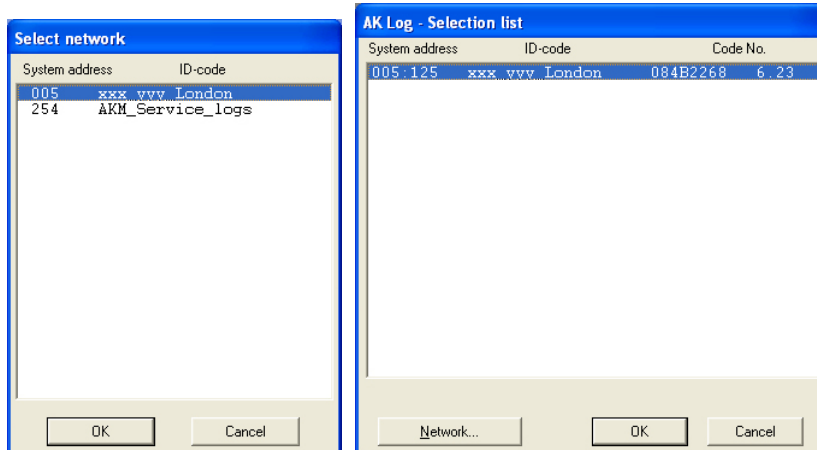
Indicate where to collect data:
Address xxx:125 is in the master gateway
AKM Service logs is in the PC

2) This display appears if a log is located in the master gateway:
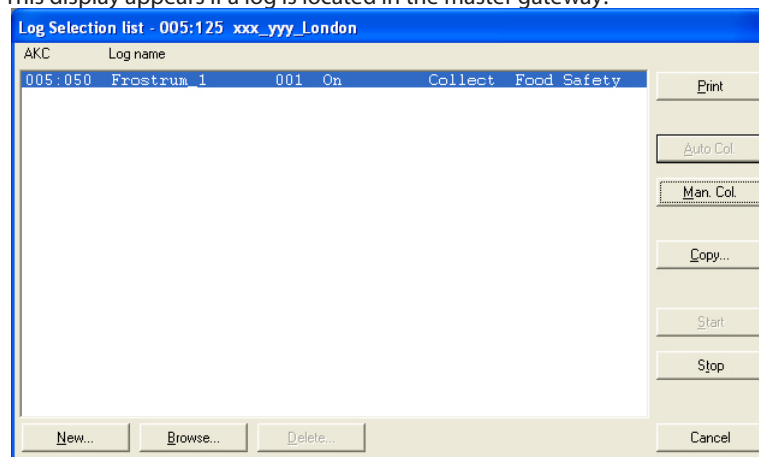
Click "New".

3) Select controller
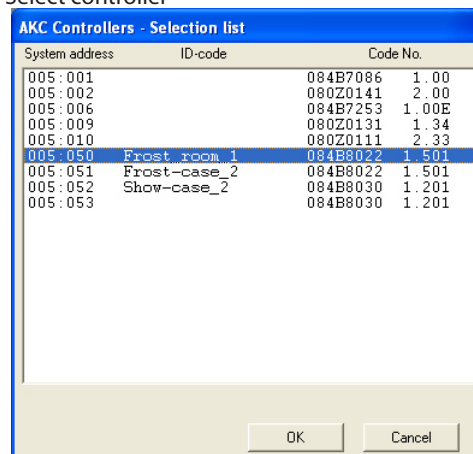
Select the controller from which data has to be uploaded.

4) The log can now be defined.
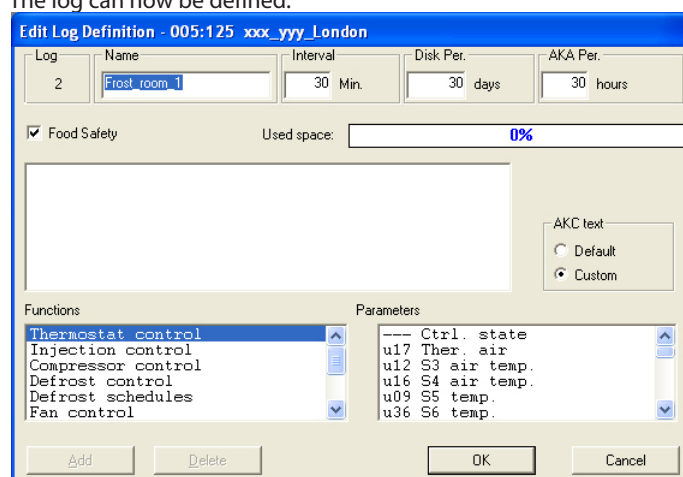
a. Start by giving the log a name

The ID code is automatically proposed, but the name can be changed, if you wish.

b. Set the intervals

The time can be set between 1 and 240 minutes for service logs, and from 15 minutes and up for authority logs.

c. Select Disk Per. time

This is the period of time the data have to be stored on the PC hard disk. They may be stored for up to 365 days for all types of logs, but the minimum storage time differs and is determined by the type of log in question.

Important:
When data become older than the set time, they are deleted (they disappear for ever), and they can no longer be displayed or printed. You must therefore set the time, so that data are present when you want to have them displayed or printed.

d. The next three points are not visible at "AKM service logs":

1. AKA Per.

This is the period of time the data has to be stored in the gateway. Data can be stored for as long as 250 hours for service logs, and for as long as 960 hours for Food safety logs.

Important:
When data become older than the set time, they are deleted (they disappear for ever), and they can no longer be displayed or printed. You must therefore set the time, so that data are present when you want to have them displayed or printed.
If data is downloaded to the PC, the PC and the programme must therefore never be switched off for a period that is longer than the set AKA period.

2. Selection in Food Safety

When a selection is made in the "Food Safety" field, the log will be defined as a food safety log and the lower interval time cannot then be set below 15 minutes. If no selection is made anyway, the log will be established as a service log in the gateway - a Servicelog.

3. Used space

Shows in % how much space has been reserved for the defined logs (one log definition may max. take up 25%).

e. Now select the type of text to be shown for the controllers.
   - Select "Default", if the original text in the controllers is to be used.
   - Select "Custom", if a number of user-defined texts are to be used.

f. Now select a function group, and after that the measurement or function to be logged.

Shown to the right are the parameters (measurements and functions) you may choose between.

g. The various measurements and functions are selected by click "Add".

Up to 13 parameters can be selected in each log definition.

5. Save this log definition by activating "OK".
   The newly established log will now be shown in the earlier display:
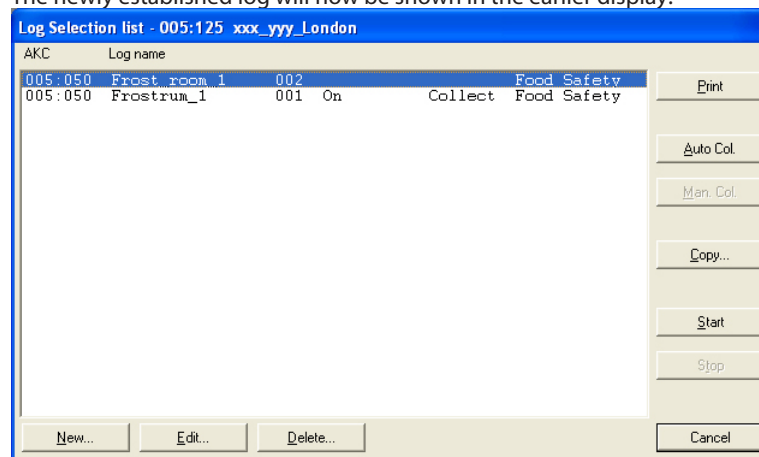
6. If there are several logs to be defined, point 4 can be repeated. However, if they are logs for the same
   type of controller and the same software version, the succeeding logs may be defined by means of
   a copying function.
   Select a log and click "Copy".
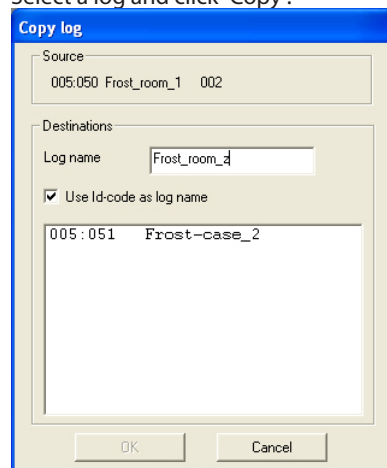
   a. The earlier log is seen at the top.
   b. In the centre field you write the name of the new log, or you put a tick against it in the field "Use
      Id-code as log name". The general rule is that if you select one controller for this log, the log must
      be given a name. But if you select several controllers for this log, a tick in the ID code field will
      provide separation of the individual logs.
   c. At the bottom you select the controllers the new log is to belong to.
   d. Finish by click "OK".

7. When the different logs have been defined, it is possible to:

   - Start and stop
     If data are to be collected, the log must first be started. Select and click "Start". The word "On" on
     the line indicates, that data will be collected.

   - Activate auto collect
     Before a collection of data can be stored on the PC hard disk, the data must be obtained from the
     gateway. This can be done automatically.
     Select the logs to be obtained and click "Auto Col.". The word "Collect" on the line now indicates
     that the data will be picked up automatically at least once a day.
     See the installation guide. Here it can be defined when the data is to be collected.

     The data can also be obtained manually, e.g. in service situations, where the most recently col-
     lected data must also be included (data collected since the last automatic transfer).

You do, as follows:

Right-click the icon AKA Log in the process line and then click "Manual collect.".
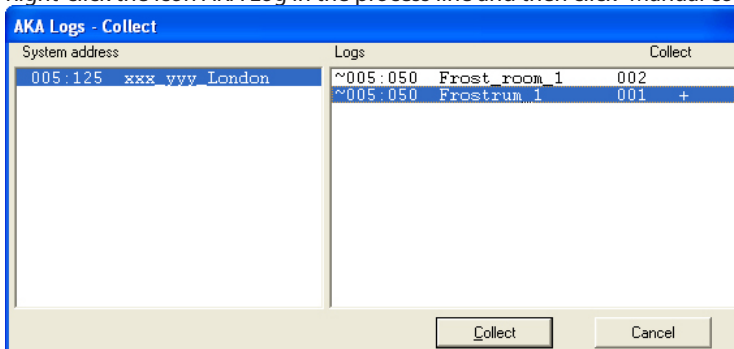
- Make printouts
  With a click on "Print" the log's definitions are printed, i.e. the parameters collected (several logs may be selected for the same printing operation).

- Perform editing
  Select the relevant log and proceed with "Edit". The required changes can now be made (the collection of data must be stopped, when the log has to be edited).

- Make deletions
  If a log has to be removed completely, select it and click "Delete". (The log must be stopped, with "Man. Collect").

Logdata from AK-SC 255, CS and SM
To collect logs from one of the named front-ends, the log setup must be made on the actual unit. See the respective manual.

Once the log set-up has been performed, log data can be retrieved for AKM.
When the log collection function in AKM has been started, it will be shown at the bottom of the display. See the information here to the right.

The steps below define how the function retrieves logs for AKM:

The function can be selected in the process line/ AK-SM / SC log

Info
Once logs have been set up in e.g. AK-SC 255, they can be collected in AKM and saved for later use.
When log collection is under way, it will be shown at the bottom of the display in the process bar:

You can view it by right-click on "AK-SM/AKSC log" and selecting the AKSC Log Collection function.
Here you can retrieve the log set-up for the selected plant.
Here you can set the AKM to automatically retrieve logs (according to the AKM's advanced settings that have been saved), to manual retrieval, to erase log lists, etc.

Info
Logs for both I/O points and for the regulators connected to AK-SC 255 are displayed.

Log retrieval
Here the user can set the AKM to automatic or manual log retrieval.

Select the plant in question to activate automatic log retrieval. Next, select the relevant logs and press the "Automatic" button.
The selected logs will then be indicated by a "+" sign.

Manual log retrieval
To manually retrieve log data, the plant in question must be selected. Next, the relevant logs must be selected. Finally, press the "Collect" button.

Food Safety
If the log is an authority log, it must be marked here.

1. Select plant (based on those previously defined)
2. Press "Upload" to load the set-up as it was performed in the AK-SC 255 unit.
3. Select the readings to be retrieved.
4. a) Automatic retrieval: press the "Automatic" button
   b) Manual retrieval: press the "Manual" button

Restore Log Setup
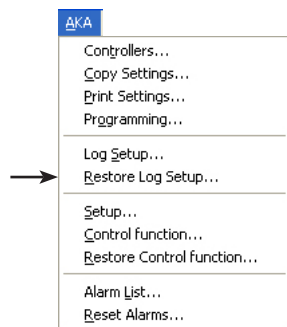
This function is used for adjusting a log setting in a master gateway. The function may for example be used in systems where an additional AKM programme (for service) is connected, from which short-term changes of the log setting can be arranged. When the service has been completed, the earlier log setting can be restored with the function. Or the function may be used, if the master gateway is to be replaced (when the programme is updated).

When the restore function is used, the exciting log setting in the gateway will be deleted and replaced by the log setting known by the AKM programme from where the restore function is started.
If data has been collected, they will also be deleted.
If the collected data are to be stored, they must be transferred from the gateway to the AKM programme (the service version) **before** the restore function is used. (activate the icon for the AKA log and perform a manual collecting)
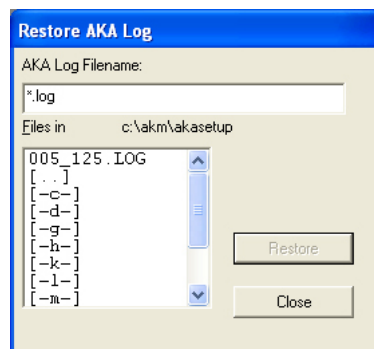
Select the "system address log" that applies to the gateway in question and click "OK".

Note!
The log collection known to the AKM programme must be 100 per cent identical with the entire network to which the "Restore" function is addressed, to ensure that the individual log setups can be delivered. If it is not, the log setup for a missing controller will be lost. This will happen if the controller is turned off, or if a software version in it has been changed.

Setup
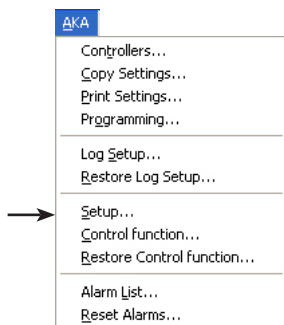
The function is used for the setup of AKA gateway's.
By means of this function you set:
- The clock function in the gateway
- Printers that are connected to a gateway
- Router tables enabling the different gateways to send information
- Port setup in gateways (speed of data communication etc.)
- Configuration of inputs and outputs DI 1, DI 2, DO 1 and DO 2
- Alarm receiver (receiver definition of alarms from controllers)
In addition to settings, setup and communication events can be read.

Select a network and continue to the next display.
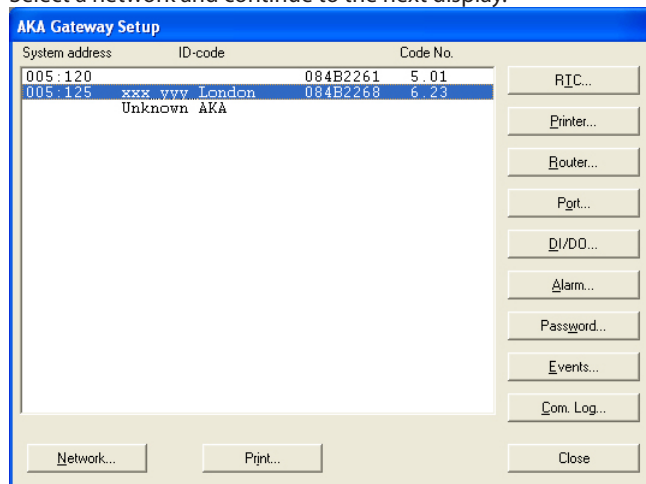
Hereafter select a gateway on this network and continue with one of the following settings:

Setting of clock function (RTC)
(It is only necessary to set the clock function in a master gateway. All other gateways, if any, have their clock function set automatically from the master).
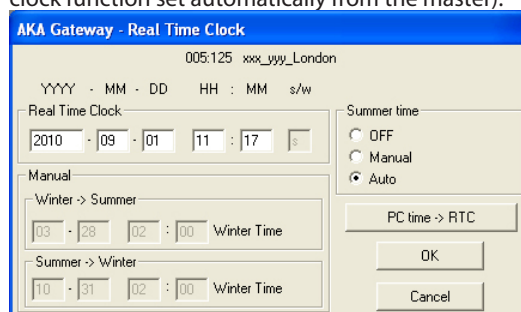
On entering the picture data is obtained from the relevant gateway. This is the following: year - month - day - hour - minute - summer/winter setting.

Summer time
Set selection of "Summer time" function in this field.
OFF: Clock function not provided with change-over to summer time
Manual: If this function is selected, the times of the change-overs must be set in the "Manual" field
Auto: Automatic adjustment of the clock is performed on the following days: last Sunday in March and last Sunday in October

PC time -> RTC
When this button is activated, the PC's time setting will be used in the "Real Time Clock" field.
If the PC time is incorrect, it should be set. "Control Panel" can be used for the purpose.
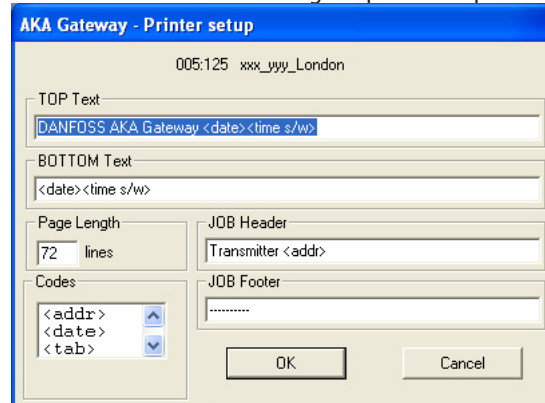
The times shown are transmitted to the gateway, when "OK" is clicked.

Note! On a network is it the master gateway that synchronises the clocks in the various controllers connected to that network. It is also the master gateway clock function that time-stamps alarms and messages received by all controllers on the network.

The functions controlled by the AKM program are time-stamped with the PC time, e.g. the time of a printout and the time of an alarm receipt.
(PC time and gateway time should always be maintained identical).

Printer
This function is used for setting the printer output for printed messages.

"Top text" indicates the text at the top of each page of printed paper. The text can consist of both fixed and variable text, such as date and time.

"Bottom text" indicates the text at the bottom of each page of printed paper. The text can consist of both fixed and variable text, such as date and time.

(The printed pages will not be given a page number. If date and time are selected for both "Top text" and "Bottom text", you will be able to read several printed pages in their correct sequence).

"Page length" indicates the number of lines on each page.

"Job header" indicates the text at the start of each message. E.g., a fixed text with the word "Sender" plus a variable text consisting of the address.

"Job footer" indicates the text at the end of each message. The text can consist of both fixed and variable text. An excellent way of separating messages is by putting a line (_____) between them.

"Codes" indicates the functions to be entered in the above mentioned fields.
<time>   = hour
<time s/w>   = hour with summer/wintertime indication
<date>   = date
<addr>   = sender's address
<tab>   = tabulation (six spaces)
For example, a code can be inserted in the following way: Using the mouse, double-click on the required code and then move the cursor to the position at which the code must be placed. Install the code with a single click.

When "OK" is clicked, the entered data are stored in the gateway.

Example of printer setup:
Top text: Danfoss AKA gateway <date><time>
Bottom text: <date><time>
Job header: System address <addr>
Job footer: -----
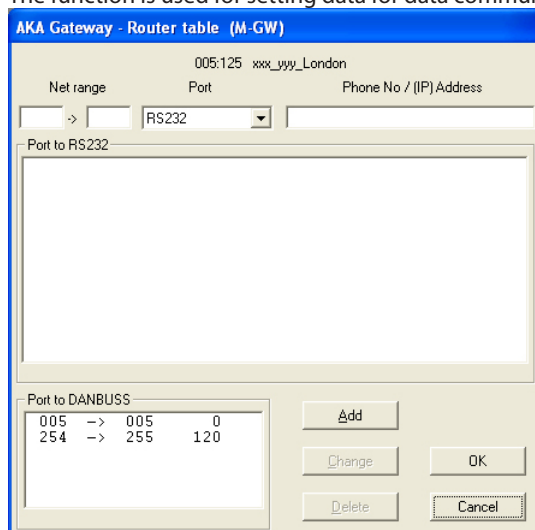
Router (Router setting performed at installation; see installation guide.)
The function is used for setting data for data communication to and from a AKA gateway.

The menu is divided up into three main sections:
At the top, after the address of the selected gateway, there is an editing field for the addressing range.
Established router lines for RS232 communication are shown at the centre. Established router lines for DANBUSS communication appear at the bottom.

Choose between the following:
1. Establish new router line
   Fill in addressing range (from network xxx to network yyy).
   Define the communication line (select RS232 or DANBUSS).
   Enter an address, a telephone number or an IP address in the next field (a PC gateway with an address, a modem gateway with a telephone number, a server with IP address).
   Click "Add", and the entered data will be transferred to the centre/bottom field.
   Click "OK", and the information will be sent to the gateway.
   If a router line is set with control panel type AKA 21, an alarm message will appear, if the setting does not cover the whole network.
   xxx:001 to yyy:125 will be the correct indication of a router line.

2. Update existing router line
   Select the router line in the centre or bottom field. The line will now become visible in the editing field at the top.
   Perform the changes.
   Click "Change", and the entered data will be transferred to the centre/bottom field.
   Click "OK", and the information will be sent to the gateway.

3. Delete existing router line
   Select the router line in the centre or bottom field. The line will now become visible in the editing field at the top.
   Click "Delete", and the line will be removed from the centre/bottom field.
   Click "OK", and the information will be sent to the gateway.

Port
This function is used for setting the gateway ports (DANBUSS and RS232).

Port to RS232
Enter baud rate and lifetime, if any (lifetime is used for modem and ethernet connections and is the time the line is kept open without any communication on it).
Baud rate for the connected unit must be set to the same value!

The three fields with IP addresses and the Subnet Mask are only used if data communication takes place via the Ethernet (see installation guide).

The "Initiate String" field is used for initiation parameters for modem and ethernet connections. See the modem or server manual for further particulars. A typical setting of initiation parameters is shown in the field.

Port to DANBUSS
Enter address and baud rate ("Address" is set with the same value as that of the gateway address/DAN-BUSS operates with 4800 baud). Click "OK", and the information will be sent to the gateway.

DI / DO
The outputs have been factory-set, as follows:
DI 1:   Reset signal. Used when a printer is connected to the gateway
DI 2:   Switch function. Used when manual alarm routing change-over is employed
DO 1:   Relay function. Used for supply voltage, if a modem is connected
DO 2:   Alarm relay output. If the gateway is to be connected to an alarm horn
Only in special cases will it be necessary to change the settings.

The functions work this way:
DI
    Printer Reset
        The input is used for giving a signal when the paper is in place in the printer.
    Optional alarm schedule
        The input is used for manual change-over between the gateway's alarm destinations "Default" and "Optional".
    Power failure monitoring
        If the gateway registers missing voltage at the input, it will cancel <u>all</u> alarms which it is capable of receiving via the DANBUSS connection. The function also requires that you key in a time from 5 to 240 minutes. If this time is passed, and voltage is still missing, an alarm will be transmitted about the missing supply voltage.
    Alarm Relay hold reset
        Pulse pressure is connected to the input. Pressure will reset the relay when it has been activated.
    External DI alarm
        The input is used to receive signals concerning alarms from another unit.

DO
If the gateway is set to modem gateway, DO 1 will be locked, so that the output can only be used for supply of voltage to the modem.
If the gateway is set to PC gateway, DO 1 may be selected on a par with DO 2.

None
The output is not used.

Alarm reporting
With this setting the relay will be activated when there is an alarm. Select furthermore whether all alarms are to activate the relay, or whether you want to opt out alarms with a special status.

External watchdog
With this setting the relay will be vacillating with the set time period. It will then be up to other controls to register that the gateway is "alive". The relay will stop vacillating, if the gateway cannot get rid of the alarms. You must also set how many unsuccessful attempts will be required before the relay is to stop vacillating (with setting = 0 the relay will always be vacillating).

Alarm Relay hold
The relay is activated when an alarm is received with a selected status. It shall remain so until the reset function is activated.

Print only alarm status
When a printer has been connected to the gateway the alarms arising will be printed by it. Here you can select whether all alarms are to be printed, or whether you want to opt out alarms with a special status.

Alarm
The function is used for defining handling of alarms in the AKA gateway
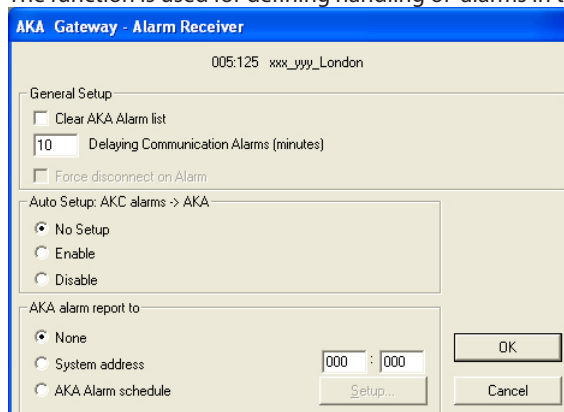
All controllers that are or will be connected to this network will be subject to the settings in this picture.

The picture contains five functions that are all transmitted to the gateway when "OK" is clicked. **In order not to disturb new alarms that are only caused by the operation of the menu, the five settings should be considered very carefully.**

The five functions are the following:
1. Delete alarm list in gateway ("Clear AKA alarm list")
   The gateway contains an alarm list with up to 250 alarms. This list can be reset by selecting the field.

2. Delaying communication alarms
   Here you can delay a communication alarm by up to 240 minutes. The function is only possible in gateways with software version 5.1 or later.

3. Force disconnect on Alarm
   If you require shutdown of an active connection to allow an active alarm to be transmitted to another destination, mark the field with a tick.

4. Setting of two menus in AKC controllers ("Auto setup")
   If "Auto setup" is selected in pos. **"Enable"**, the gateway will set the following values in all connected AKC controllers on the network:
   - The AKC menu "System address" will be filled in with the network's own number and with the AKC controller's own number

- The AKC menu "Alarm report to" will be filled in with the gateway's own system address
When this setting is selected, the master gateway will also carry out the mentioned settings each time it is switched on.

If "Auto setup" is selected in pos. **"No setup"**, the gateway will not change the setting of the AKC controllers. A change can only be made on each individual AKC controller.
During service the setting must always be put in pos. "No setup"! - Remember to change back the setting when the service has been completed.

If "Auto setup" is selected in pos. **"Disable"**, the "System address" and "Alarm report to" settings in the AKC controllers will be removed.

Note! This function can only be carried out, if the connected gateway is the network's master.

Consequences
When the menu picture is abandoned, it can be done with one of the earlier mentioned settings. Depending on the selected setting, the following will apply:
"Enable" has been selected! Here the alarms will immediately be released for transmission when a new controller is connected to the system or there has been a power failure.
"No setup" has been selected! Here the AKC controllers will retain their alarm setting after a power failure. With this setting, alarms in newly connected units will not be released for transmission.
About two minutes after the selection of one of the routines "Enable" or "Disable" and a click on "OK", the programme will be released again, and you may now select "No setup". Finish by click "OK".

5. Retransmit alarms ("AKA alarm report to")

General
The gateway receives alarms from defined units and stores them in the alarm list. In addition to being stored in an alarm list, a received alarm can also be sent on to an indicated address. A retransmitted alarm will also appear in the receiver gateway's alarm list, to which it is addressed. All alarms are sent on, and if the gateway's alarm relay is to be used, alarms with status 1 will activate it (software-based, see Appendix C).
As the alarm list can only contain 250 alarms, the oldest alarms will no longer be registered.
If the gateway is set to retransmit alarms, there may be problems if the receiver is not able to receive them or acknowledge receipt of them. As the gateway's alarm list only contains 250 unacknowledged alarms, new alarms, over and above the 250, will not be registered (the most recent alarm will be "Alarm list overflow").

"None"
If the "None" setting is used, the alarm will only be found in the alarm list.

"System address"
With the "System address" setting, the alarm will be retransmitted to the set address.
If the network address is set at 000:000 or NNN:125, the alarm message will be transmitted to the printer that is directly connected to the gateway.

"AKA alarm schedule"
With the "AKA alarm schedule" setting the gateway will be able to route alarms to different receivers on its own. The routing will depend on the time schedule that has been entered. The time schedule is entered by click "Setup".

The receiver of alarms is defined as primary receiver ("Primary"). If the system cannot get in touch with this receiver, the alarm will be sent to an alternative receiver ("Alternative"), if one has been indicated. Whenever there is an alarm, information is also sent to the address indicated in the "Copy" field.

There is a DO relay output on the master gateway that can be configured for alarm reporting (factory setting = DO 2). If this relay is to be activated in connection with important alarms (status = 1), field "DO" must be selected. (The importance of the alarms is set in every AKC controller. This can only be done via the menu "Controllers"-"Alarm destinations").

A change between the two destinations "Default" and "Optional" can be made in two ways:

1) Manual change
   Activation of the master gateway's input DI (that has been configured for manual change-over, factory setting = DI 2) will produce the effect that "Optional destinations" will be used.
   The "Manual" field will show the status of the DI input. A cross in it will show that the function is active.

2) Time-based change (gateway-time)
   By means of the "Start" and "Stop" fields you define the times when "Optional destinations" are to be used. When the times have been defined, click "Add", and the time interval will be shown.
   Repeat the procedure until all times have been defined.
   Please note the required setting for the night between Sunday and Monday.

   If an interval has to be changed, select the line, change the time, and finish by click "Change".
   If a line is to be deleted, select the line and click "Delete".
   When the setup has been completed, click "OK", and in the next picture you have to define the type of the various alarm recipients.

Note!
If you set the function in such a way that a master gateway transmitting alarms to a printer on another gateway or relay output configured for alarm reporting will not be activated on that gateway.

Here you see the different destinations and their type.
Alarm: The receiver here is an AKM or the alarm-handling function of a master gateway.
AKA gateway printer: The receiver here is the printer connected to the relevant gateway.
Unknown: - the receiver is a gateway and no printer has been connected to it
                 - if it is an AKM unit which has not been installed
                 - AKM is not known in all gateway router lines
                 - AKM is unable to identify the type
                 If the message "Unknown" is displayed, the setting must be changed to a correct
                 type.
              Click "OK" to approve the setup.
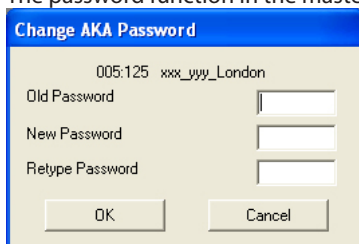
The selected settings are sent to the gateway when "OK" is clicked in the first alarm receiver display (AKA alarm receiver).

Password
The password function in the master gateway can be set here.

Factory-set access codes:
Extended access code = 40. This will give access up to and including the menu section "TIME SETTINGS".
Service access code = 99. This will give you access to the whole unit.

In connection with a new setup where there is no password in the gateway, a "blank field" will   be the required setting.
If the password has to be removed from the gateway again, the new password will likewise be a "blank field".

Events
Here you can display the date, time and system address of the last setting made on the basic setup.

Com.Log.
Here you see the date, hour and system address of the communications made to and from the gateway.

Print
When you click the button "Print" in the "AKA Gateway Setup", a list will be printed of the various settings made for the functions in question - RTC, Router, Port; and Alarm.
The function will provide you with a complete list of the settings and may for instance be used for technical support.

Control function
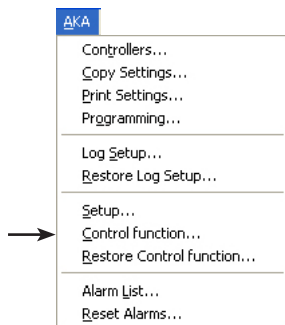
You can use this function if you require that the AKM programme is to provide master control of the following functions:
- Injection on
- Alarm Limit offset
- Alarm limit
- Central Defrost
- Day/Night control
- Suction pressure optimization
- Yearly time schedule

These functions are described in Appendix N.

Principle
The following display will be the first one you encounter when you have selected "AKA control function" and have chosen the network on which you are going to perform the settings.
- The network number will be seen at the top left. The address will always be 125 as the function is only present in the network's master gateway.
- On the left-hand side you can see how much of the space available for definition of override functions you have used.

Examples of override functions are shown on the display.
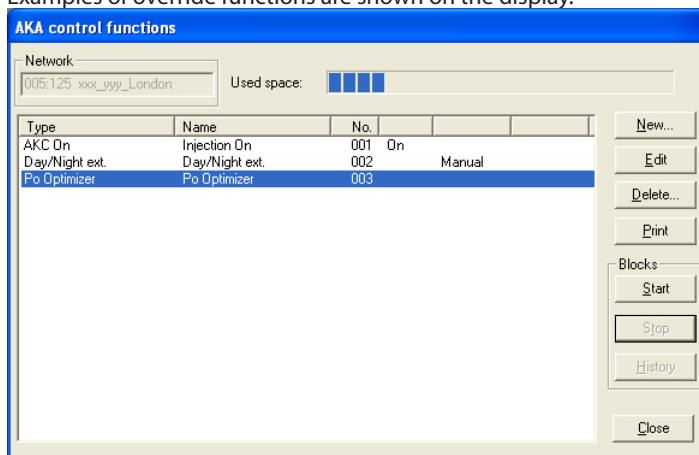
Type: Here you see the type of override that has been defined.
Name: Here you see the name selected during the setup.
No: This is just a serial number indicating the sequence in which the individual overrides have been defined.
On: If ON is shown on a line, the override has started.
Manual: If Manual is shown on a line, the function is force-controlled (see the respective function).
Start: When you have configured one or more override functions, you can activate them by starting the override.
1. Select the line with the actual override function.
2. Press "Start"
Stop: If you want to stop an override function in operation:
1. Select the line with the actual override function.
2. Press "Stop"
History: There are historical data on the override function with P0 optimisation. Two bar charts are shown here – one with a 24-hour survey and one with a weekly survey of the refrigeration points registered as the most heavily loaded ones in the system. If there are major differences between the contents of a 24-hour display and the weekly display, this should be examined more closely.
Change: If you want to make changes in an override function, you will have to stop it first.
Delete: If you wish to delete an override function, you will have to stop it first. When you are deleting an override function used by other override functions, you will receive an alarm message:
No matter how you continue, you will not break the configuration between the two functions.
- With "Stop" you will interrupt any deletion of several override functions.
- With "Skip" you will continue the deletion of the other override functions selected by you before the programme showed the warning.

Configuration
1. When you want to configure a new override function, press "New".
   2. Now select one of the functions shown in the subsequent display.
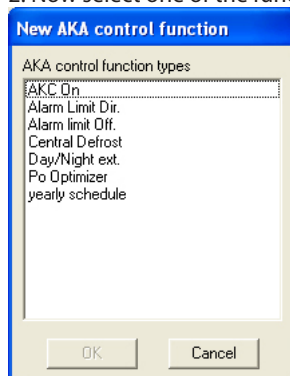
If the function is not shown in the display it is because the maximum number of this function has already been established. Additional functions of this type cannot be established. It is for example only possible to establish three P0 optimization.

3. Continue the configuration on one of the following displays:

Injection ON

1. Select "New" in the override function's main menu.
2. Select "AKC ON".
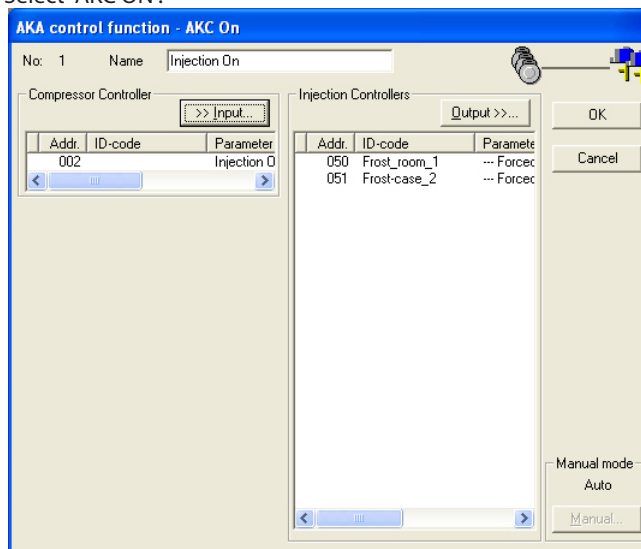
A maximum of 5 groups can be set up with Injection ON.

3. Give the new override function a name.
4. Press "Input" and define the controller controlling the compressor in the actual system.
5. Select the controllers that are to receive the override signal (make sure that you remember all the controllers).
6. Finish with "OK".
7. In the override function's menu you can now start and stop the "Injection ON - override".

When the override function has been defined, started and made operative, it will be possible to force-control the signal by means of the "Manual" function.
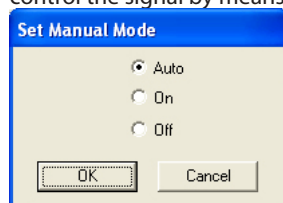
Auto: The compressor control determines.
On: AKV valves are opened.
Off: AKV valves are closed. Cooling stopped.

Alarm limit offset

1. Select "New" in the override function's main menu.
2. Select "Alarm limit Off".
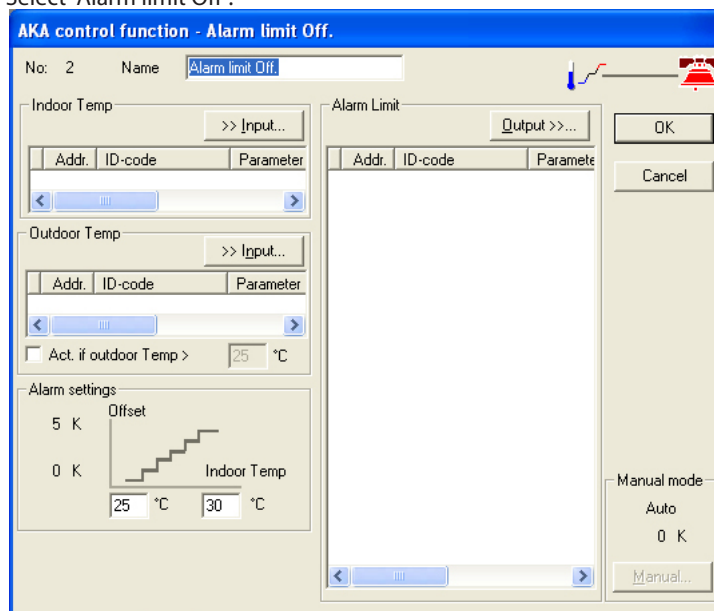
A maximum of 2 groups can be set up with Alarm limit Off.

3. Give the new override function a name.
4. Indoor temperature. Press "Input" and subsequently define the controller and the parameter to be used as signal value for the indoor temperature.
5. Outdoor temperature. Press "Input" and subsequently define the controller and the parameter to be used as signal value for the outdoor temperature.
6. Tick off, if the function is only to be active towards a given outdoor temperature.
7. Define this outdoor temperature, if applicable.
8. Define the lowest indoor temperature where override is to start.
9. Define the indoor temperature where override of the alarm limit is maximum.
10. Select the controllers that are to receive the override.
11. Finish with "OK".
12. In the override function's main menu you can now start and stop the override function.

When the override function has been defined, started and made operative, it will be possible to force-control the signal by means of the "Manual" function.
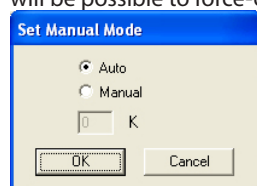
Auto: The temperature values determine.
Manual: You will override with the following value.
Value: Set the value.

Alarm limit direct

The configuration of this override function is almost the same as described above. There is however one additional setting.
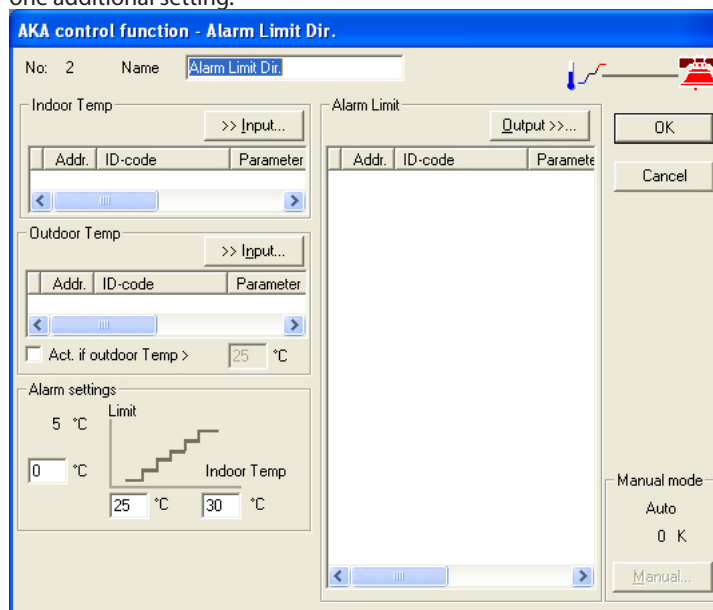
A maximum of 5 groups can be set up with Alarm limit direct.

When the override function has been defined, started and made operative, it will be possible to force-control the signal by means of the "Manual" function.

All the points (1-12) must be defined as in the function above, but there is one additional (8a) where the alarm limit has to be set. **This alarm limit will apply to all the selected controllers.**

Central Defrost

1. Select "New" in the override function's main menu.
2. Select "Central Defrost"

A maximum of 20 groups can be set up with Defrost control.

If you wish to start an extra defrost cycle over and above the planned defrost times, you do it by click "Manual defrost".
The function will automatically return to pos. OFF after a couple of minutes.

3. Give the new override function a name.
4. The signal that is to activate the defrost may either come from a time schedule or from a digital signal in one of the controllers (or both):
   a. Defrost schedules

You can either enter the required defrost starts on the list or use the automatic function, if the interval between starts is the same, e.g.:
- Write the number of defrost starts per day
- Write when the first one is to take place
- Write when the last one is to take place
- Click "Auto Settings" on the relevant list.
The defrost starts will now be evenly distributed over the period.

   - Enter some defrost times on lists 1, 2 and 3
   - Select the list to be used on Mondays
   - Select the list to be used on Tuesdays, etc....
   - Finish with "OK".
   b. Digital signal
   When you select the field "External defrost start" you will have access to the function

   - Select the controller and the function that are to transmit signals about defrost starts

5. Select the controllers that are to receive the signal
6. Finish with "OK".
7. In the override function's main menu you can now start and stop the central defrost.

If defrosting needs to be **coordinated** between a number of controllers, the function must be marked and the current controllers must be selected:
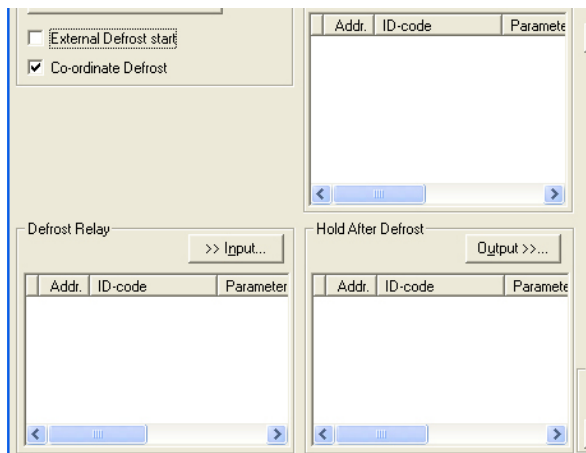
Here you select the controllers the defrost of which has to be terminated before refrigeration can be resumed (max. 30 units).
- Select the parameter indicating the defrost status (e.g. "Def.start/relay")

Here you select the controllers which are "held" by the signal.
- Select the parameter releasing the regulation (e.g. "Hold after def.")

Day/night control

1. Select "New" in the override function's main menu.
2. Select "Day/Night Ext.".
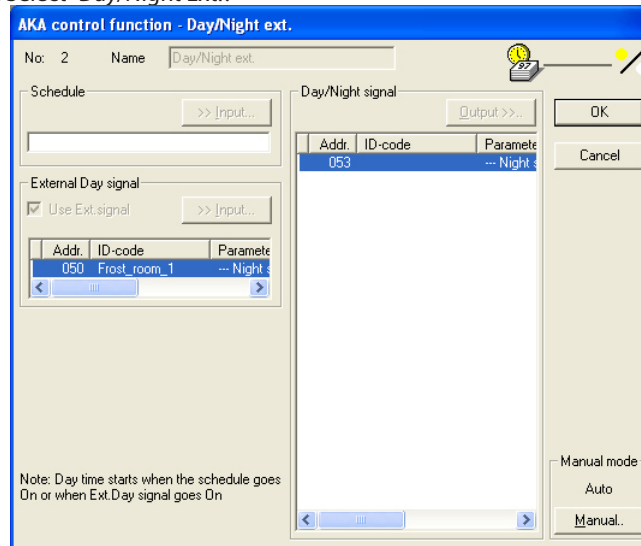
A maximum of 5 groups can be set up with Day/night control.

When the override function has been defined, started and made operative, it will be possible to force-control the signal by means of the "Manual" function.
Auto: The time schedule determines.
Day: Forced day operation.
Night: Forced night operation.

3. Give the new override function a name.
4. The signal that is to activate day and night times may either come from a time schedule or from a digital signal in one of the controllers:
   a. Schedule
      Press "Input" and then define the time schedule that is to give the signal on day and night times (if a time schedule has not been defined at this point, establish a new ome. See the time schedule on the next page).
   b. External Day signal
      - Click "Input" and define the controller and the input that are to give the signal.
      - Select the field "Use Ext. Signal", so that the function will be active.
5. Select the controllers that are to receive the override signal.
6. Finish with OK.
7. In the override function's main menu you can now start and stop the day/night control.

P0 optimizer

1. Select "New" from the override function's main menu
2. Select "P0 Optimizer"
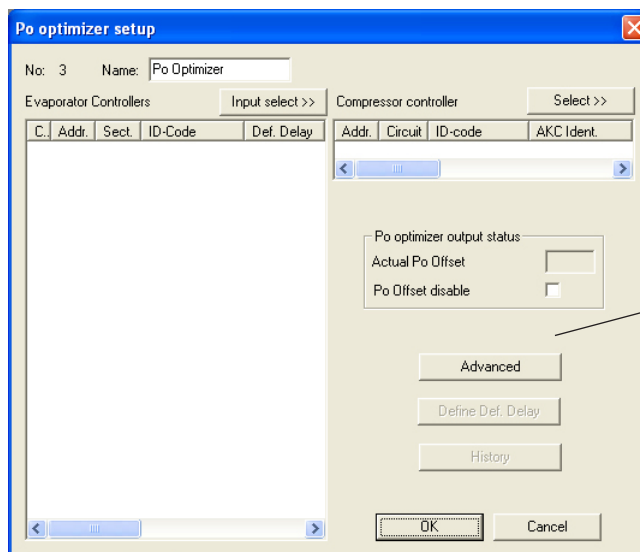
A maximum of 3 groups can be set up with P0 optimiser. Each group can contain 60 controllers.

Behind the key it is possible to set an alarm. The alarm will be activated if the suction pressure reference is overridden to a value exceeding the 90% value towards the P0 min. setting.

There are also special settings for the override function. These settings should only be changed by specially trained staff.

3. Give the new override function a name
4. Click "Input Select" and define the controllers and sections from which the override function is to receive signals.
5. Click "Select" and define the compressor control that is to receive the override signal.
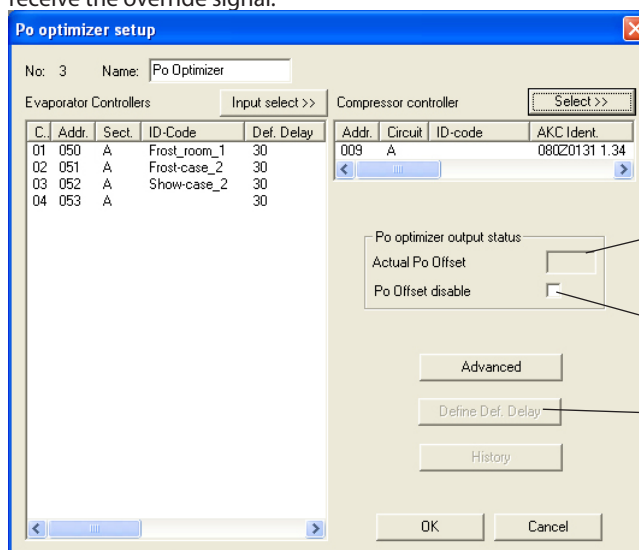
Here you can see the displacement of the reference expressed in Kelvin
A minus value will lower the suction pressure.

If it is required that the signal to the compressor control must be stopped, it can be done here. The collection of data will continue.

Immediately after a defrost the refrigeration point will not be included in the calculations. It will not be included until the time delay has expired.

Here, the cooling sites that have the greatest influence on regulation are totalled. See Appendix

6. Finish with "OK".
7. In the override function's main menu you can now start and stop the "P0 optimizer".

Yearly schedule

The following time schedule can be used for the day/night control.

1. Give the list a name.
2. Set ON and OFF times.
3. Press "OK" to finish the definition of the time schedule.

A maximum of 30 groups can be set up with Time schedule.

ON
During an ON period there is no override.

OFF
During an OFF period signals are sent to the receivers.

Holidays
If you wish to override the list on certain days in the course of the year, periods may be set where the signal is forced to a specific value.
1. Set the period.
2. Determine the signal (ON or OFF).
3. Tick off, if there as an annually recurring event.
4. Press "Add".
5. Repeat 1 to 4, if there are several periods (max. 30).

Restore Control function

The function is only used when the software in the master gateway is to be updated or the master gateway has to be replaced.
Procedure:
1. Activate the override function, as mentioned above. The gateway settings are now uploaded in the PC.
2. Carry out the necessary changes on the master gateway.
3. Activate this function. The AKM programme will now send the uploaded settings "back" to the master gateway.
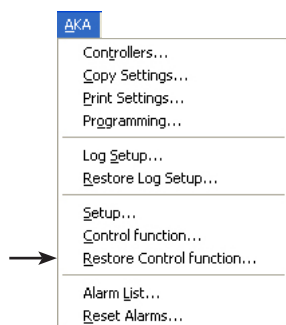
Alarm list

This function shows the alarms that are sent to the system unit on the network.
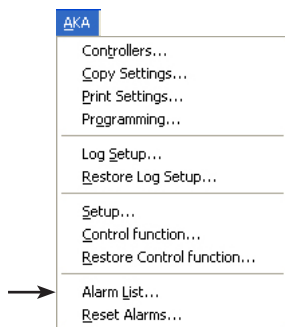
Select a network.
Only gateways defined as masters can be selected, i.e. address = ✳:125).
After selection, the following picture appears where all data will now be obtained from the gateway.
The picture contains <u>all</u> alarms that have been sent to the gateway (but max. 250).
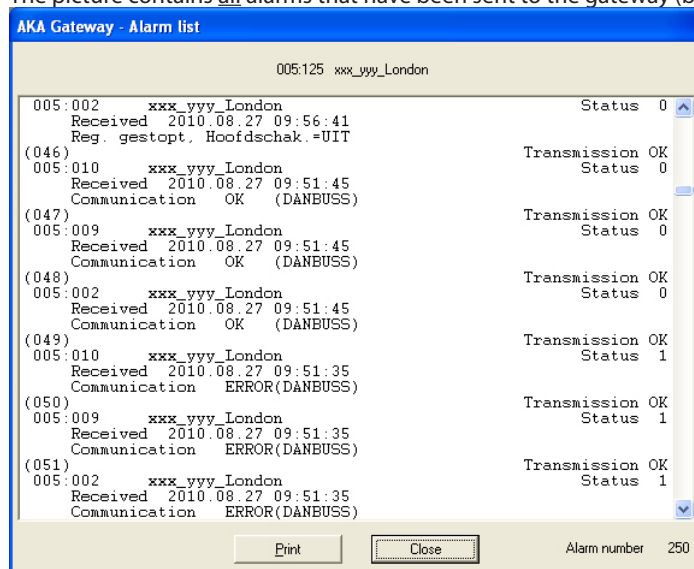
The alarms received are shown in a sequence where the time (gateway-time) of the onset of the alarm is the sorting criterion, and the most recent alarm is shown at the top.

A received alarm is shown with its:
- Address
- Address text
- Alarm text
- Alarm time and
- Alarm status (active/not active. Active alarm status ≥1).

When "Print" is activated, a printout will be made of the alarm list shown.

"Alarm number" indicates the number of alarms obtained from the gateway in question.

If new alarms appear when the menu display is on, they will not be shown in the accessed alarm list. When the alarm list is full (250 alarms), the "Alarm number" field will indicate if new alarms have been added during the time it has taken to transfer the alarm list from the gateway to the screen. The "Alarm number" will in that case be smaller than 250. You need not pick up all the alarms from a gateway. Click "Close" when no more are required.

Reset Alarms

This function is used for cancelling several alarms at one go. You can cancel alarms from one controller or from several selected controllers. The function is chiefly used when new installations are made, or if there are so many alarms that it is difficult to survey them.
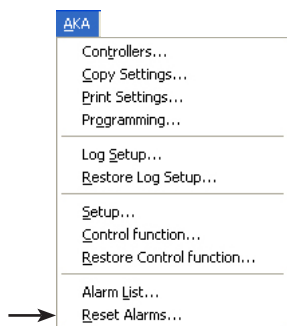
Select one or more controllers.
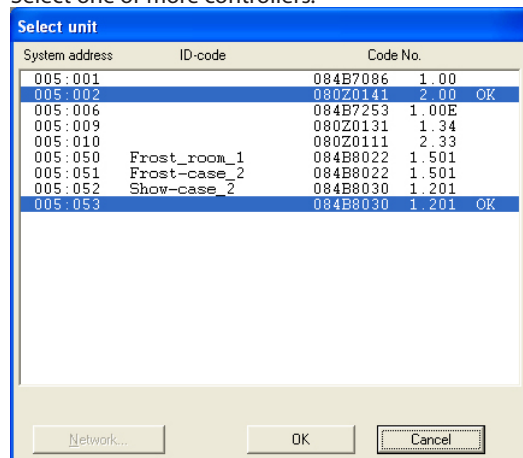
Activate one or more controllers and cancel their alarms by click "OK". The system will react by showing either "OK" or "-".
"OK" means that all alarms have been cancelled.
"-" means that there is no connection to the unit. Alarms, if any, therefore cannot be cancelled.

If there is still an error somewhere in the system, the alarm will be activated again.

AK-SC

Info
The menu does **not** contain tools for setting a AK-SC 255/AK-CS.
Setup and settings must be entered on the unit or by using software type AKA 65/ Browser

Controllers

The function is used for monitoring and setting parameters in the controllers.
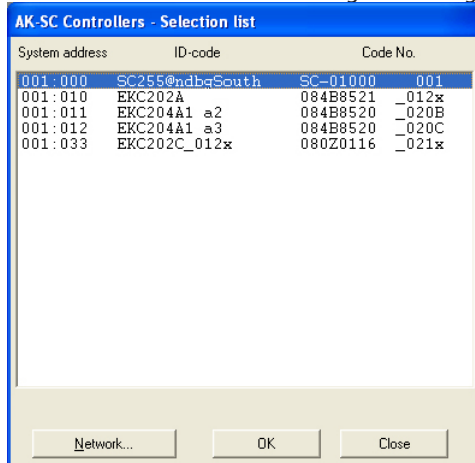
If you select the AK-SC unit's address, you will gain access to its automatically controlled readings and regulations.
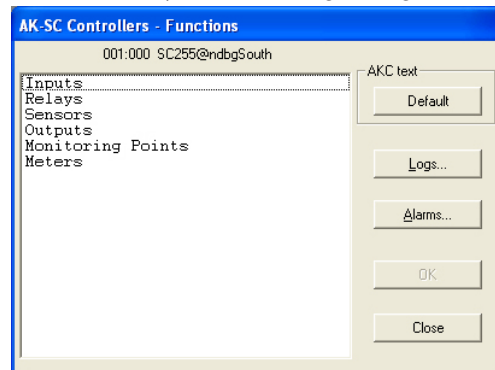
Select a controller. (network and address).
The controller's function groups will appear.
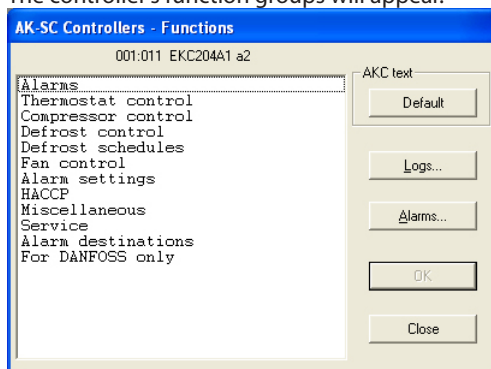
Default (Custom)
If custom -defined texts have been registered they will replace the texts shown here, in this and the next display. Otherwise, the key has no other function.

Logs
The button is described a couple of pages below.

Alarms
The button provides access to AKM's alarm history, but only alarms from the current controller are shown.

Select the required function group
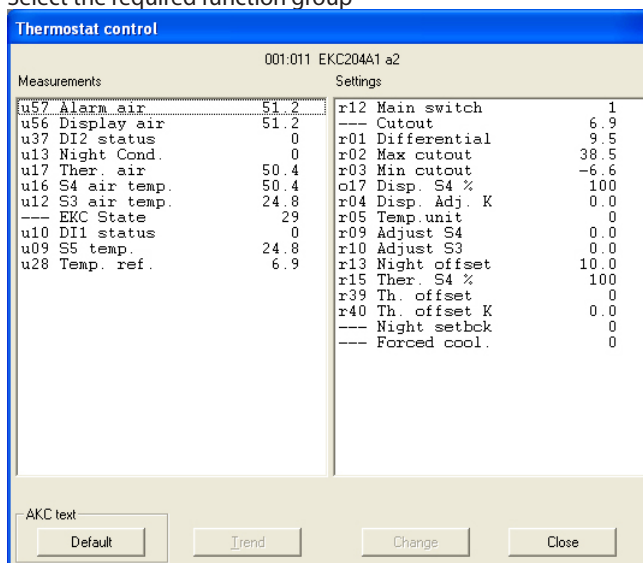
A group has been selected here, where both measurements and settings can be made.

Measurements (left column)

The different measurements are constantly updated and can be read in the "Measurements" field. If a graphic display or a data collection of the measurements is required, select the relevant measurements (max. 8) and click "Trend".

The trend function is a simple display following the selected temperatures, but only while the picture is shown on the screen.

On the picture can be seen:
- The period of time during which the measurements are shown (time for full graph width can be set)
  Note! If the time scaling is altered while data are being collected, all collected data will be deleted and data collection will begin anew.
- Temperature range for all measurements
- A grid, so that it is easier to follow the curves, (the grid is activated by selecting the "Grid" function
- the different measurements can be shown in colours, (activate the colours by activating the "Colour" function). Numbers shown in black/white.
- "Invert" switches black and white in the graph display.
- if the word "Logging" appears at the bottom right of the display, the measurements shown will be stored on the PC's hard disk.
- By placing the mouse cursor on one of the curves, and activating the mouse button, the value of the curve at this point will be shown in a field under the graph.
- With the "Logs" button, a number of data collection functions can be started that are required in a service situation. Data can only be collected as long as the trend function is on. The collected data can later be displayed via the function "Curves".

- Give the log a name.
- Set how long the log is to be stored on the PC hard disk. When this period of time has expired, the log is automatically cancelled.
- Set when the data collection is to start. (If the starting time is not filled in, collection of data will start as soon as "Add" is clicked).
- Set the period data are to be collected.

When the four settings have been made, click "Add", and the data collection can start. There will now be one data collection for all the parameters selected for the trend function. When the collection of data has started, this is indicated with an asterisk opposite the log number. If a data collection in process is to be stopped before the specified time has elapsed, it can be done by click the "Stop" button. (The word "Add" is changed to "Stop").

Collection of data is discontinued, if you leave the trend function!

Certain log names, for which there is no collection of data, are older files. If you no longer wish to store them, select them and remove them with the "Delete" function.

In the "Interval" field you can see how often data are collected. The length of the interval is determined by a setting in the earlier display for the trend function. There is the following relation between the two times:

Time scale (min.)	Interval (sec.)
5	2
10	4
15	6
30	12
45	18
60	24
90	36

Settings (right column, page 85)
Select the required function:

Functions with ON/OFF (0/1) setting will give the following menu picture:
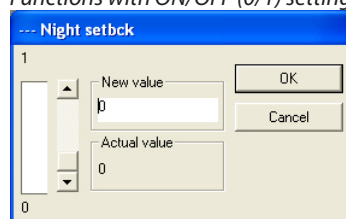
Change to the new setting and click "OK".

Functions with variable settings will give the following menu picture:
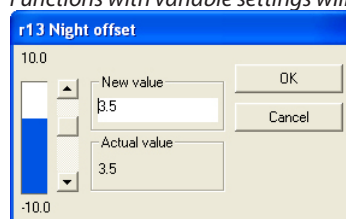
Change the new value. The new value will apply, when you have clicked "OK".

Logs (page 85)
You will see a display from the controller that can show which parameters have been defined, so that they can be gathered in a log. (Both started and stopped logs, if applicable, will be shown).
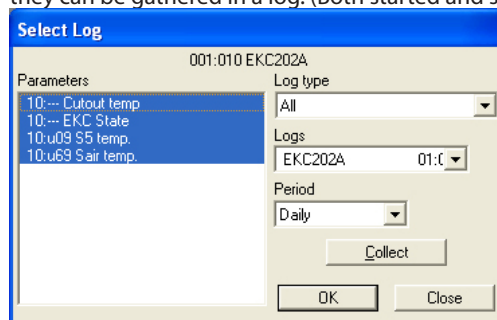
1. Log type
   May be data collection in either the AKM programme or the frontend. Here you may choose whether you want to see logs from one or the other, or from both. The following log types are available: All, AKM, frontend, Service, Food Safety and Trend.
2. Logs
   Select one of the available logs. Now the parameters defined in this log will be shown.
3. Parameters
   Select one or more parameters to be presented.
4. Period
   Select the period of time you want displayed on the screen. If you select "weekly" you may then later advance or move back by weeks in the data collection.

5. Collect

 If you want to include the latest data in the presentation, you can do this by click "Collect". When the data have been obtained, you can have them presented.

6. Ok

 When you have selected one or more parameters for presentation, you can click "OK". The log presentation will now be shown..

In this display you can study the collected data in more detail.

- "Print" enables you to print out log data in either curve or table shape.
- "Setup" enables you to remove/change the grid, to change between colours and black-and-white, and to indicate measuring points.
- You may use the "Zoom in" function when you want to have a closer look at a specific area.
- With the "Left arrow" and "Right arrow" buttons you can move up or down in the log data.

Control Functions

This function provides access to view and modify the Master Control functions (override) that have been set in AK-SC 255. To modify the settings, the stagger function must be deactivated in AK-SC 255. Control functions (override) are described in Appendix N.
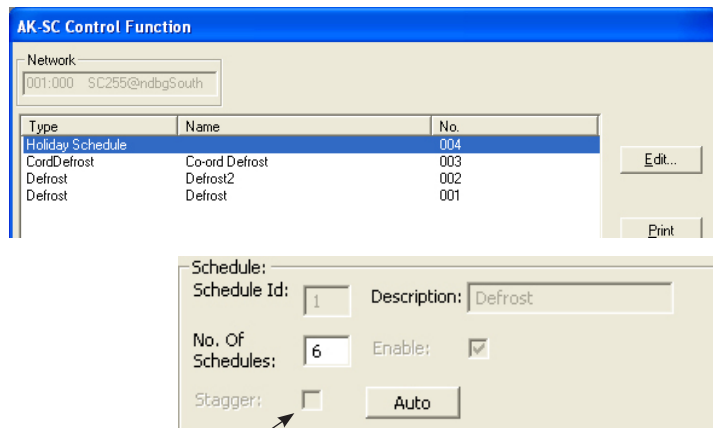
Modifications can only be made when the stagger function is deactivated.

Alarm List

Alarm List

This function provides access to the alarm list in AK-SC 255.

AKM will read the updated list each time the Alarm list function is enabled as well as each time an action is performed in the alarm list display.

If AK-SC 255 is set to route alarms to AKM, the alarm list in AKM will always be updated with the list in AK-SC 255.
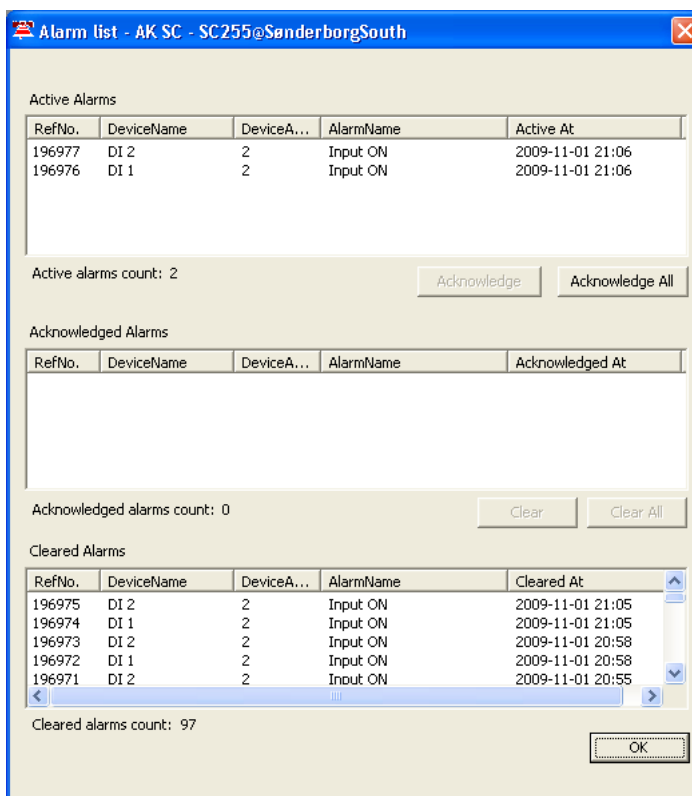
There are three groupings in the display:
• Active alarms
• Acknowledged alarms
• Cleared alarms

Here are the different alarm actions. There are three groups
1. Actions 1-8: Here all alarms, active and cancelled, must be confirmed manually.
2. Actions 9-11: Active alarms must be confirmed manually. Cancelled alarms are confirmed automatically, but only if the active alarm has been previously confirmed.
3. Actions 12-15: Automatic confirmation of both active and cancelled alarms.

If AKM is to resend the current alarm situation in AK-SC 255, the alarms must be selected in group 3 (e.g. action 12).

Access

Change AKM Password
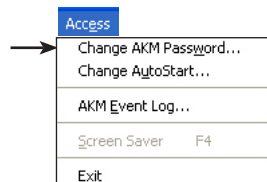
Here you can change your password for entering the programme.
When you click on the line a box will appear which will first ask you to state your old password. When this has been accepted, you may key in a new one of max. six characters.

A user with the initials **AKM1** and keyword **AKM1** has now been established. Use it for the establishment of a new "superuser" having access to all functions.
Delete the "**AKM1**" user when general access to the system is no longer required.

- First key in your old password, and then your new password.
- Please note that only stars are shown when you key in your old password.
- Finish by click "OK" (or interrupt the process, if you change your mind).

Change AutoStart
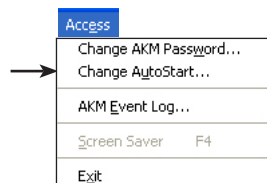
When Logon is completed, the programme may be started in two ways:
1) Allowed functions can be selected in the main menu.
2) You may move directly to a selected function (it will still be possible to select the remaining allowed functions from the main menu).
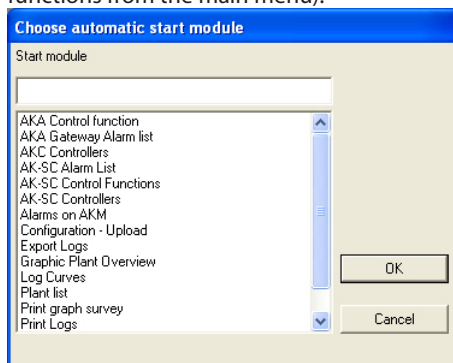
Select a function and click "OK".

The function is activated in the log-in display:
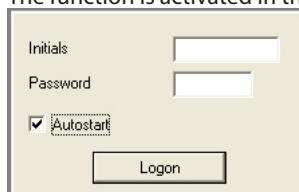
AKM Event Log
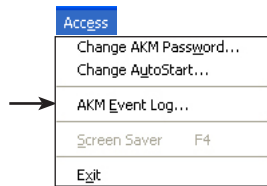
The function sums up the events that are taking place when you operate the AKM programme.
Registered data are stored for a certain number of days, as defined in "AKM setup".
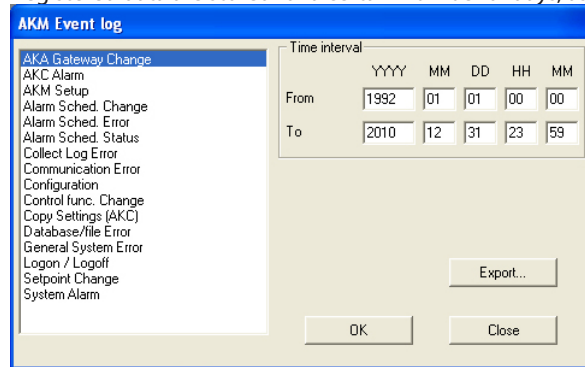
Make a delimitation of the events in the AKM programme:
- Indicate a period of time
- Type of event to be clarified:

If "AKA gateway change" is selected there will be events concerning same, e.g.:
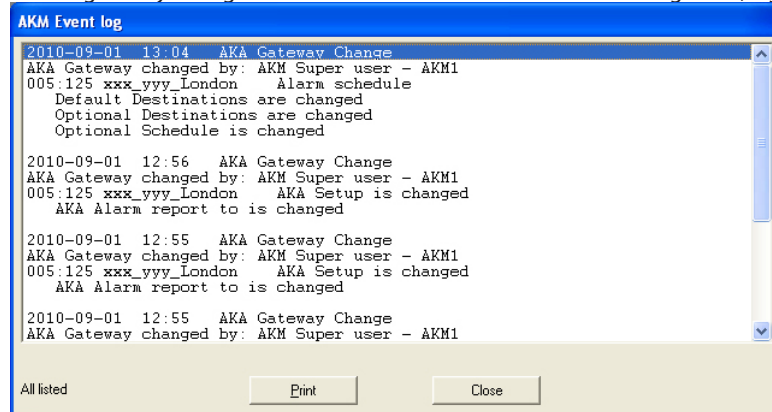
All the events taking place during the defined period of time are shown here.
If a printout of the display is required, click "Print".

Export
If you have to provide documentation of events in a specific system during a given period, you can use this function. The procedure is as follows:
1. Indicate time period and type of event to be documented
2. Click "Export"
3. Give the file a name (max. eight characters) and continue exporting the file. The file will be given the extention CSV.
You can now open the file on a spread sheet where the events will subsequently be shown in sequence.

Screen Saver
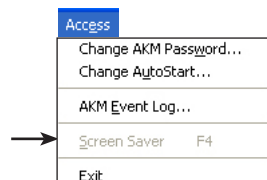
This function will start the screen saver.
The function is set in: AKM Setup / Advanced.

Exit
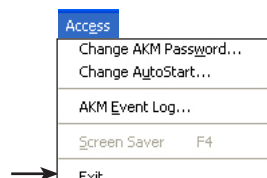
The AKM programme shut down.

A: Error message

This is a list of the most frequently occurring error messages in the AKM programme. In each error message is mentioned the possible cause of the error and what possibilities there are of solving the problem that has arisen.
Each message is accompanied by a number. Please state this number if you require service from DANFOSS.

If you require service, you must have made the following preparations:
- In connection with communication errors, you must have consulted Appendix B. (99% of this type of error are start-up problems. Appendix B will help you localise the problem).
- In connection with error messages you must have noted down the number of the message (see below)

All alarms cannot be shown in list box (1)
The list box is full.
Limit the search.

The selected AKA has no alarm schedule support (21)
AKA contains an earlier software version than the required one (2.20).

Error detected while downloading to AKC (8)
There has been an error in the entry of AKC data.
Repeat copying procedure.

Error detected while uploading (9)
There has been an error in the reading of AKC data.
Repeat copying procedure.

Duplicate ID-code (7)
The same ID-code is used for another unit.
Type another ID-code.

Set alarm receiver failed (17)
AKA contains an earlier software version than the required one (2.20). Consequently, AKA alarm routing and "Disable alarms" cannot be selected. The failure may also be due to a communication error.
See also Appendix B.

Set alarm schedule failed (18)
The unit was unable to answer or answered incorrectly.
See also Appendix B.

Set port failed (19)
AKA unit was unable to answer or answered incorrectly.
See also Appendix B.

No AKA units found (12)
There is no AKA gateway in the AKM programme's database. Or there is no contact to an AKA gateway.
Carry out new upload.
If the message appears during an upload!
Check the network number.
Is the unit connected? Has voltage been connected?

No AKA master units found (13)
There is no AKA master gateway in the AKM programme's database. Or there is no contact to an AKA master gateway.
Carry out new upload.
If the message appears during an upload!
Check network number and address.
Is the unit connected? Has voltage been connected?
Check AKA software version.
If using AKA Winsock, the "TelnetPad" must be selected.

Read alarm list failed (14)
AKA unit was unable to answer or answered incorrectly.
See also Appendix B.

Read alarm receiver failed (15)
AKA unit was unable to answer or answered incorrectly.
See also Appendix B.

Read port failed (16)
AKA unit was unable to answer or answered incorrectly.
See also Appendix B.

Missing AKC description file!! Upload file (10)
The AKM programme does not have a description file for the relevant AKC controller.
Carry out an upload or import a description file for the controller in question.

Missing or wrong destination (11)
Alarm destination incorrectly stated or missing.

Communication error (4)
The unit was unable to answer or answered incorrectly.
See also Appendix B.

Conflict between plant overview and description file (5)
One or more units have changed type or software version (parameters with errors are marked with asterisks "✳").
Store the plant overview again, or set up a new list of parameters.

Conflict between uploaded description and the configuration (6)
The controller has been cut out or the description file destroyed during the communication.
Restart the upload procedure.

Syntax error in line (20)
There are overlapping intervals in the AKA alarm routing.

B: Checklist for communication errors

For gateway only

✳ Has voltage been connected to all units?

✳ Has the data communication cable been connected to all units?

✳ Has the power supply for all controllers and modems (if applicable) been switched on?

✳ Have all the controller's addresses been correctly set? (allowed addresses are from 1 to 123 and 125 for the master gateway).

> AKC 14 - 116 and AKL 25 - 111A: DIP-switch and System address
> EKC controllers: LON address
> AKC controllers: LON address
> AKC 31M: System address
> AKA: System address
> AKM: System address

✳ Have the addresses been activated in all the controllers? (When an address is set, the supply voltage to the controller must be interrupted).

✳ Is the controller known by the gateway via Scan or Service PIN?

✳ Has the baud rate been correctly set?

✳ Does the cable between the PC-gateway and the PC contain handshake?

✳ Are the router lines in all gateway units correctly set?

✳ Has a new upload been performed after installation of new controllers?

✳ Has a new upload been performed after replacement of software in an existing controller?

✳ Have the defined printers been connected, and are they "On line"?

✳ Does the gateway contain the required software version? (See Appendix C).

C: Version history for AKM

Controllers and gateways are made in several software versions. The earlier versions of the units were designed before the AKM programme, as a result, the programme cannot communicate with them.

The AKM programme can communicate with all controllers in the programme that have been made after the middle of 1992.

AKM version:

2.00   This version and later versions can communicate with the AKM programme. The DO2 alarm relay in AKA 24 is activated by all alarm types. Alarms can be received from AKC 31M.

2.10   AKA 24's alarm relay DO2 is activated by status 1 AKC alarms and "Integrity scan alarms" of status 0 (important alarms). Selected functions can be set and read in AKC 31M. Alarms can be received from AKC 31M.

2.20   AKA 24's alarm relay DO2 is activated by status 1 AKC alarms and "Communication error (DANBUSS)" (important alarms).
Selected functions can be set and read in AKC 31M.
Alarms can be received from AKC 31M.
AKA 24 can carry out alarm routing on its own.
With AKA 24 it is possible to delete the system address (in AK 10 and AK 20 units) and the "Alarm report to" address in AKC controllers.

3.00   This version contains a log function which can collect and store data in the master gateway. In addition to this function a "Call back" function has furthermore been introduced, so that the gateway can call an AKM programme to deliver log data.
The functions can only be operated via AKM.

4.00   The introduction of a password function, more router lines in the modem gateway and an event log reflects the most important changes.
These changes have resulted in the addition of new code numbers and a changed type designation. (A "P" and an "M" have been added to the existing type designation for the PC gateway and modem gateway, respectively).

In 1998 AKA 24 is taken out and replaced by AKA 244.

5.00   At your option AKA 244 may be used as either modem gateway or PC gateway. It contains override function, version 1.

5.10   Connections DI and DO can be configured.
AKA 243 is introduced. The first 60 addresses here have been reserved for LON data communication (EKC connections).

5.20   The override function is extended to version 2 (defrost control and day/night control).

5.30   Support for Ethernet introduced.

5.5   P0 optimizing

5.56   Automatic log export

5.64   Support for AK2 alarms via modem.
Support for several network cards.

5.70   Support for AK2 logs and alarms from AK2 plant (modem and winsock).
Address structure extended for AK2 plant.
Implemented DSN structure (domain, subnet, network).
Implemented new plant archive.

6.00   AKM ported to 32 bit.
Data base change to MySQL.
Prepared AK2 log support.

6.03   Error correction and performance improvements.

6.25   Support for AK-SC 255.

6.26   Support for AK-CS.
Automatic export of AK-SC and AK-CS log files.

6.28   Alarm synchronisation between AK-SC 255 and AKM.
Optimised log and MIMIC performance.

7.00   Windows 7 support.
Language updated.
Scan for AK-SC, CS and SM
Automatic log export of AK-SM log files
Service via alarm list
Modified menu structure

D: Vocabulary

The programme contains the following terms:

Description file
File indicating the functions a given controller can perform.

Default file
Description file containing factory-set texts, values, etc.

Custom file
Description file which contains customer-adapted selections of:
- Custom text
- Controller user level
- functions to be presented in the plant overview menu
- alarm priorities (of significance to the alarm routing via the AKM programme)

ID code
A name to which a given address can be added. In other words, one address may be supplemented with an easy-to-recognise text, like "frost 1", another with "frost 2", etc.

Alarm priority
In the AKM programme an alarm priority can be attached to each individual alarm from an AKC controller. When alarms are routed via the AKM programme, the different priorities can consequently be routed to different receivers.

DSN address
A system address / DSN-address is build up in 4 levels:
aa =   Domain (0-64)
bbb =   Subnet (0-255)
ccc =   Network (0-255)
dddd = address (0-1023), Gateway=0125, AK-SC 255, AK-CS and
        System manager=1001
Example of an address 12.010.255.0125

E: Log function

Definitions

A log is a serie of data that can be read and collected in the different controllers for later use. The data can be measured values from various sensors, or status values for other functions available to controllers in the ADAP-KOOL® Refrigeration Control System. A precondition is however that the different values can be read via the data communication.

Various kinds of data collection can be carried out, depending on the purpose of the collection. The different kinds of collection are described below:

1) Trend log

This type of collection is used for adjustments and for trouble shooting. Via the trend function you select the parameters to be registered. The AKM programme will now constantly be in contact with the relevant controller, and a constant and quick collection of data will be carried out, the sole purpose of which is to follow the selected parameters. The AKM programme is now 100% busy with this data collection, and it can be used for nothing else during this period.

Data can max. be collected for eight parameters at a time.

2) AKM service log

This type of collection is used, when data are collected from one network at a time over a long period of time. When this function is used, the AKM programme should be directly connected to the network from which log data are required. The function can also collect log data from one network via a telephone connection, but on account of the telephone costs it is recommended that one of the following collection methods be used.

3) AKA Service log

This type of data collection is used on networks where an AKM programme is not constantly connected. The collected data are stored in the gateway which will then constantly write new data over the oldest data. If there are problems with the system, the last collected data can then be transferred to an AKM programme and analyzed (e.g. via a telephone connection). If a data collection is required which is longer than the one indicated in the "AKA per." field, the collected data may be transferred to an AKM programme. Define automatic collection in the AKM programme which will then at intervals contact the gateway and pick up the collected data.

4) AKA Food safety log/HACCP

This type of data collection is used on networks where an AKM programme is not constantly connected. The network is however contacted at least once a day, when the collected data are transferred.

Data collections can be performed with as little as 15 minutes between each measurement. The collected data are stored in the gateway and can at defined times be entered into an AKM programme, e.g. via a telephone connection.

Procedure

AKA and AKM collections
The log definition must be made in the following way:
- decide whether data collection shall take place from the AKM programme or from the master gateway.
- select the relevant controller,
- select the parameters applying to this controller,
    When these steps are complete, the collection parameters for log no. "1" have been defined.
- Enter a name for the Log-collection, and how often values are to be collected (e.g. at 15-minute intervals).
- If it is a "Food safety" log in a gateway, the "Food safety" field must be selected.
- Established parameters are now ready for registration in the log. Since only relevant collected data are to be presented later, the period for which those values are to be stored in the log must also be defined. When the collected data become older than the defined period they are automatically deleted.
- All definitions have now been made, but data will only be collected from the time the log is started.

When this procedure has been completed for one controller, it must be repeated for the other controllers - until all required logs have been defined and started. (The AKM program contains a function able to "copy" a log for a given controller, but only when data are to be collected from a corresponding controller with the same software version. And copying can only be carried out within the same network.).

AK-SM collections
The log definition must be made with the service tool AK-ST 500.

AK-SC collections
The log definition must be made with the AKA 65 software program, or directly on the front panel.

AK-CS collections
The log definition must be made via a web browser or directly on the front panel.

Display
When the various logs have been defined and data has been collected over a period, the values can be displayed in graph form on the PC screen, or printed out. A printout in table form is also possible, or the values can be transferred (export) to a spreadsheet for further processing.

To enable a simple graph for a number of parameters from different controllers to be made up, the parameters from different logs (different controllers) can be extracted and stored under one name. The selected parameters can then be shown in the same graph display/table printout. For example, data from sensors that register the temperature of the medium at different refrigerated counters can be collected under one name and then be shown in one display.

Deletion of collected data values

The period for which collected data are to be available must be defined in the AKM programme. Data older than the defined period are automatically deleted. The deletion occurs at fixed times defined in the program. These times cannot be altered. When such deletion is performed it is displayed in the form of an icon with the text "Delete logs".

Limitations

Common:
- Data for a maximum of 13 parameters can be collected in each log (13 registrations from each controller).
- Collected data will not be stored satisfactorily when collection is defined by a long interval and a short period, e.g. a log interval of 4 hours and a period of 1 hour.

AKA logs:
- Max. 170 logs can be defined in AKA logs (120 food safety logs and 50 service logs). Data can be collected from all of them simultaneously.
- The interval for "Food safety logs" cannot be less than 15 minutes.

AKM logs:
- Only data from one network at a time can be collected.
- Max. 999 logs can be defined in an AKM service log, but data can only be collected from 120 logs at a time.
- Data from max. 20 logs can be collected, if just one of the logs has been set with a time interval of one minute. (45 logs if two minutes, 70 logs if three minutes, 90 logs if four minutes, and 120 logs if five minutes).
- If data are collected from 25 controllers and the log intervals are 30 minutes, a new log with time intervals smaller than two minutes <u>cannot</u> be started.
- If short log intervals are used, the AKM program should not be used for anything other than logging.

Collection procedure

Data are collected at fixed times in accordance with the time interval. All logs having the same time interval are collected during a period within the duration of the interval and a presentation of these data will contain this fixed time (even when the collection of many data for many logs extends over several minutes).

A log starting point is not synonymous with the time of the first data collection. The first data collection is determined by internal program parameters and occurs before the stated time interval has elapsed (e.g. if a time interval of 1 hour has been defined, the first data collection will occur after a maximum of 59 minutes). Subsequent data collections will then occur at the defined time interval.

When at least one log has been started, this will be indicated by the "AKM Log" or "AKA Log" icons at the bottom of the screen. Whenever data are stored on the PC's hard disk, this can be seen from the icon (a connection between the units is shown).

Newly collected data can at any time be stored manually on the hard disk. Activate the icon and start the function storing log data.

There are four different types of logs:

- Trend logs
  Data are only collected when the AKM programme is in direct contact with a controller.

- AKM service logs
  Data are collected directly for a started AKM programme. The collected data are subsequently stored on the PC's hard disk. Data can only be collected when the PC is on and the AKM programme has been started. If the PC is 100% busy with something else (e.g. a time-consuming printout), you cannot be sure that all data will be collected during this period.

- AKA Service log
  Data are collected for service information. The function constantly collects data in the master gateway. New data are all the time written over the oldest data. The registered data will only be called, if there are problems with the system.

- Food safety logs
  This type refers to data collection for registered food temperatures. The function constantly collects data in the master gateway. The collected data are then transferred periodically when "Auto. collect" is defined (or more often, if required by the master gateway's memory) to an AKM programme log database. Collected data can be transferred in one of the following two ways:
  1) The AKM programme contacts gateway and picks up the data.
  2) The "Call back" function is selected in the AKM setup. (Callback is only actual for AK-SC, CS and SM if they are connected to a modem). The following will then happen:
     - The AKM programme contacts gateway and asks it to establish contact in one minute.
     - The contact is interrupted.
     - One minute later gateway will contact the AKM programme and the data will be delivered.
     If the gateway has not established contact within 15 minutes, the AKM programme will once more establish contact to the gateway, and the data will be picked up right away.

If an AKM programme has to pick up collected data from several master gateways, there will be a pause between the individual collections. The pause will be between 0 and 5 minutes long (1 to 6 minutes when the "Call back" function is used).

The time used for collecting data will vary depending on the number of logs to be collected and the amount of data contained in the individual logs, and whether the connection is via a modem or TCP/IP.
Generally:
- A few logs with many data can be collected faster than many logs with a few data.
- It will take longer if the data are transmitted via several DAN-BUSS networks.

Example:
- Data are obtained over the telephone network via two master gateways.
- 65 logs will be collected (10 Service logs and 55 Food Safety logs).
- Gateway's memory is full (80% of max. and must be emptied). This data transmission will take between 20 and 25 minutes, depending on the hard disk's performance and the database contents.

Collected data are stored in the PC memory (RAM), until the amount of data is large enough to be transferred to the hard disk. When the transfer is made, an icon "Move logs" is displayed. In addition, data are stored on the hard disk when the log definition is changed, or if the manual function "Save logs" is activated (started by activating the icon "AKM Logs").

Data base
A data base is defined depending on where a log collection takes place.

Collection site	Name of collection	Saved in
AKA 245 gateway	AKA log	AKA log
AKM Programme	AKM log	
AK-SM system manager	AK-SM	AK -SM log
AK-SC system controller	AK-SC	AK-SC log
AK-CS convenience store	AK-SC	

When displaying a collected log, it will be necessary to upload the log in the current data base.
This is performed in the log selection display.

If the **very latest** collected data is to be shown, a manual data collection must be performed, and the data must be saved in the AKM program.
This manual collection can be performed via the icon at the bottom of the display screen:

Data base	Right-click		Then click
AKA log	AKA Log	Save Logs Cancel Auto Collect Manual Collect...	1. Manual 2. Next, click "Save"
AKM log	AKM Log	Save Logs	1. Save
AK-SM/SC log	AK-SM/AK-S...	AK-SM Log collection... AK-SC Log collection... Cancel Auto Collect(AK-SM) Cancel Auto Collect(AK-SC)	1. Select the current log.

Error messages
Error messages in connection with log definitions and log collection.
If the log function is operated incorrectly, there may be alarm messages. These alarm messages will mostly occur, when logs from another AKM programme than the one installed in the system are established or changed (e.g. in connection with service). Alarm messages will also occur when controllers are exchanged in the system and the controllers in question are collecting log data.

Typical sources of error:
- Name or disc period has been changed.
- Logo type has been changed (e.g. a food safety log has been deleted and a new service log with the same log number and setup has been established).
- Logging is carried out from another AKC address than the original one (e.g. a log setup is deleted and then re-established in connection with another AKC address).
- Logging is performed with other parameters than originally.
- A log has been deleted or added.
- Clock in the gateway not correctly set
- Too little space on the PC hard disc
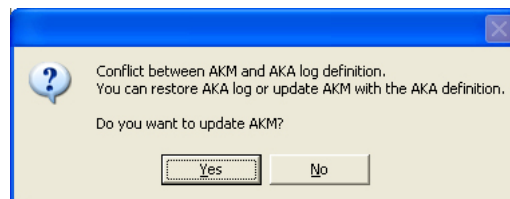
Example of error message for log definition.
- When you activate "Yes", the AKM programme is updated with the log definition found in the master gateway.
- When you activate "No", the master gateway's log setup will be displayed without the AKM programme being updated. Check the individual logs with errors by click "Browse", if required.
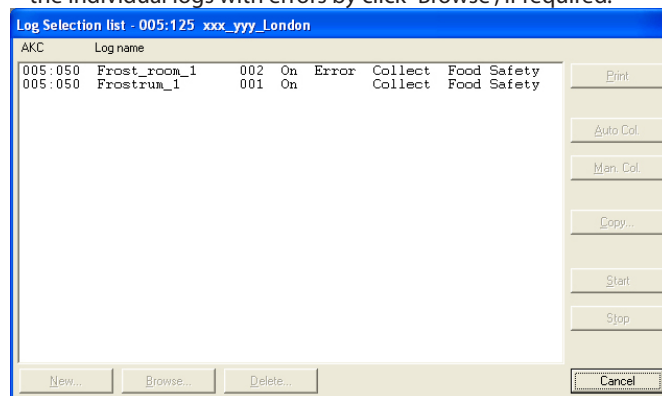
Check the individual logs with errors by click "Browse", if required.
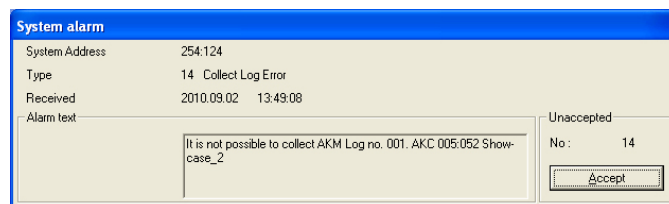
Example of error message for log collection.

Corrections
If you wish to use the log setup in the master gateway:
- Click "Yes" in the previous display.
    Data can now be obtained either by means of automatic collection or manual collection.
If you wish to use the log setup in the AKM programme:
- Perform an "Upload" of the network configuration and of the description files.
- Carry out manual collection of the active logs.
- Send the AKM programme's AKA-log setup to the master gateway by using the "Restore" function. The function is primarily used, when a master gateway is exchanged. Only if the log setup of the AKM programme is completely identical with the system, to which the "Restore" is addressed, will the entire log setup be delivered to the master gateway.
If the error is due to an exchange of AKC controllers:
- Perform an "Upload" of the network configuration and of the description files.
- Make corrections in the defined log (remove parameters shown as "Unknown").
- Click "OK" to store the log setup.

Repeat routine
If a log collection cannot be picked up/delivered to the defined receiver for one reason or another, a repeat routine will be started. The routine will repeatedly try to establish the connection. If it fails, a system alarm will be released (this system alarm will also be entered in the "AKM Event log"). Appendix F contains a description of the repeat routine.

Note!
If there is less than 1MB space left on the hard disc, the log collection will be stopped. If this happens, a system alarm will be given and the log icons will be marked with a cross.

F: Repeat routines when there is no contact to the receivers

General communication between units on DANBUSS

When information has been transmitted, the sender will wait for acknowledgement of its receipt. If this acknowledgement has not been received within 35 seconds, the information will be repeated, and there will be another 35-second wait for the acknowledgement. If there is still no acknowledgement, an error report will be issued. When modem connections are used, the waiting time is increased from 35 seconds to 70 seconds.

AKM alarm schedule

In connection with alarm routing and when the alarm cannot be delivered, the repeat routine will take place, as follows:

Start	Normal at-tempt	Pause in number of minutes:/ then repeat attempt number:										Stop
		1/ 1	5/ 2	5/ 3	5/ 4	10/ 5	10/ 6	10/ 7	20/ 8	20/ 9	20/ 10	
		Total 106 minutes + transmission time										

After the tenth attempt with a primary receiver, try with an alternative receiver.

AKM log collection

When retrieving an AKM service log, the AKM program establishes a connection to the master of the required network. If contact cannot be established, attempts are made every 7½ minutes. When contact has been established to the master, AKM will ask for value in the controller. If this value is not received as mentioned under "General Communication", an error report will be issued. A new attempt will be made after:
- 5 times the log interval for log intervals under 5 minutes
- 2 times the log interval for log intervals between 5 and 15 minutes
- 1 time the log interval for log intervals over 15 minutes

When a data collection has to be obtained from a master gateway, the AKM programme will establish a connection to the master gateway.
If the "Call-back" function is used, this function will be established, and the connection will be interrupted. The master gateway will then reestablish the connection a little later. If this connection is not established within 15 minutes, the AKM programme will again establish a connection and immediately start the collection.

Start	Nor-mal at-tempt	Pause in number of minutes: / then repeat attempt number:				Pause in number of hours:/ then repeat attempt number:			
		15/ 1	15/ 2	15/ 3	System alarm	4/ 4	4/ 5	4/ 6	4/ etc.

If the "Call-back" function has been selected, this function will be used for all the repeats.
If the collection fails after the data transmission has been started, a system alarm will be sent. There will now be a 40-minute wait, and another attempt will be made.

G: Custom texts

The programme can use text in several languages. They have been defined on the basis of the following assumptions:

- Used language version of the Windows programme.
  All functions with text controlled by Windows (primarily messages) will use the text from Windows.

- The various AKM program displays contain text in 18 languages.
  The menu "AKM setup" shows which languages are available.
  Selection can be made between the languages displayed.
  If the language must be changed after installation, the newly-chosen language will not apply until the AKM program has been restarted.

- Custom text may be entered together with the controllers' menu text.
  The menu text of the different controllers are written in English. (Some of them also in other languages). This text will be used in the programme, if nothing to the contrary is done. However, if you require a language/system defined text, it is possible to enter this text together with the text, obtained from the controller. On the actual displays it will now be possible to choose between two languages:
  (Default = the language obtained from the controller, or custom - the text that has been entered).
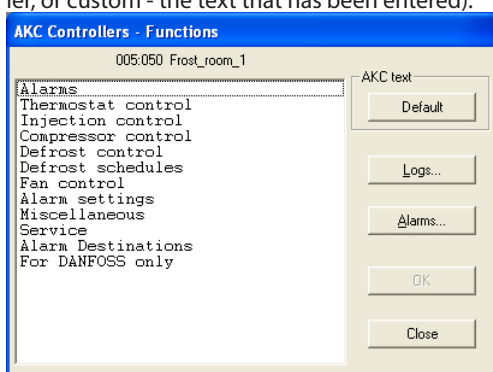
Entry of a language-defined text is performed with the "Edit custom file" menu.

J: Customer-adapted description files
(Also called custom files)

This is how the AKM Programme uses description files.

The basis of a description file will always be the data found in a controller. In some controllers there are more sets of data to choose between, depending on the number of language versions the controller has been provided with.
When the AKM Programme has to obtain data from a given controller, it will only obtain data belonging to one language version. A setting in the controller will determine which language has been selected, and hence the data that can be picked up by the AKM Programme.

When the data communication is ready, data can be obtained for the AKM Programme with the "Upload" function. When this has been done, the AKM Programme has a "Default Description file" and can now communicate with controllers of this type.

There are however advantages in processing a "standard description file", so that it becomes a "customer-adapted description file":

1. Texts
   Each function has a set of texts that are obtained from the controller (Default). The texts will always be present in the file, and they cannot be changed.
   These texts can now be supplemented with a customer-defined text. This is done by adding a specific text opposite each standard text (or opposite the most used functions). When this editing has been concluded, this text will be called "Custom".
   When the AKM Programme is used there will then be screen displays where you may choose between "Default" and "Custom".

2. Plant overviews
   All functions, measurements and settings etc. can in principle be shown in a plant overview, but to obtain the best overview, only a selection of data should be displayed. This selection is performed here in the description file. Opposite each function you would like shown in a plant overview, you must indicate that it must be used in the plant overview. And it is only the marked functions you will later be able to choose between. Select, for example, relevant temperature measurements, temperature settings and defrost functions.

3. User levels
   The individual users of the AKM Programme are assigned a user level when a user is established. Here you may choose between three levels - low, medium or high. In the description file the various function groups may also be assigned a corresponding function. In this way users with "Low" status will only have access to functions with "Low" status. Users with "Medium" status will have access to low and medium-level functions. Finally, users with "High" status will have access to all the functions.

4. Alarm routing
   The AKM Programme also contains a function which can route alarms to various receivers at different times - and they can be routed according to priority.
   If this alarm routing function is to be used, it is here in the description file that the priority of the various alarms has to be defined. And this priority will only have an influence on how the alarm is routed in the "AKM Alarm Schedule" function.

When the editing of a description file has been completed, the file has to be saved. This can be arranged in two ways:
a) It can be saved as a new default file where the edited file is entered and replaces the standard file obtained from the controller.

b) It can be saved as a separate file.
   If this solution is chosen, the file must be given a name and subsequently linked to the relevant controller in the "Upload" display. If there are several controllers of the same type and with the same software version, the same file may also be attached to these.

Once a description file of one type or another has been edited, the file may be used in another system.
- Use the "Export function" for copying the file on a USB key.
- Then use the "Import function" for copying the file into the new system. **(If the description file is saved as a "New Default" and imported before the "Upload" function is started, no data or languages will be obtained from the controller).**

Controller

AKC___

Language 1 ●
Language 2 ●
Language 3 ●

Default Controller text
Custom defined text
Include in Plant overview
Alarm priority
AKC user level

T

M

H

2

2

Edit Custom file

084Bxxxx + VER

X-NAME.des

Upload

Import

"Save as new default"

084Bxxxx + VER

"Save"

NAME

"Connect"

Used description

Export

(X-NAME.des)

DANFOSS
A84B1562.10 .10.02
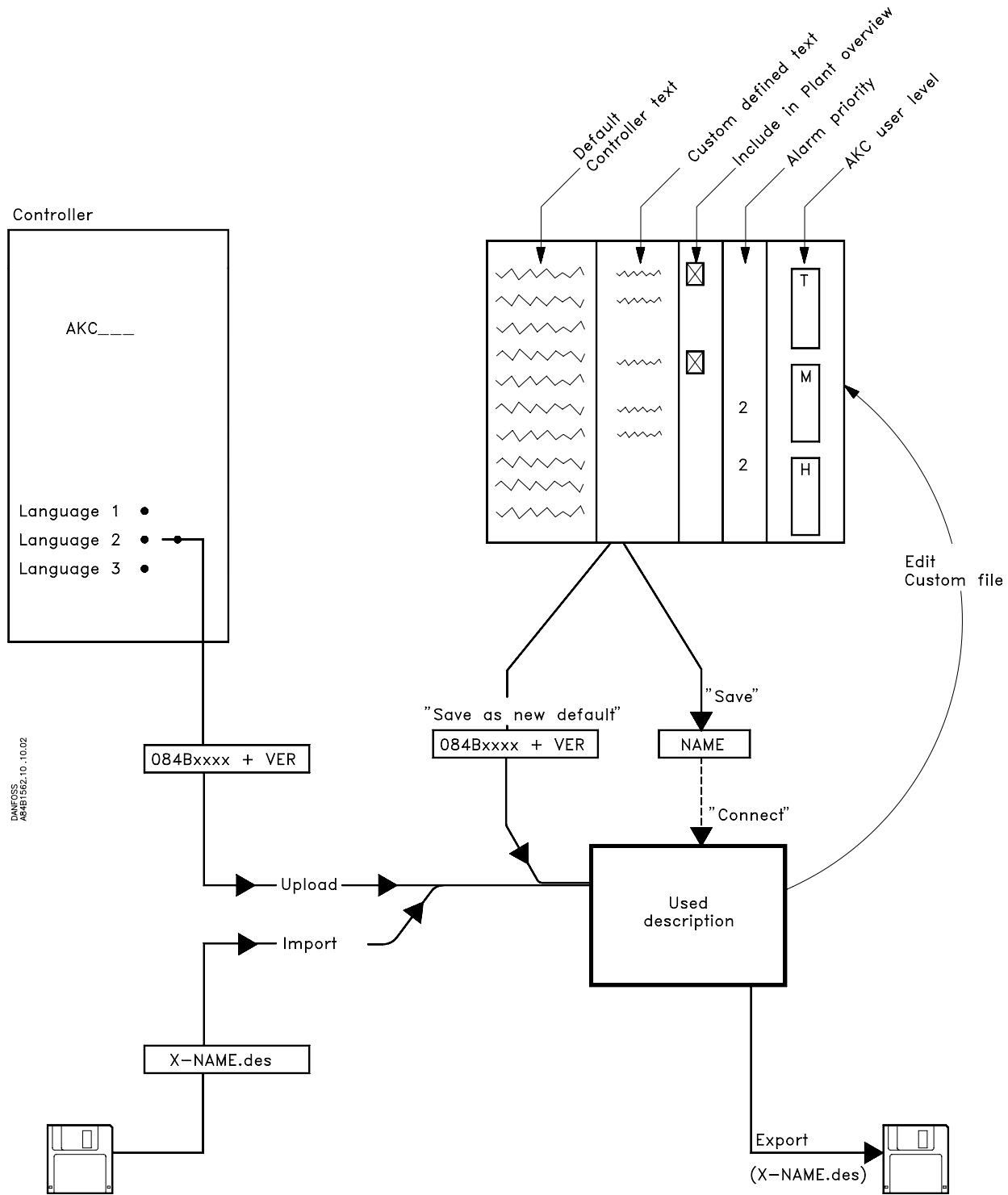
K: Setup guide for AK-Monitor and AK-Mimic

In this appendix we shall have a look at all the necessary settings required before the programme can pick up and present data.

The appendix K contains:

Before you start
Before starting with this appendix you must have installed the programme and obtained all the controller data from the individual controllers. This process has been described in an earlier document "Installation guide", and it is a condition for the continued procedure that this <u>has been</u> done.

You now have two options:

   Either
1 Imported description file
Have you imported customer-adapted default files? (I.e. custom files that have been edited in an earlier installation and subsequently stored by means of the function "Save As Default file". This file may be imported **before** upload is carried out (Upload configuration) and will then replace the default file uploaded from the controller).

If you have imported such default files prior to uploading, and editing is **not** required in these files, continue on the next page. However, if editing has to be done in some of the files, continue with the procedure shown below.

   Or
2 Upload
You have asked the programme itself to upload the various default files from the controllers by means of an upload (Upload configuration).

If this is the case, you must now open the individual files and add a customer-specific adaptation.

Procedure:
- The existing default file is opened
- The text is adapted to the plant, and parameters for presentation are selected
- You may now save the file under a new name which you decide yourself
- If the same texts can be used in several controllers of the same type, it is enough to adapt one file. The relevant controllers can then share this file. But if different texts are required for the individual controllers, you must adapt a file for each controller

The whole procedure is described in the section "Edit Custom file" . Study that section and proceed on the next page.

Set clock function in the master gateway

Description
There is a clock function in the master gateway. This clock function is used for time setting alarms, collection of data and synchronisation of the clock functions in all the other controllers on the network.
The clock in the master gateway can be set with this function.

Procedure
In the "Setup" menu, select "Advanced Configuration" → "AKA Real Time Clock".
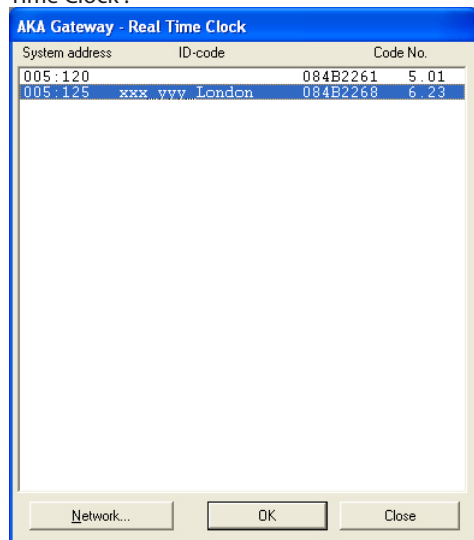
Select master gateway (address = xxx.125)

If there are several networks, repeat the following for each network.
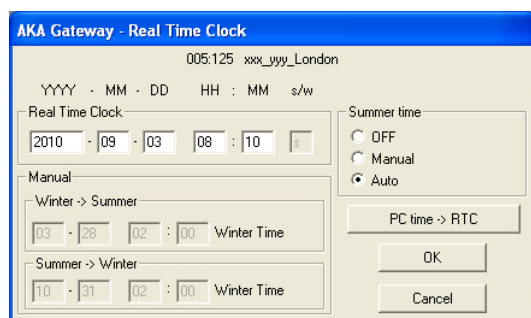
The programme will now read the clock setting in the gateway. This setting can subsequently be seen in the "Real Time Clock" field.
If the time is not correct, you may key in the correct time. You may also transfer the PC's clock setting to the gateway by click "PC time → RTC". (The times shown will not be transmitted to the gateway until you click "OK").

Summer/winter time
The gateway can itself change the clock setting in the controllers when there is change-over from winter time to summer time and vice versa.

Define whether change-over to summer time is required with the settings:
- OFF   No change-over to summer time
- Manual   Changes are made here of the days and times which you yourself have to enter in the two relevant fields
- Auto   The gateway itself sets the days to:
           - last Sunday in March and the last Sunday in Octo-ber

Establish a user

Description
Before you proceed with the programme setup you must establish a user of the programme. And it is best to establish the user who is to have the highest authorization, i.e. who will be operating most functions in the programme. All other users may be established at a later date.

Procedure
1) In the "Setup" menu, select "Authorization".

2)
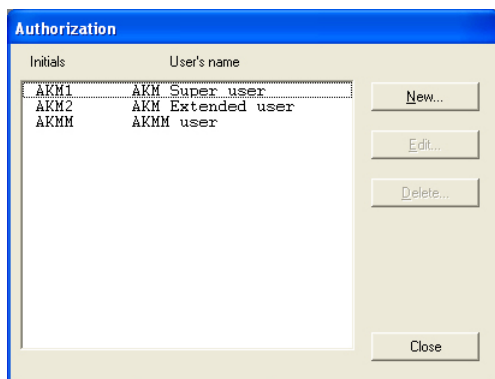
Click "New".

3)
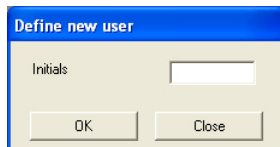
Enter initials of the new user and click "OK".
(Be aware of capital letters and small letters).

4)
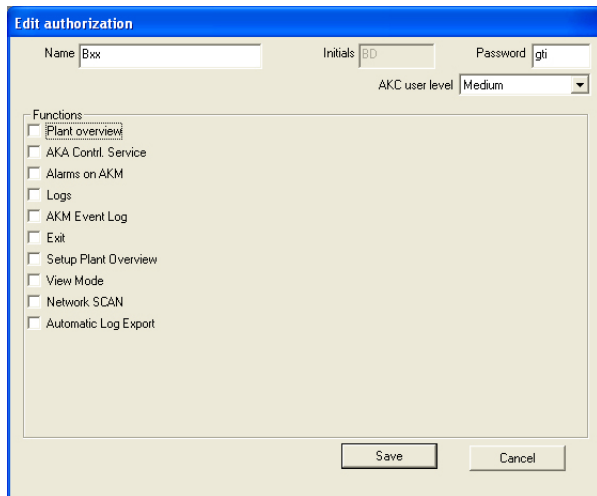
a. Name and Password.
   Enter name and password of the new user (the user may then personally change the password later).

b) Select user level for operation of AKC controllers. The user levels for various functions have been defined in custom file. These user levels can now be used, so that important functions are kept invisible to the users who are not authorized to use them
   At this point, when you establish the user, you decide how many functions the new user may use when he/she is to operate the system at a later date. E.g. whether a temperature may be set, or whether it may only be read.

   - "Low" is defined for users who are only allowed to operate a few functions.
   - "Medium" is defined for users who have access to almost all functions
   - "High" is defined for users (e.g. service engineers) who in addition to all the other settings also have to set functions requiring special knowledge.
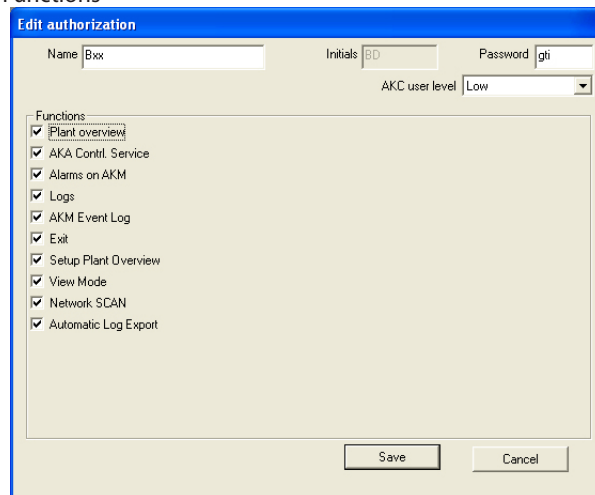
c) Functions

   Here you select all the functions the user may operate.

5) Click "Save" to save the new user authorization.

Assign a name to plants, appliances and rooms (only possible for AKA)

Description
To facilitate daily operation you may give the various controllers a ID-name. Based on this name it will be easier to operate the different settings than if the controller was only defined with a system address.

Procedure
1) First check which controllers have been obtained for the programme.
  In the "Setup" menu, select "Upload".
  Now enter the network number and click "OK". E.g.:
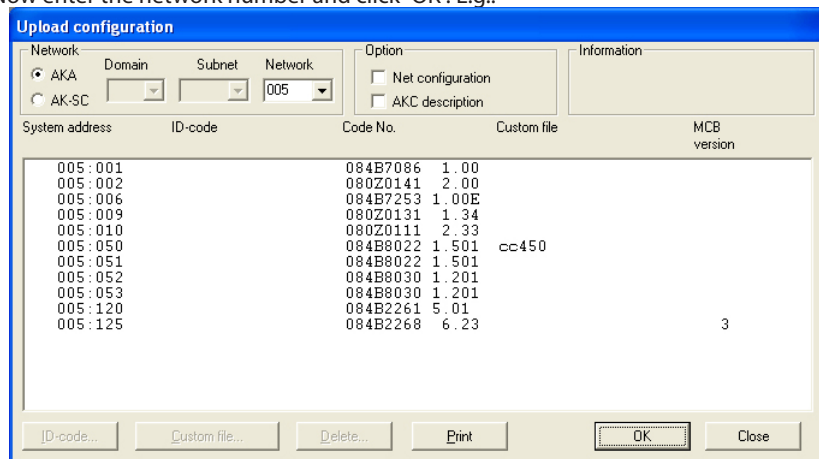
MCB:
Here you can read if the controller has an "AKA override function" and on which level.

2) Now set the "ID-code" fields.
  This is where the individual controllers are assigned a name of your own choice. It may be a name based on what the section is referred to in everyday parlance, e.g. fruit, vegetable or milk.

3) Select a controller (a line) and click "ID-code".
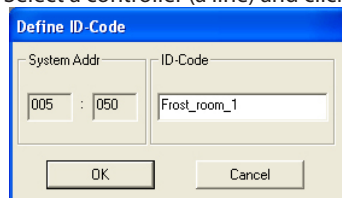
4) Enter the required name and click "OK".

5) Repeat points 3 and 4 until all controllers have been given a name. (Address number 125 is master for all the other controllers, and the name here may for instance be the shop's name).

Example of final result.
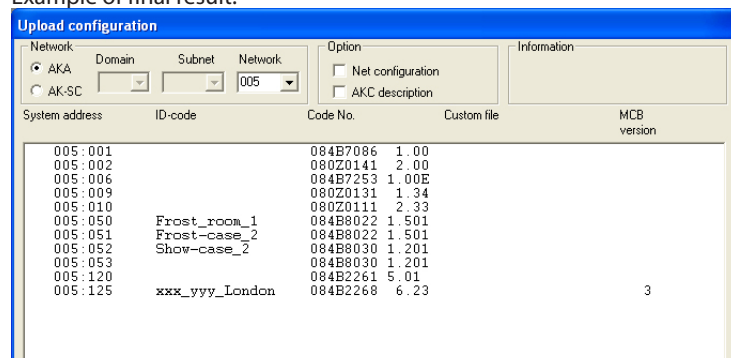
Now that all individual controllers have been assigned a name, the individual controller **must** also know which texts and functions have been customer-specified for this controller. And here is another either-or situation for you:
- If you said Yes to point 1 on the appendix' first page where you had already imported customer-adapted files, you may skip the rest of this page and continue on the next page.
- If you said Yes to point 2 on the appendix' first page and have moved to the end of the instructions to edit Custom files, you must now attach these Custom files to the controllers (a Custom file may be used by several controllers, if the controllers are of the same type). Proceed below.

1. Continue from the previous display:
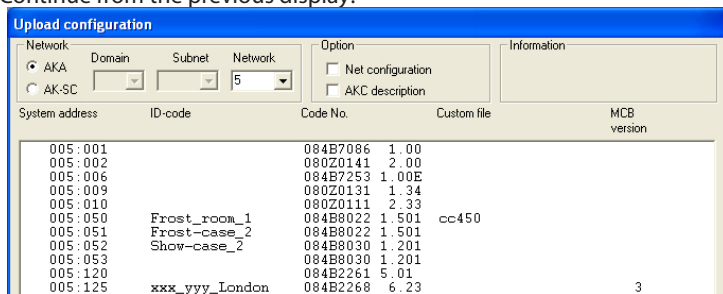
2. Select controller to which file is to be attached.

3. Then click "Custom".
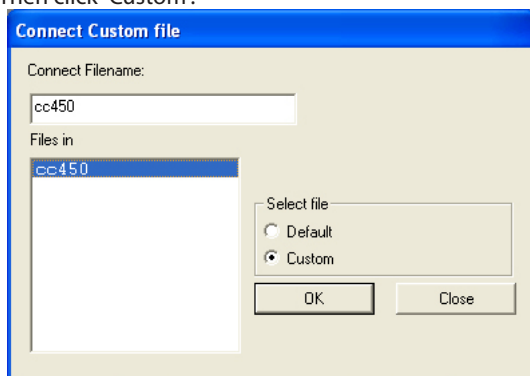
Now all files of the same format as the selected controller will be shown.

4. Select the file that is relevant for the selected controller and click "OK".

5. Repeat points 1 to 3 for all controllers to which files are to be attached.

6. Finish with "OK" and continue on the next page.

Note. If you regret the text in the selected file, you may reselect the factory-set texts by selecting "Default" under point 2 and using the file with the controller's code number.
But if a file is used which has been "Save As Default file", it will be necessary to delete this file and carry out a new upload from the controller in question.

Example of final result

How to define a plant overview

Description

A plant overview is a display showing selected measuring values or other relevant situations for the plant. It may for instance be the temperature at the various refrigeration points, whether defrost cycles have started, or whether there are alarms of a certain type. You must now define this overview, and you can define it in such a way that the overview is depicted either as a drawing of the shop, bar chart or as a number of lines with current values

To obtain "a drawing of the shop", you must have AK-Mimic or AKM 5. This is discussed in Appendix - AK-Mimic. When you have studied the AK-MIMIC document, go on to the next section entitled "How to define measuring points for logs".

If you want a "column diagram" or "lines with actual values", continue here.

You may also define additional overviews, so that one display for instance shows temperatures, another defrosts, a third settings, etc.

If the plant is a small one, all these things may be shown in one overview, but that will require that max. 50 displays be selected, as that is the limit for one overview.

Procedure

1) In the "Setup" menu, select "Setup Plant overview" - "Plant lists".

2) Click "New"
   - If the programme knows several networks, a display will appear where you have to select a network. Do that and proceed to point 3.
   - If the programme only knows one network, it will automatically move on to the next display.

3) From this display you may now establish one or more plant overviews:

All controllers on this network are now shown for the selected system.

a. Start by defining name and title on the list.

b. Then select the text to be shown for the controllers.
   - Select "Default", if the original text in the controllers is to be used.
   - Select "Custom", if a number of user-defined texts are to be used.

c. Now select a controller, and after that the measurement or function to be displayed.

Shown to the right are the measurements and functions you may choose between. If a tick has been placed in the "Parameters used in all func." field, an additional number of selected parameters will be shown from the controller in question. These parameters were not defined when the user-defined description file was set up, but are determined by the controller type. Select also one or more of these parameters, if required.

d. The various measurements and functions are selected by click "Add".

The measurements selected for the overview are shown in the middle of the display. You may select as many as 50. (In the plant overview they may subsequently be shown as 50 columns or as 20 lines).

Useful hints

If another sequence is required for the selected lines, you may move lines or insert new lines, as follows:
1) Select a line
2) Click the right-hand mouse key
3) Move the cursor to the place where the line is required
4) Click the right-hand mouse key once more

e. Select colour for display of columns
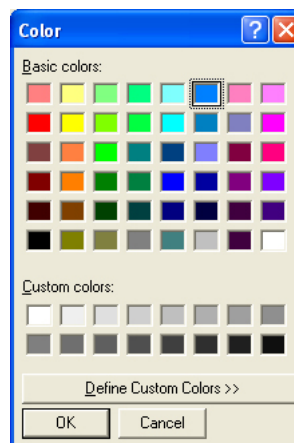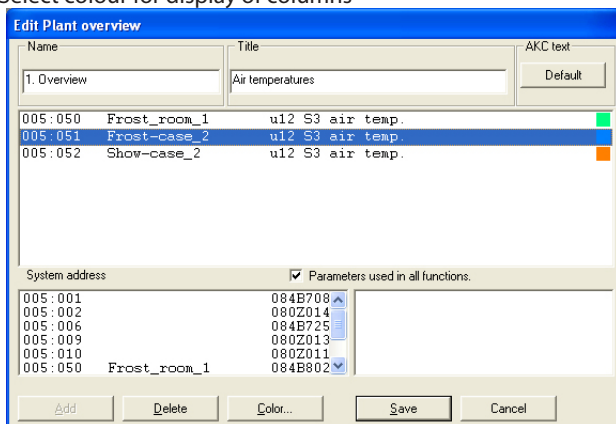
Select one or more lines that are to have the same colour, and click "Color". Now the display will appear where colours can be selected. Select colour and click "OK".
(You may for example select light blue for refrigeration temperatures, dark blue for freezing temperatures, and red for temperature alarms).
The chosen colour will now be placed on the lines selected on the previous display.

f. Activate "Save" to save the overview.

4) A plant overview has now been defined.
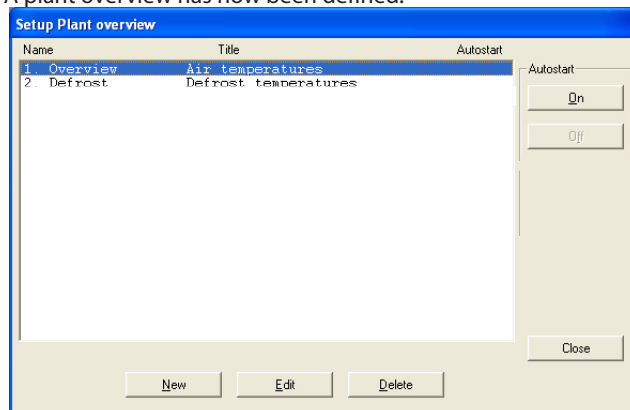
Repeat point 3 until all plant lists have been defined on this network.

5) Autostart
   A plant overview can be defined for autostart. This means that the selected overview will be shown directly after log-on when the programme is started. You may choose autostart for one overview by selecting it and subsequently click "On" under autostart. A cross at the right-hand side of the line now indicates that it has been set for autostart.

6) If there are several networks, the whole section is repeated for each network.

How to define measuring points for logs from AKA

Unfortunately, logs cannot be set up from AK-Monitor. Instead, use AKM 4 or AKM 5 for this.

Description

Types
Two types of logs can be defined. In principle it does not matter which type is selected, but the decisive thing is whether the PC is switched off for periods of time, or whether the AKM programme is stopped. If that is the case, select the type where data collection takes place in the master gateway.

- Collection of data in the PC (AKM Service log)
   "AKM_Service_logs". It is a requirement that the PC is switched on and in constant touch with all the controllers. Neither the AKM programme nor the PC, must be stopped.

- Collection of data in the master gateway
   This type collects data in the master gateway, where the data are stored for a defined period of time.
   All data will at suitable intervals be transferred to the PC (the programme itself calculates when transfers are to be made). If the PC is switched off, for example on the point of transmission, the programme will start picking up log data about one minute after the programme has been re-started.
   (Please note: If the network contains both a PC gateway and a modem gateway, the modem gateway should be the master on the network. In that case the data communication will not be disturbed unduly when large amounts of data are sent out on the telephone network).

Limitation
Logs are defined for one controller at a time, and there is room for 13 parameters in one log definition. It is possible to establish several logs for the same controller. As many as 120 logs can be set up on each network.

Procedure

1) In the menu "AKA" - "Log Setup" select network
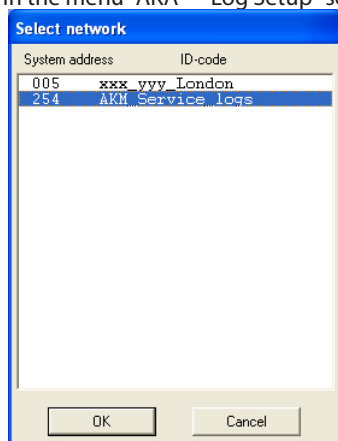
Indicate where to collect data:
Address xxx:125 is in the master gateway
AKM Service logs is in the PC

2) Proceed from this display, if AKM Service logs has been defined
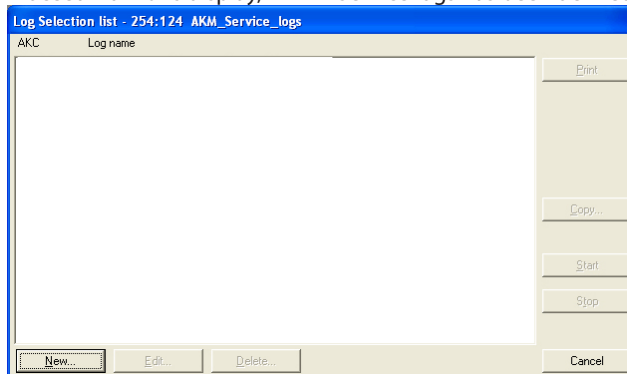
Click "New".

3) Select controller
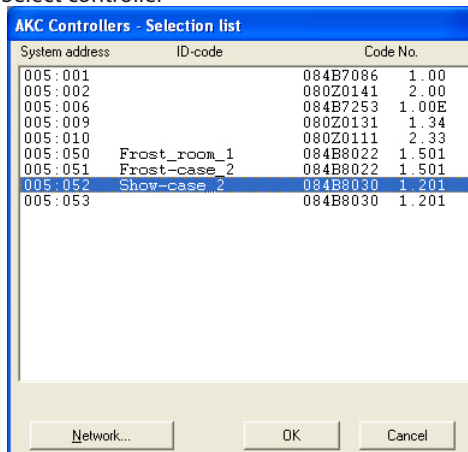
Select the controller from which data are to be uploaded.

4) The log can now be defined.
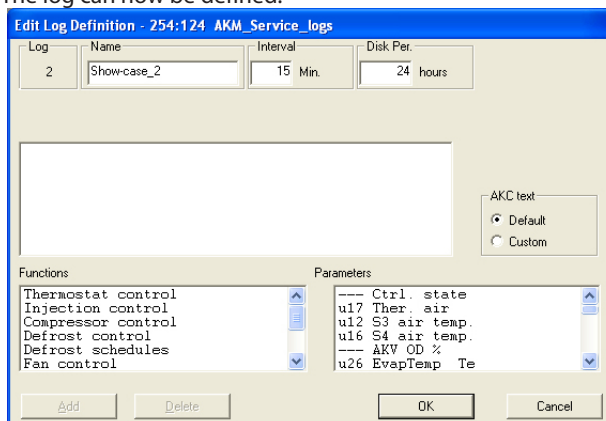
a. Start by giving the log a name
   The ID code is automatically proposed, but the name can be changed, if you wish.

b. Set the intervals

The time can be set between 1 and 240 minutes. If the field "Food Safety" is also selected, the time can be set between 15 and 1440 minutes. (See also point d.)

c. Select Disk Per. time

This is the period of time the data have to be stored on the PC hard disk. They may be stored for up to 800 days for all types of logs, but the minimum storage time differs and is determined by the type of log in question.

Important:
When data become older than the set time, they are deleted (they disappear for ever), and they can no longer be displayed or printed. You must therefore set the time, so that data are present when you want to have them displayed or printed.

d. The next three points are only visible when a log is established in the master gateway:

1. AKA - per

This is the period of time the data have to be stored in the gateway. Data can be stored for as long as 250 hours for service logs, and for as long as 960 hours for Food safety logs.

Important:
When data become older than the set time, they are deleted (they disappear for ever), and they can no longer be displayed or printed. You must therefore set the time, so that data are present when you want to have them displayed or printed.
The PC and the programme must therefore never be switched off for a period that is longer than the set AKA period.

2. Selection in Food Safety

When a selection is made in the "Food Safety" field, the log will be defined as a food safety log. If no selection is made, the log will be established as an AKA service log.

3. Used space

Shows in % how much space has been reserved for the defined logs (one log definition may max. take up 25%).

e. Now select the type of text to be shown for the controllers.
- Select "Default", if the original text in the controllers is to be used.
- Select "Custom", if a number of user-defined texts are to be used.

f. Now select a function group, and after that the measurement or function to be logged.

Shown to the right are the parameters (measurements and functions) you may choose between.

g. The various measurements and functions are selected by click "Add".

Up to 13 parameters can be selected in each log definition.

5. Save this log definition by activating "OK".

6. If there are several logs to be defined, point 4 can be repeated. However, if they are logs for the same type of controller and the same software version, the succeeding logs may be defined by means of a copying function.
Select a log and click "Copy".
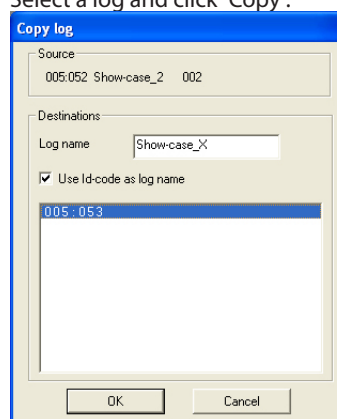
a. The earlier log is seen at the top.
  b. In the centre field you write the name of the new log, or you put a tick in the field "Use Id-code as log name". The general rule is that if you select one controller for this log, the log must be given a name. But if you select several controllers for this log, a cross in the ID code field will provide separation of the individual logs.
c. At the bottom you select the controllers the new log is to belong to.
  d. Finish by click "OK".

7. When the different logs have been defined, it is possible to:

 - Start and stop
     If data has to be collected, the log must first be started. Select
     and click "Start". The word "On" on the line indicates, that data
     will be collected.

 - Collect data
     Before a collection of data can be stored on the PC hard disk,
     the data must be obtained from the gateway. This is normally
     done automatically. Select the logs to be obtained and click
     "Auto Col.". The word "Collect" on the line now indicates that
     the data will be picked up automatically at least once a day.

     The data can also be obtained manually, e.g. in service situa-
     tions, where the most recently collected data must also be
     included (data collected since the last automatic transfer).
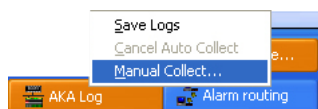
     Activate the icon and click "Manual Collect..."

 - Make printouts
     With a click on "Print" the log's definitions are printed, i.e. the
     parameters collected (several logs may be selected for the
     same printing operation).

 - Perform editing
     Select the relevant log and proceed with "Edit". The required
     changes can now be made (the collection of data must be
     stopped, when the log has to be edited).

 - Make deletions
     If a log has to be removed completely, select it and click
     "Delete". (The log must be stopped, with "Man. Collect.").

How to define presentation of logs from AKA

Unfortunately, logs cannot be set up from AK-Monitor. Instead, use AKM 4 or AKM 5 for this.

Description

In the previous section it was decided which measurements and functions were to be collected. In this section we shall now define how the collected data should be presented when they are later displayed or printed out.

The presentation can be in the form of a graphical display where up to 13 random logs are shown in the same picture, and where all logs in this picture will be from the same network. All collected values may also be printed out as tables, and all logs from the different frost rooms may for example be printed on the same list. And this list may then be defined to be printed at specified times, e.g. every Tuesday at 10 am

If you define the presentation so that about six logs are shown in each display, you will make best possible use of the paper when the data collection is printed. It will also be difficult to take in several curves when the collection of data is shown graphically.

Procedure

1) In the "AKA" menu, select "Log Setup"

2)
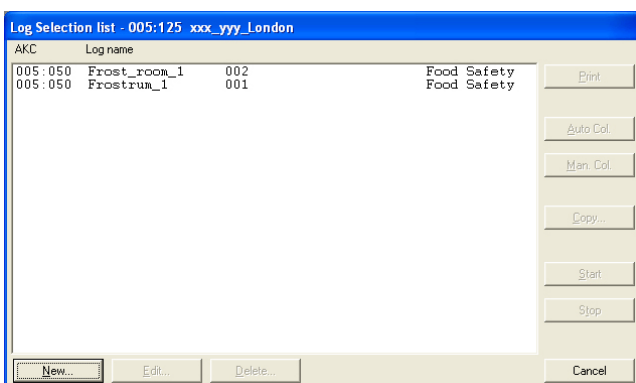
Click "New"

3) All systems (networks) where logs have been defined will now be shown.
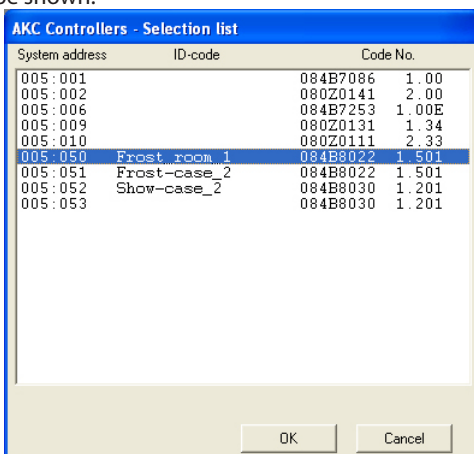
Select the system where the presentation has to be defined and finish by click "OK".

4) All logs in this system will now be shown in the centre field.
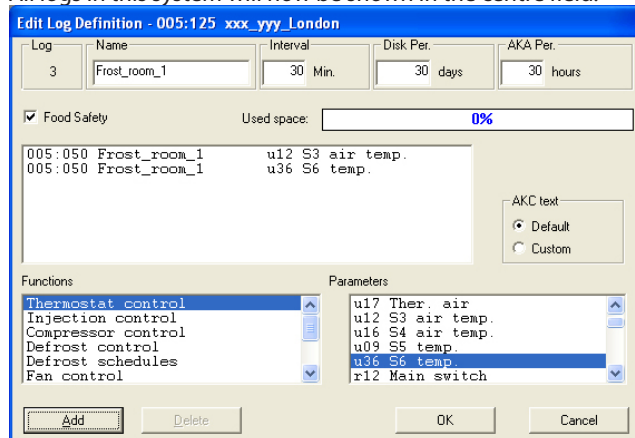
a) Start by entering name and title on the log list.

b) Select Custom in the "AKC text" field. When you do that the earlier defined texts will be used. (If you select default, the factory-set texts will be used).

c) Selection of measurements and functions to be presented must be performed in the two bottom fields
Select a function and select a parameter. Now click "Add".

d) Repeat point c until all the required measurements or functions have been entered in the field at the centre (max. 13 can be selected, but you should not select more than 6).

Hints
If another sequence is required for the selected lines, you may move lines or insert new lines, as follows:
1) Select a line
2) Click the right-hand mouse key
3) Move the cursor to the place where the line is required
4) Click the right-hand mouse key once more

e) Save the list by click "OK".

5) Now define how the lists are to be printed
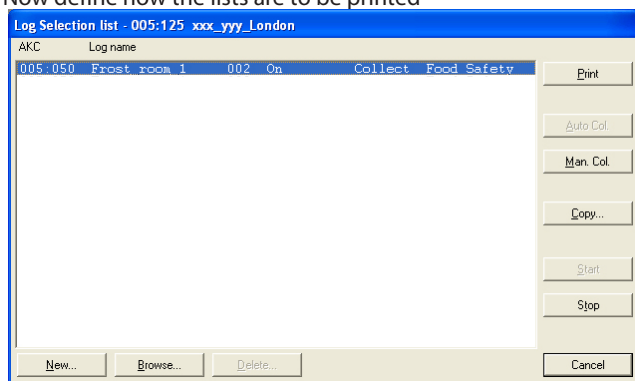
- If data are only to be printed when there is a need for them, the actual definition of the presentation of logs has been completed. Terminate this display by click "Cancel".

- If the data are to be printed in table form or based on a fixed time pattern, this can be done automatically:
  See function "History" - "Print Logs"

The definition of the presentation has now been completed.
Terminate this display by click "Cancel".

L: e-mail from AKM — SMTP

Internet Information Services
The following pages describe how the Windows component "Internet Information Services" is installed and set up, so that it can work with AKM version 7.
By installing the component, the PC will be used as a mail server so that e-mail can be sent via the internet connection to which the PC is connected.
The function is called "Simple Mail Transfer Protocol" ("SMTP" for short).

SMTP
This function is not available in Windows 7.
Install Outlook or Outlook Express.

Conditions:
To send e-mails via the SMTP server, certain programs must be configured not to block the sending of e-mails. E.g. Antivirus and fire wall protection.

Installing "Internet Information Service"

1. Insert the Windows operating system CD into the CD-ROM drive.
2. Open the Control Panel and click on "Add or Remove Programs".
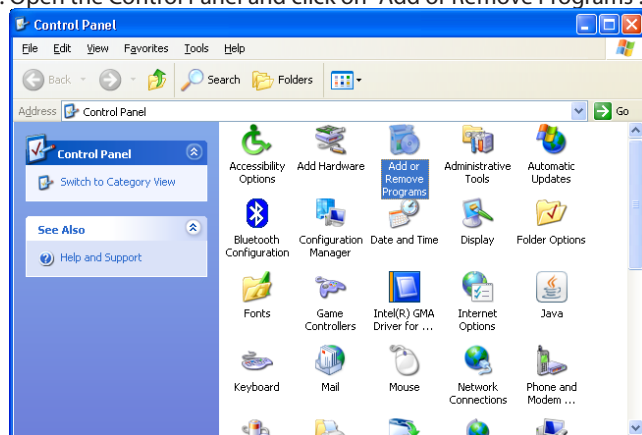
The Add/Remove window should then open.
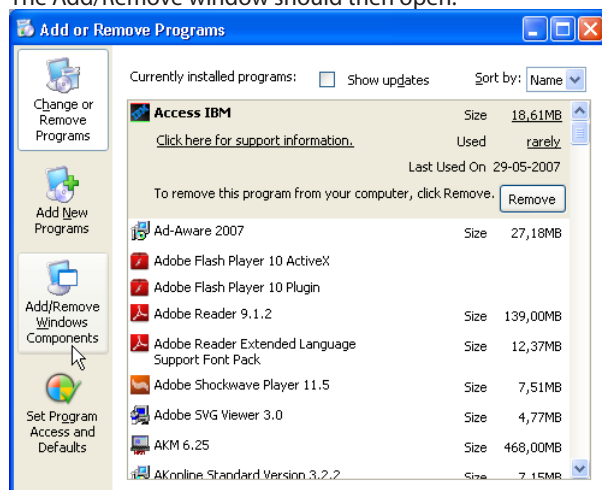
3. Click on "Add/Remove Windows Components".

In the new window that opens, there will be a list of the possible Windows Components that can be installed.
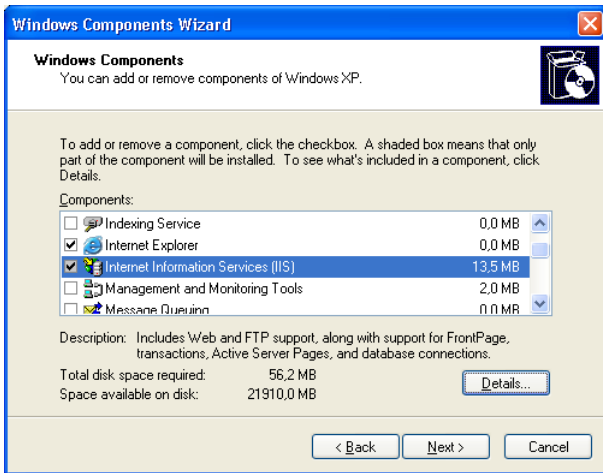
4. Scroll down through the list and select "Internet Information Services (ISS)".
5. Then click on "Details".
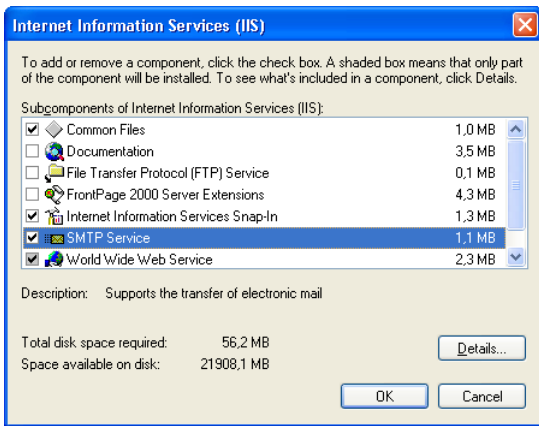
6. Verify that "SMTP Service" has been selected.
7. Press "OK".
8. Click "Next" to install the selected components.
   When the installation is complete, this message will appear.

9. Click "Finish"

Check that the SMTP service is running on the PC

1. Open the Windows Administration tool by click on "Start", right-click on "My Computer" and selecting "Manage".
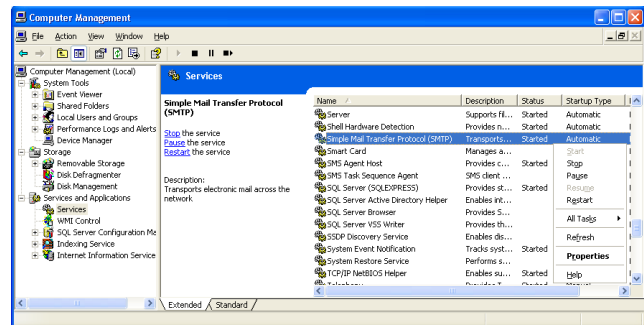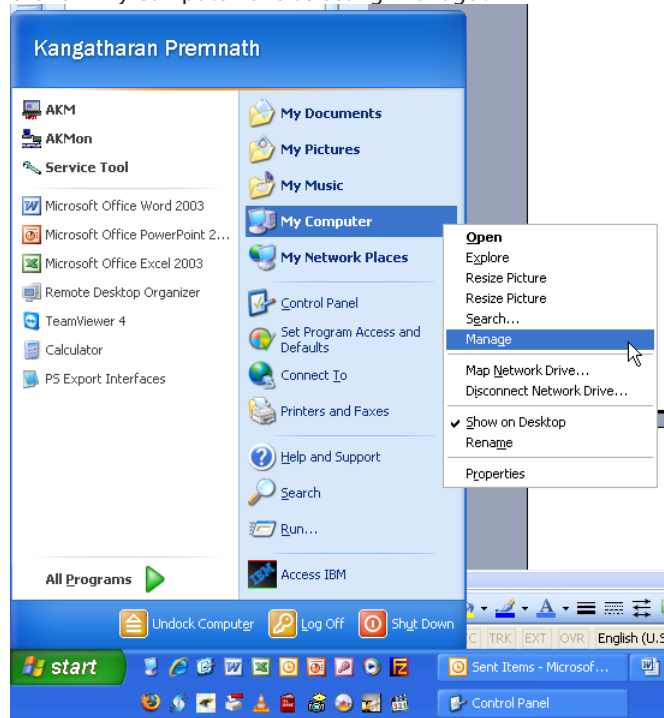
On the left:
a. Find the "Services and Applications" menu item
b. Select "Services"
   A list of the various "Services" used by Windows will now be displayed in the list on the right.
On the right:
c. Find "Simple Mail Transfer Protocol (SMTP)"
d. Check that it has been started.

e. If it has not been started, right-click on it and select "Start". The status will now change to "Started".

2. The SMTP server is now ready.

Setting the SMTP server

If Outlook/Outlook Express is installed on the PC, the virtual server will retrieve its settings from there.
You can now go on to the next section.

If it is **not** installed and configured, the following settings must be entered:

The SMTP server must be set correctly to be able to send e-mails.
1. Open the Windows Administration tool.
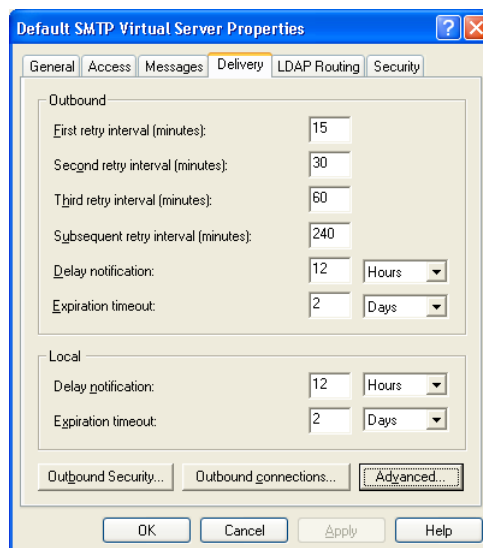   In the list on the left, find: the "Internet Information Service" menu option and select "Default SMTP Virtual Server".
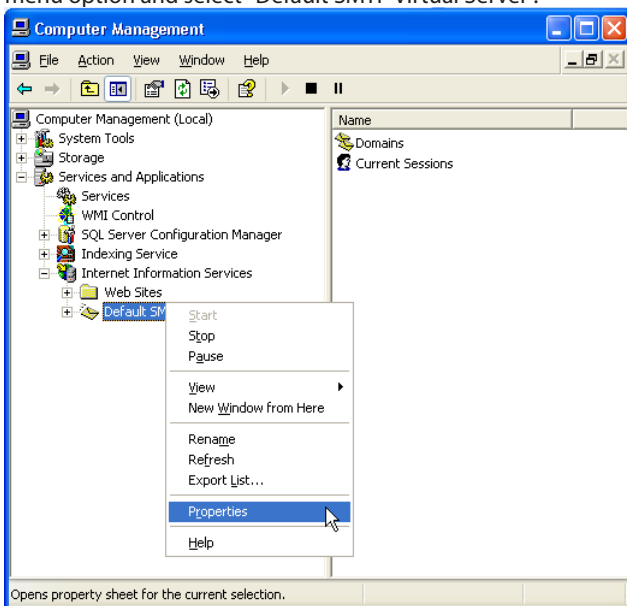
2. Right-click and select "Properties".
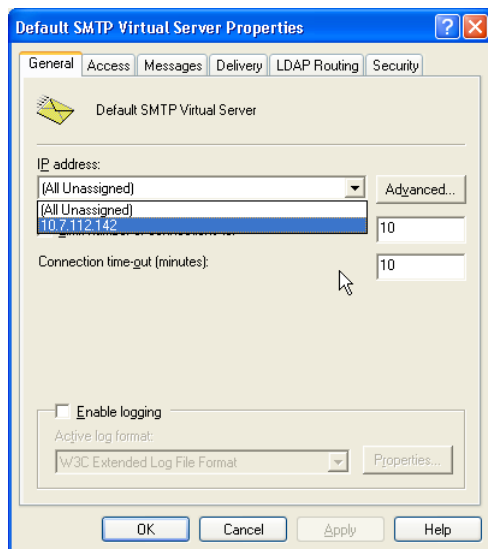
3. Select the "General" tab.
4. Enter the IP address you will use to send e-mail.

You will then need to select e-mail delivery options.

5. Select the "Delivery" tab.

6. Click on "Advanced".
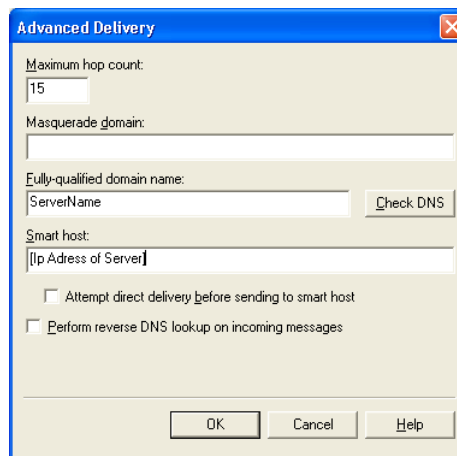
7. Enter the necessary server information..
   In the "Fully-qualified domain name" field, enter the computer name of the PC.
   The name can be found by click on "Start", right-click on "My Computer"/"Properties", and selecting the "Computer Name" tab.
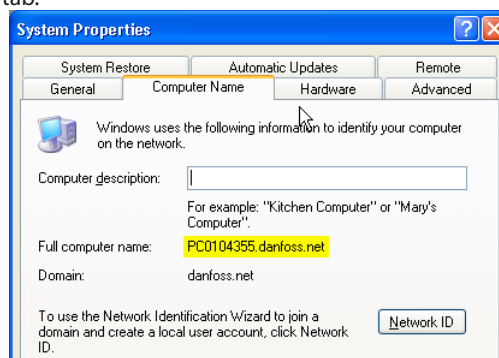
8. Check that the server name is correct by pressing "Check DNS". A message will appear indicating whether or not it is correct.

9. Click "OK" and save your settings. You can now send e-mails through your AKM.

M: Graphical representation of the operating condition in a refrigerating plant
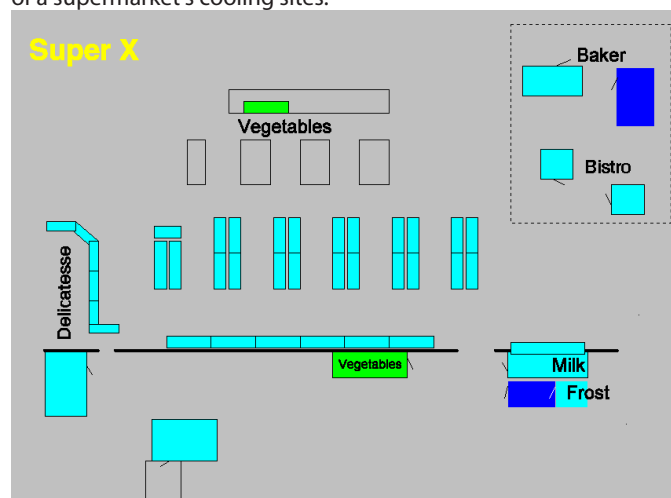
Introduction

AKM is for control and monitoring of refrigerating plant fitted with an ADAP-KOOL® Refrigeration controls system.

Depending on operating needs, AKM is available in four versions:
• AK-Monitor
• AK-Mimic
• AKM4
• AKM5

Two of these programs (AK-Mimic and AKM5) can show a display of a supermarket's cooling sites.

Placed opposite each refrigeration point are names, symbols and temperatures, so that the operating situation of the plant can be followed from just one display.

A few words about the symbols
Symbols of different kinds will be found here in the user menu - but they will only be shown when something "happens" in the plant. The symbols have the following meanings:

-18°C
Temperature:
Shows the temperature at the refrigeration point.

Drops:
Shows that defrost is in progress.
During defrost you must expect that the temperature is a little higher than during normal operation. If the temperature becomes too high over a period of time, the alarm will sound.
The defrost symbol will be shown during defrost..

Alarm bell:
Indicates that there is an operational breakdown in the plant. Either there is a defect, or the temperature lies outside the permitted value. This situation requires a close examination, the purpose of which is to identify the defect.

Refrigeration symbol
Shows that there is refrigeration at the site.

Stopped regulation:
The regulation has stopped here, so that the refrigeration point is not working.

Manual operation:
Regulation has been stopped here and set to manual operation, so that the individual functions may be controlled by force.

Door:
Indicates that a door is open.

Compressor:
Shows that the compressor is operating. A value indicates how much capacity has been cut in.

Fan:
Shows that the condenser is operating. A value indicates how much capacity has been cut in.

Cross:
The stated parameter does not exist in the controller. Check that the correct object is being used.

Hourglass:
Shows that no data are available at the present time or that the function is waiting for data from the controller.

Short-cut
A supplementary drawing for the refrigeration point has been established here, and you can access the drawing on the screen.

Stars
Indicates a sensor error.

Hatched symbols
There is a communication error in the plant.

Question mark
The database is messed up with objects. Check that all objects have been transferred in connection with imports and exports.

Exclamation mark
There is conflict on the network. Check the network.

Windows flag
One of the above mentioned symbols should have been shown here, but the programme is unable to locate it.
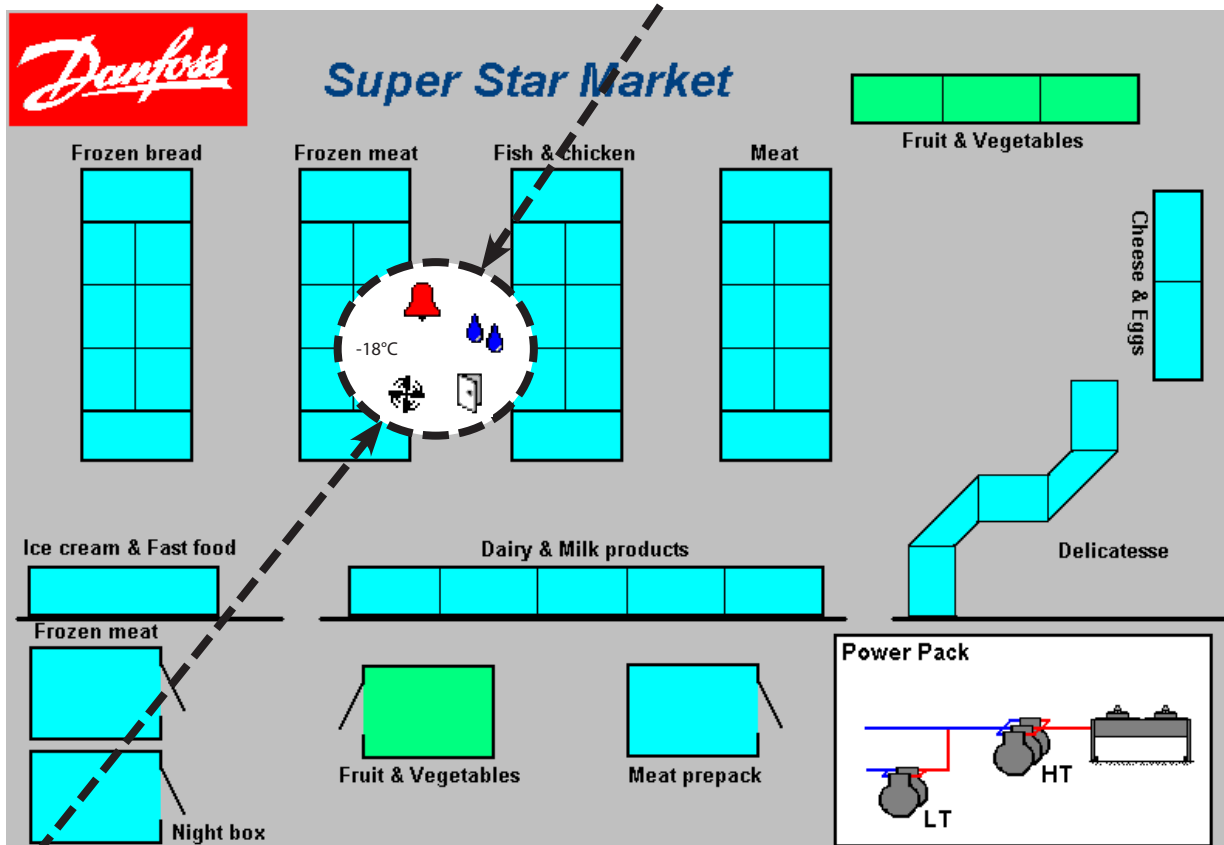
Principle

1. First make a drawing of the relevant plant.
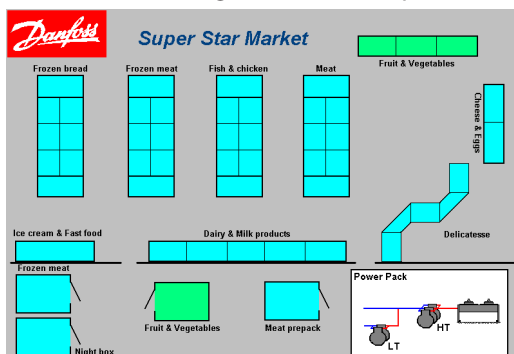
2. For each refrigeration point a controller has been placed that controls and monitors the refrigeration point.
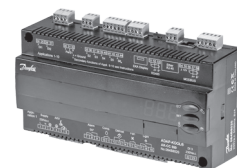
3. The drawing is now used as background on the PC-screen, and the controller's functions are placed symbolically at the refrigeration point.

4. Next to the refrigeration point a number of selected functions will now be seen which will only be visible under certain operating conditions. e.g. water drops when a defrost is in progress.
   The symbols shown will depend on the refrigeration point that is being controlled, and to what attention needs to be drawn. There may for instance be alarm symbols, temperature display, open door, and the controller's operating condition.

So much for the setup part.

User part
   In connection with later displays in the user part, all the necessary symbols will now appear under given operating conditions. With the symbol as the starting point, the user can now move further into the underlying functions. The following may for instance be seen:
   - temperature performance at the refrigeration point (logs)
   - alarms
   - changes may be made to previous setups, and temperatures may be adjusted
   - there will be access to all the controller's functions when service is required.

Preparation

Before you can start the setup you must have drawn a picture of the plant to be operated. You may for example have an overview drawing at your disposal which you can use directly or maybe scan in, and then have it converted to the required format. It is important, however, that the end result will be a drawing in BMP (BitMaP) format.

Example
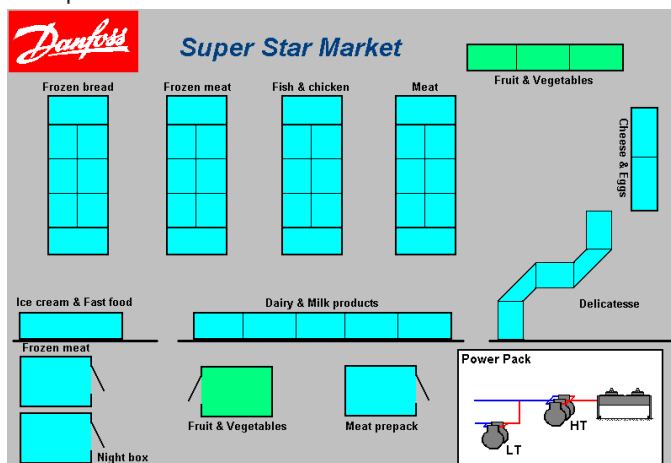
Hints

• Supplied with the MIMIC programme are a couple of recommended systems. Study them on the screen before you start your own drawing.

• It is best to draw the picture on the screen, on which the picture is to be used. In that way you avoid problems with screen resolution and drawing size.

• If you make the drawing on another screen, you have to know the screen resolution to be used to obtain the best results.
Find the resolution to which the system's screen has been set and make the drawing based on this setting.
Also use the colour resolution employed by the other screen. If you are in doubt, choose 256 colours or less.

• Installed together with Windows is a programme called Paint. This is simply a drawing programme that you might like to use.

• When you save the drawing, it *may* for instance be in 256 colours, but it *must* be in format BMP.

• When you have a finished drawing of the plant, you may copy your file into the folder of other BMP-files. The path could for example be: C:\AKM\AKLAYOUT\

A few more words about preparation
The programme has been designed in such a way that you may make a setup on a PC without there being a direct contact to the relevant plant. If you wish to make a setup in this way, read on below.

No direct contact

When you are about to move a controller to a specific refrigeration point, **you must know** which controller and which software there are at the different addresses, otherwise you will not be able to carry out this kind of setup.

1. First define the relevant network number of the plant.
2. Then give this network an address.
3. It is now up to you to define the code number and software version.
4. After this, you may proceed as usual.

In other words:
Without a direct contact the programme cannot know which controllers are placed at which addresses. It is up to you to know **all** the data.

When there is direct contact

When you wish to attach a controller to a specific refrigeration point, the programme will help you with the controllers' type, code number and function. The programme will obtain these data from the upload function.

1. First select the network number.
2. Then the address.
3. The code number and software version will now be displayed.
4. Proceed as usual.

In other words:
When there is a direct contact, the programme will guide you to the relevant data.

Construction of objects

The function is an editing function for the controls described in the "Setup Plant overview" section.

With this function you can edit an already existing object or construct a new object right from scratch. It is however a requirement that you are familiar with the functions of the controller, so that you know which information the controller is capable of transmitting and receiving.

Construction of objects is only for super users!

The function can only be operated via programme AKM 5 with software version 5.2. or newer.

A bit about information from the controller

- Temperature value.
  Here you will obtain a value between -30 and +30 from the controller, and it will be your job to describe what it is and what name it is to have. E.g. "Defrost sensor" and "°C".

- Operating conditions
  The various functions in a controller will change between certain operating conditions. These operating conditions will be transmitted as a value and will be:
  • 0 or 1 when a relay output is inactive or activated;
  • 0, 1, 2 or 3 when there is alarm status;
  • 0, 1, ... or 11 when it is the controller's actual operating condition. 0 will here represent "no refrigeration at the moment" and 4 may represent "defrost going on just now".
  To make such an operating condition visible, its parameter value may be linked up with a symbol, and the symbol may for instance be selected, as follows:
  - Parameter for compressor relay: Compressor symbol when the parameter value is equal to 1.
  - Parameter for alarm status: Alarm bell symbol when the parameter value is equal to 1 or 3.
  - Parameter for regulating condition: Symbol of a couple of drops when the parameter value is equal to 4, and of an ice crystal when the parameter value is equal to 2.

In order to make these setups you must know the parameter name and the parameter values of each function you wish to include in the object.

You will find this information in the document "Menu operation" for the respective controllers - but please remember that the code number and the software version must be compatible.
(If a parameter value is indicated as ON/OFF, it will be equal to 1 / 0).

A bit about objects

When you have constructed an object it must subsequently be placed in the plant overview. How this is done has been described earlier in the manual.

There are two types of objects you can construct:
• Standard object - a simple display of a number of parameters
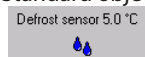
  The selected parameters are shown here with texts, measurement values and symbols.
  It is this block you subsequently can place in your plant overview, as mentioned earlier.

• Application object - Parameters are displayed together with a drawing of, say, a refrigeration appliance.
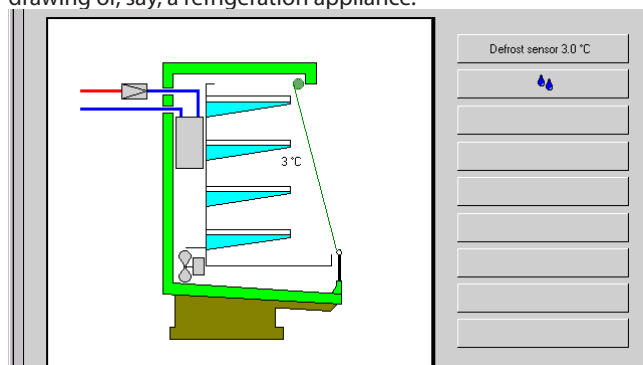

In an application object the parameters will be linked up with a drawing, so that you can place the different parameters at the exact place in the drawing that fits your application.
You must place the application object in the plant overview, as mentioned earlier. But in contrast to the standard object where the parameters are shown directly in the plant overview, the application object will be placed on a short-cut icon. When you now click on this short-cut icon, you will skip the routine and obtain the drawing of the refrigeration appliance with belonging parameters.

In more complicated drawings of, say, a compressor room you will be able to place many parameters, but you are not allowed to place more than 26 different parameters. This is what the programme allows.

N: Control function (Overriding) from AKA

Introduction
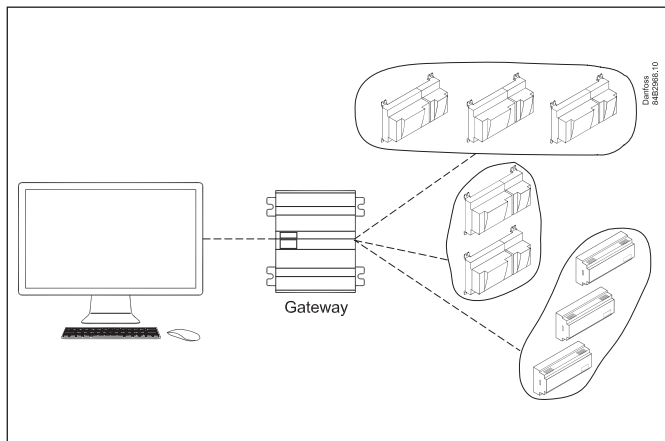
The master gateway of an ADAP-KOOL® refrigerating system contains an override function that can transmit signals between selected controllers via the data communication.

Setup takes place via system software type AKM where the individual functions are established. During the subsequent operation it is not necessary for the AKM programme to be operative - the master gateway itself will control the functions.

Based on the selected function the controllers are gathered in groups. So when there is override, all controllers in the group will receive the same override signal.

Among the functions can be mentioned:
• When the last compressor is stopped in a system, the compressor control will signal all the controllers to close the valve in the refrigerating circuit.
• The alarm limits for an entire refrigerating system can be changed as a function of an outdoor/indoor temperature.
• Defrost start can be carried out centrally
• Change-over between day and night operation can take place centrally.
• Optimisation of system's suction pressure

The functions are described on the following pages:

Definition of control function

Principle
The following display will be the first one you encounter when you have selected "AKA" - "Control function" and have chosen the network on which you are going to perform the settings.
- The network number will be seen at the top left. The address will always be 125 as the function is only present in the network's master gateway.
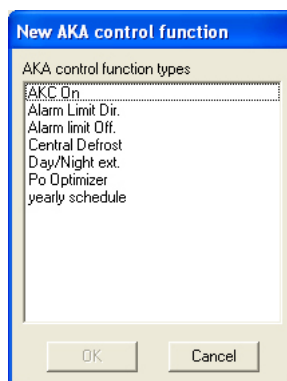
Injection on

Principle
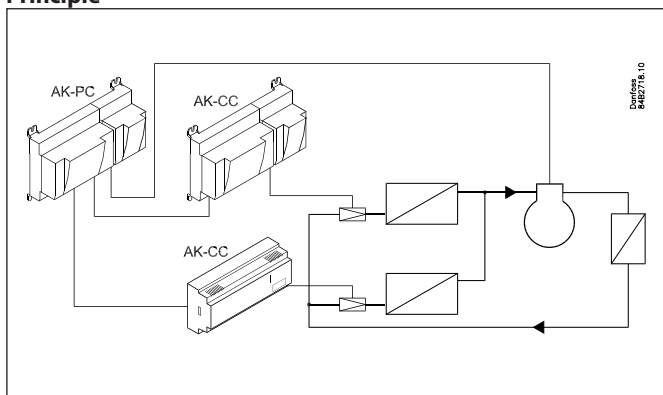
All controllers controlling an expansion valve have an AKC ON connection. By cut out this connection the controller will close the valve, so that there will be no liquid flow in the evaporator. In this way it is certain that the valve will close when the compressor has stopped, but it also requires some wiring.

You can obtain this function with a signal via the data communication, so the wiring can be reduced.
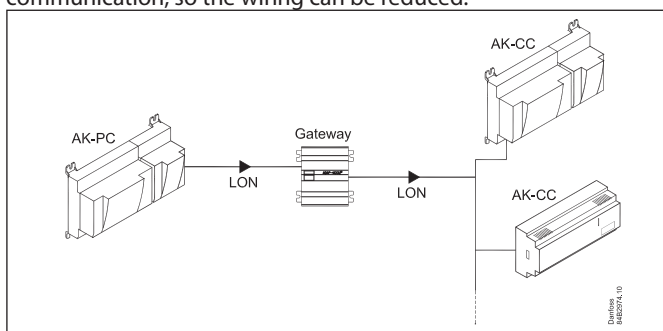
Start with the menu display you see when you select controllers. If the word "Automatic" appears next to the controller, it is a new controller which has been prepared for this function.

Automatic

Compressor control
The override function itself reads the parameter showing the AKC-ON function's signal.

Controllers with AKV control
The override function will itself find the parameter controlling the AKV valve. (When there is override, the AKV valve will always be closed).

Not automatic
The controller has not been prepared for the function, so you will have to set all the parameters and connections yourself. On last page in the appendix you can see how you select the parameters.

Compressor control
Here you have to find the parameter releasing the status on the Injection output. The parameter is called "AKC ON" or "Injection ON.
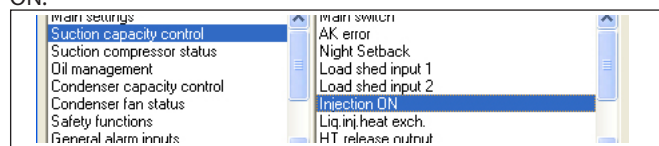
Controllers with AKV control
Here you have to find the parameter that can force-control the AKV valve. The parameter is called "Force close". You will find it in the group named "Forced closing" or "For Danfoss only".

Change of alarm limit

Principle
This function changes the set alarm limit in the different controllers.
The function is primarily used in refrigerating systems where it is difficult to maintain the required temperature on extremely hot summer days.
The alarm limit is changed as a function of a room temperature measurement, and the change may be up to 10 K from the starting value. The override may also be made dependent on the outdoor temperature, so that it only starts operating when the outdoor temperature exceeds a set value.

There are two ways of changing the alarm temperature:
- one where an existing alarm limit in the controller is displaced
- one where a new setting is made of the existing alarm limit.

The override value depends on the values set for the indoor temperature. If there is a difference of 5 K between the two settings, the override value will also be 5 K.

Alarm limit offset
The function is activated when the indoor temperature reaches the set range.
The function may also be made dependent on the outdoor temperature, so that the function will only be activated if the outdoor temperature exceeds a set value.
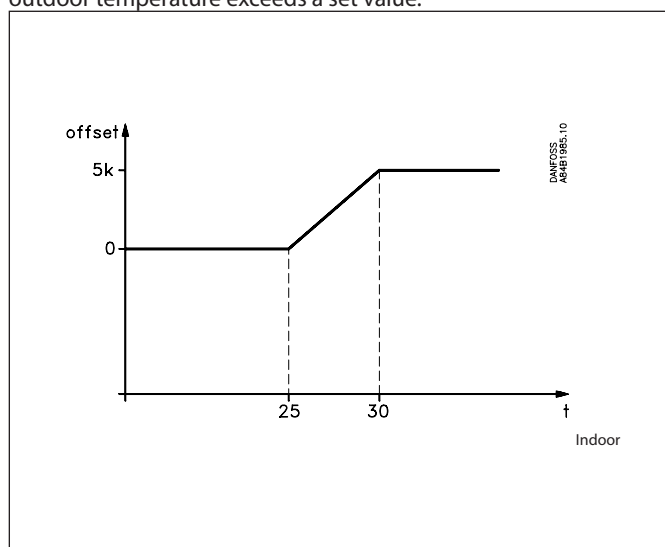
If the function is released by the outdoor temperature at a time when the indoor temperature is in the active range, the override will start with the corresponding step.

The override function may be attached to controllers with different alarm limits, as it is a displacement of the alarm limit that is made.

Alarm limit direct
The function in principle works in the same way as "Alarm limit offset", but the alarm limit is set differently in the different controllers. For a start all the connected controllers must have the same alarm limit setting. This value is also set in the override function. When the override function then is activated, another value will be set in all the connected controllers. This value will now apply until it is overwritten by yet another value.
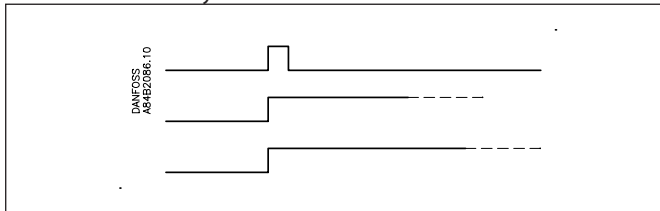The maximum value that can be set will be 10 K higher than the starting value.

When "Alarm limit direct" is used, it will be necessary to gather all controllers with the same alarm limit value in their own individual override functions.
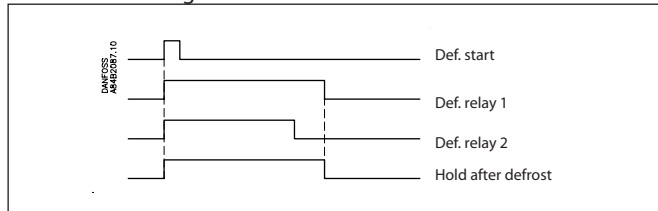
Defrost control

Cental defrost

The control function (override) enables you to define and start a number of defrost cycles.

When the defrost has been started, it is up to the individual controllers to determine how it is to be terminated again. In some it may stop based on time, in others based on temperature.

Co-ordinate Defrost

The function enables delaying the cooling until all controllers are finished defrosting.

Def. start

Def. relay 1

Def. relay 2

Hold after defrost

When the override function has received a signal from all the selected parameters that the defrost has been terminated, it will cancel the signal "Hold after defrost".

When the controllers "lose" this signal, the regulating functions will be released. The normal functions following a defrost cycle can now start.

P0 - Optimisation

Principle

The control function (override) makes it possible for you to opti-mise the suction pressure so that it will be adapted to the system's actual load. During the optimisation data are collected that tell you which refrigeration points are most heavily loaded.
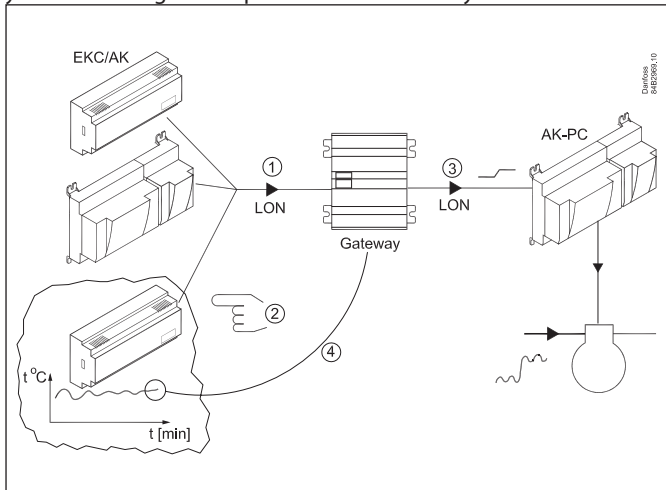
The individual controllers handle the temperature control in the refrigeration appliances. Some controllers control two, others three refrigeration points in the same appliance. The load and operating condition of each refrigeration point are continuously uploaded to the gateway via the data communication. The col-lected data are accumulated here and the "most heavily loaded" refrigeration point identified. An adaptation will now be made of the suction pressure so that the air temperature at the refrigera-tion point is maintained. Only after a period of, say, 20 minutes, or if the operating condition of the refrigeration point is changed (defrost, cutout, etc.) can another refrigeration point be desig-nated as the "most heavily loaded one".
It is the gateway that collects data from the refrigeration points and it is the gateway that transmits an offset signal to the com-pressor control so that the suction pressure reference is changed to suit the needs at the "most heavily loaded" refrigeration point.

The set min./max. limits for the suction pressure will of course be observed.

The time during which a refrigeration point has been designated "the most heavily loaded one" will be summed up in a log (history) in the shape of minutes. These data can be presented in a display containing "the last 24 hours" and "the last 168 hours (one week)". The oldest values will continuously be overwritten.
It will typically be the same pattern that is formed on the two charts, but if "new ones" emerge and differ from the rest this should be examined more closely.

System requirements

Max. 60 refrigeration points (sections) in one group.
Max. three groups.
Data should max. be uploaded from 100 refrigeration points in one DANBUSS connection. Too many will create too much traffic on the data communication.

Coming controllers:
The AKM programme must know the controllers that are used in the P0 optimisation. The code number and software version for these controllers are described in a file named "akctype.ini". This file is continuously updated at Danfoss.
If you install a new controller in the refrigerating system and the AKM programme does not know this controller, it may be neces-sary to update the mentioned file. Please contact Danfoss.

History

Here you accumulate the refrigeration points which during the period have had the greatest influence on the P0 optimisation. On the y-axis you can see for how many hours the P0 optimisation has been locked to the relevant refrigeration points.

In a stable system there will not normally be major deviations. If there are major differences of the contents of a 24-hour overview and a weekly survey, this difference should be examined.
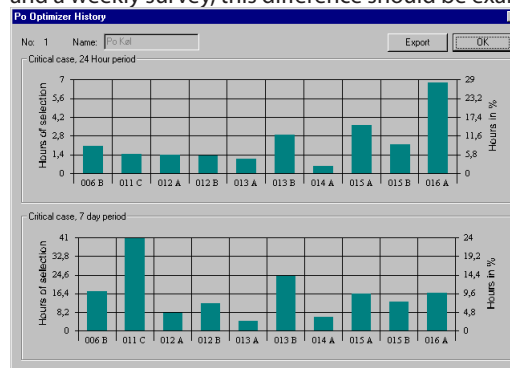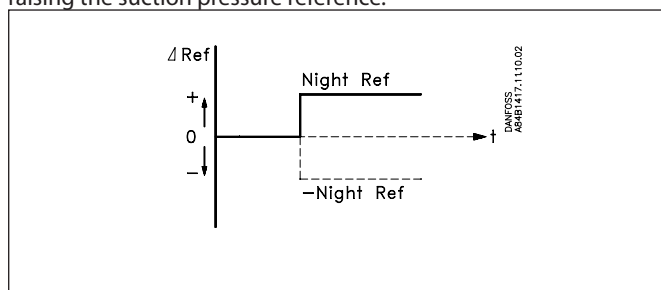

24-hour overview

Weekly overview

Day / night control

Principle
This function transmits a signal to selected controllers. The signal can e.g. be used for raising the temperature reference and for raising the suction pressure reference.
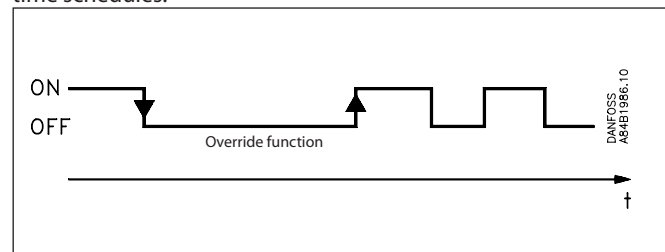

When the individual controllers receive the signal, the reference will be changed by the value set in the individual controllers.

Time schedule

Principle
The control function (override) enables you to define a number of time schedules.

Example of use:
Input signal for day/night control.

Principle of selection of parameters

Principle
Each controller in the whole system contains hundreds of parameters. And if we have a look at just one controller, it will use the given parameters defined by the factory. However, when you have to configure an override function here, it will be necessary for you to define one specific parameter, and one only, in one specific controller in order for the function to be a success. For certain overrides you will have to select several parameters as signal givers, and maybe quite a number of controllers as receivers.
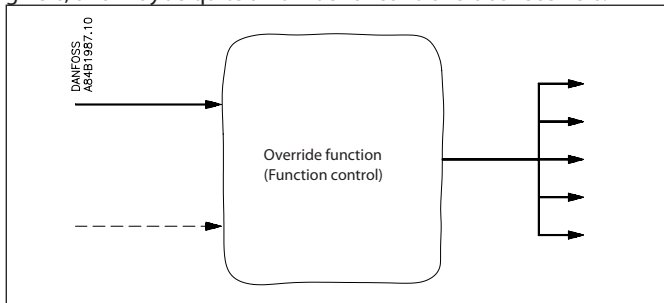
Automatic
Wherever possible we have made this selection easier. We have put in an "automatic" function which will itself recognize the override function you are configuring. This recognition will produce the result that you will see the word "Automatic" when you have to select controllers. In this way you do not have to move way down in the controller's menu to find the very parameter needed for the function - you can select it on controller level.
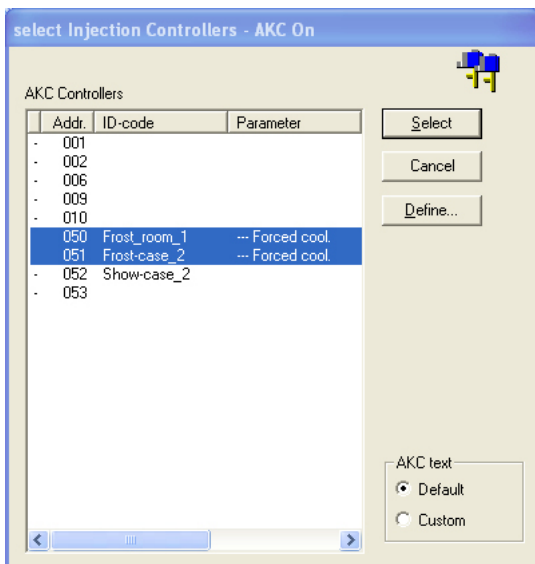

HOWEVER - as it appears from the display - there are also some controllers that do not have this built-in automatic function. So here you have to select the controller's parameters, as shown in address 50 and 51.
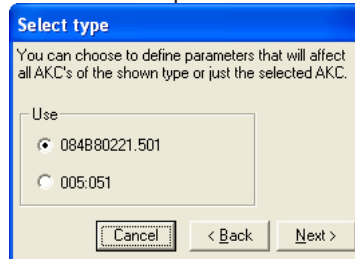
Manual
When you select one specific parameter for an control function (override), it should be done in this way:
1. Select the controller address (the word "Automatic" does not appear on the line)
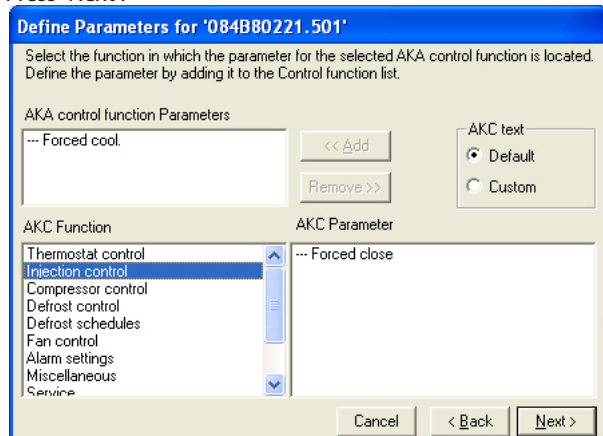2. Press "Define".
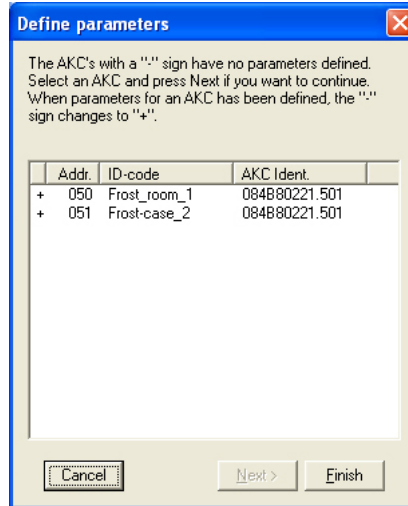
3. Select a line and press "Next".

The parameter you are selecting may be selected for other controllers of the same type and software version at one go. But it may also be defined for just one address.

4. Press "Next".

5. Find the function group containing the required parameter.
6. Select the parameter and press "Add", so that it is placed in the upper white field of the display.
7. Press "Next".
8. You have now selected a parameter in a controller, and it can now be used in an override function.

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