

Menu operation via AKA 21

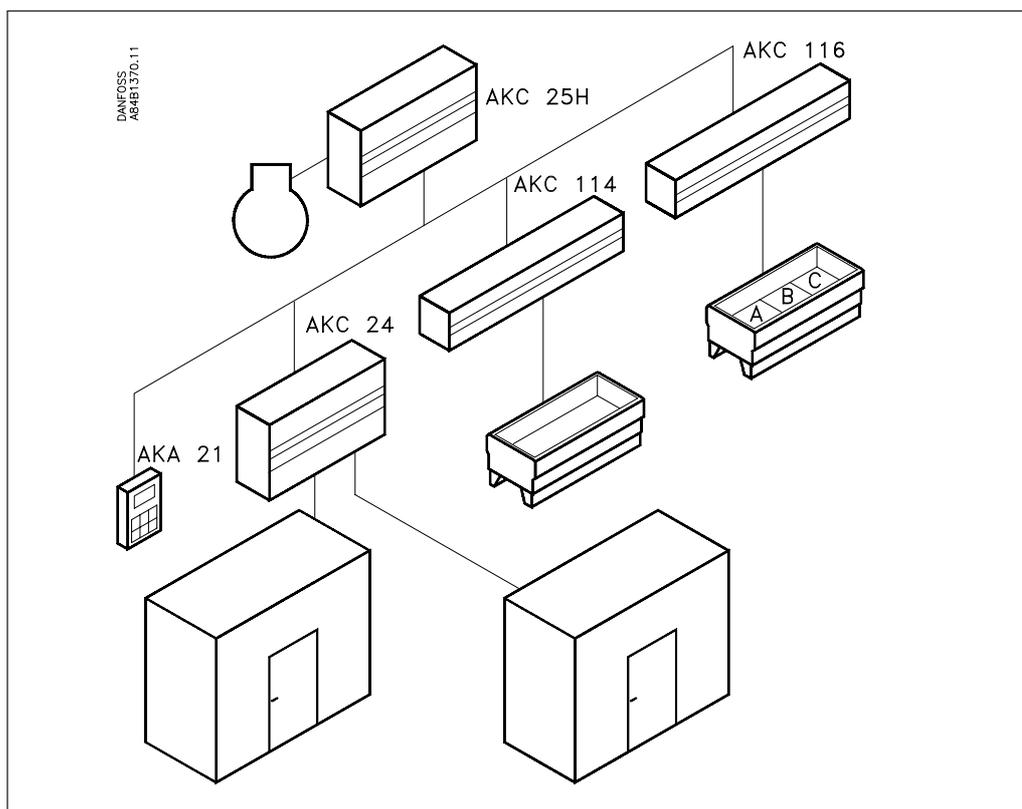
Controller type AKC 151R for controlling evaporator

Software version 1.0x

ADAP-KOOL®



System survey



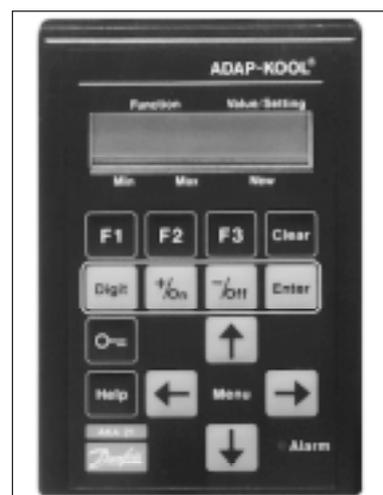
A refrigerating plant fitted with ADAP-KOOL® refrigeration controls will mostly consist of several controllers where each controller will regulate its own refrigeration appliance/cold room.

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

Operation

The individual controllers can be operated in two ways:

1. With control panel type AKA 21.
Use this document when operation takes place in this way.
2. With PC and system software type AKM.



Validity

This menu operation was worked out in October 1997 and applies to AKC 151R with the following code number 084B6195 that is fitted with software version 1.0x.

Select a controller

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

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

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

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

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

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

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

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

Settings of a controller

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

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

```
OFF / ON ON
OFF / ON ON
```

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

Access to a controller

The functions in the controller can be protected by means of an access code. Depending on the settings to be made, you may gain access in one of the following ways:

User input:

1. Push F1
2. Push F2
3. Code 1 and then F1
Code 1 and then F3
4. Code 2

Gives access to:

- Display of alarms
- Reading of selected temperatures, change of temperature in the refrigeration appliance, start of defrost
- Acknowledgement of alarms
- Setting of selected parameters
- Operation of all settings of the entire menu system (with system software type AKM there is access to additional functions).

Pages 6 and 7 contain a description of how you gain access to the system via a code.

Supporting text

A supporting text is attached to the individual functions. When such a function is shown in the control panel's display, the supporting text can be obtained by pushing the key "Help". The supporting text is intended as a help to users who no longer use these operating instructions.

In the menus shown below functions with supporting texts are identified with the word "Help" next to the function.

How to localise an error

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

1 < 2 > 16 AEAAAAAAAAAagg A

AKC 151R Adr: 2 E Mon-11:27
--

High air temp

When an error has occurred, first select the controller on which the error is registered. When the controller has been found, push "F1", and the error message will appear. At the end of the document there is a list of all the error messages and a description of how to acknowledge an alarm.

Functions of a controller

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

e.g.

AKC 151R Adr: 2 E Mon-11:27
--

From this position you can freely choose between several forms of operating levels:

1. Display of alarms - push "F1"
2. Display and setting of a few selected functions - push "F2"
3. Display and setting of several selected functions - push "F3"
The function may be protected with a code (code 1)
4. Display and setting of all allowed functions in the controller. The function may be protected with a code (code 2).

Operation of the individual levels is shown below:

- 1. F1** When you push "F1" the alarm messages from the controller in question appear. Only active alarms are shown. With a push on "↓" you can see whether there are more alarm messages, and if so, their texts.
When an alarm has been localised and corrected, the alarm is acknowledged (removed from the system, so that it no longer appears). In large systems where a gateway is also connected this acknowledgement will take place automatically. In other systems it has to be done manually, cf. end of the document.
Prior to the acknowledgement of the alarm, the keying of a code is required, see page 6.

Leave the F1 function by pushing "←".

2. F2 When you push “F2” a number of functions will appear where it is possible to read or set values.

You can move to and from the individual functions by pushing “↑” or “↓”. On page 3 you can see how a setting is changed.

Man. Def OFF/ON 5:03:02	Manual defrost is activated when ON (changes automatically to OFF)
CutOut °C -50 - 50 4:03:04	Setting of thermostat cut-out value MUST BE SET.
AlarmAir 4:02:01	Actual air temperature for the alarm function
Ther.Air 4:02:02	Actual air temperature
S3 °C 4:02:03	Air temperature at S3 sensor
S4 °C 4:02:04	Air temperature at S4 sensor
RunTime 4:02:07	Actual thermostat cut-in time or duration of the latest finished cut-in
Reg. Cond. 3:01:01	Regulating condition 0: No cooling 1: Cooling 2: Forced cooling 4: Defrost 5: Start after defrost 6: Forced closing 8: Emergency cooling (sensor failure)
DefTime m 5:02:03	Actual defrost cut-in time or duration of the latest finished defrosting period.
MDefTime m 5:02:04	Average value of the latest 4 defrosting periods.

Leave the F2 function by pushing “←”.

3. F3 When you push "F3", a number of functions will appear which are used when the system is serviced.

- If access code is used (code 1), key it as follows:
 - Push the "key"
 - Enter the code by using the three keys "+", "-" and "Digit" (the code is mentioned later as code 1, and the factory setting is 40. If code 2 has been set at 0, access code 1 cannot be used).
 - Push "Enter"
 - Push "F3"

Move to and from the individual functions by pushing "↑" or "↓".
On page 3 you can see how a setting is changed.

Main Switch -1 / 0 / 1 2:02:01	Main switch: 1: Regulation 0: Controller stop -1: Service
Diff. K 0.5 - 10 4:03:05	Setting of thermostat differential
Dt Night K -25 - 25 4:04:02	Night set back value
High Lim °C -50 - 50 4:05:02	High air temperature alarm limit (absolute value). When there is night setback operation, the alarm limit is raised by the night setback value.
Low Lim °C -50 - 50 4:05:05	Low air temperature alarm limit (absolute value)
AKV OD % 3:01:02	Actual valve opening degree
Def.Stop °C 0 - 60 5:04:03	Temperature value of defrost stop
MaxDefTime 5 - 180 5:04:02	Max. permissible defrost time in minutes (Security time on Temperature stop)

Leave the function by pushing "←".

4. Access to all functions

The access to the functions may be protected with a code (code 2).

- If access code is used, key it as follows:
 - Push the "key"
 - Enter the code by using the three keys "+", "-" and "Digit"
 - Push "Enter"
 - Push "←"

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

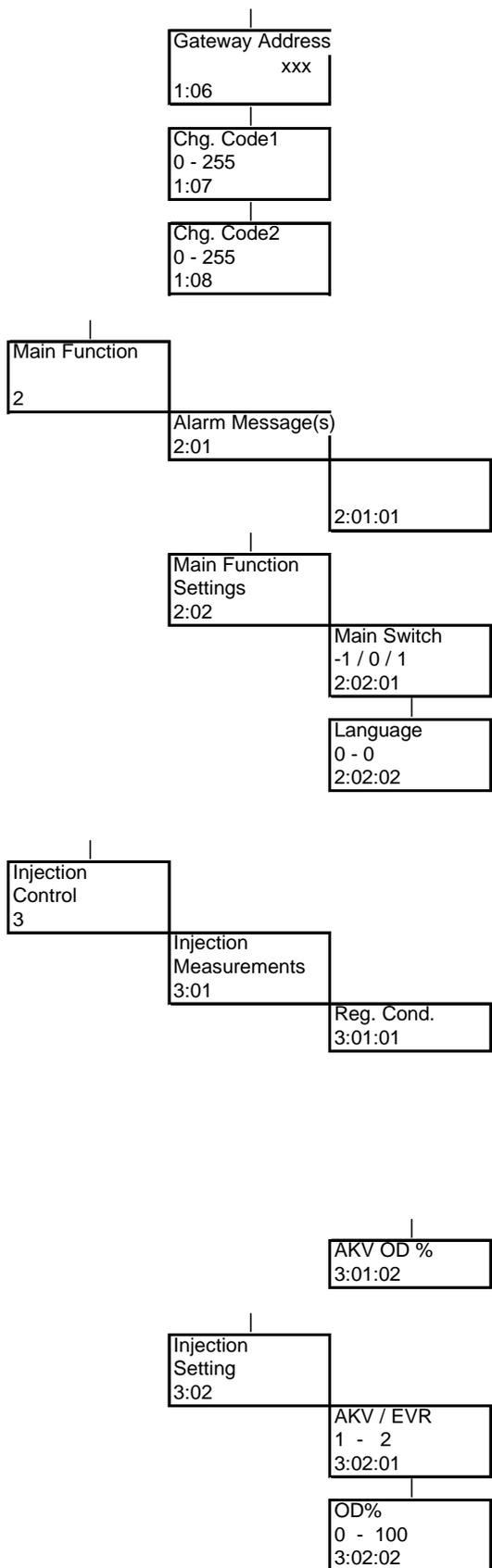
When you wish to leave the "Access to all functions" function, push "Clear" and then "←".

List of functions on level 1:

1. Controller's access display and access to system information
2. Interruption of regulation and selection of language
3. Injection function
4. Temperature function
5. Defrost function
6. Forced control functions for service and initial setting

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

Level 1	Level 2	Level 3	Level 4	Description
AKC 151R Adr: xxx Mon hh:mm				Controller access display If the code function is used, continue by pushing the "key" key.
	Enter Code 0 - 255 0 1:01			Entry of access code 1 or access code 2 (cf. also 1:07 and 1:08). Continue by pushing "arrow left"
AKC 151R Adr: xxx Mon hh:mm 1				Access to system information If an E appears in the display, an error has been registered.
	Code No. Prog. Ver. 1:02			Reading of the controller's code no. and programme version.
	Clock: Mon hh:mm 1:03			Setting of controller clock (AKC clock)
		Clock: Day. Mon(1) Sun(7) 1:03:01		Setting of day (1 = Monday, 7 = Sunday)
			Clock: Hour 0 - 23 1:03:02	Setting of hours
			Clock: Min. 0 - 59 1:03:03	Setting of minutes
	System Address Adr. yyy xxx 1:04			Reading of the controller's system address yyy=network no. and xxx=address. The system address can only be set via PC
	Alarm report to Adr. yyy xxx 1:05			Reading of the alarm address (end receiver) the alarms are to be sent to. The alarm address can only be set via PC.



Reading of the address on the nearest gateway which has to effect alarms (see 1:05)
The address can only be set via PC

Change of code 1. The code gives access to acknowledgement of active alarm by means of the F1 key.
Also access to the selected settings/readouts via the F3 key.
(Factory setting = 40) (See also code 2)
Change of code 2. The code gives access to the whole menu system.
(Factory setting = 0. Setting = 0 offers free access where neither code 1 nor code 2 is required)

Main function

In case of alarm, an E is shown on the display
(Error log becomes visible)

See page 19, check of Alarm message

Access to the main switch

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

Selection of language.
0: English

Expansion valve function

Measurements

Regulating condition
0: No cooling
1: Cooling
2: Forced cooling
4: Defrost
5: Start after defrost
6: Forced closing
8: Emergency cooling (sensor failure)

Actual valve opening degree

Settings

Definition of valve type connected to output terminals 14-15
1: AKVA injection valve
2: EVRA solenoid valve

Opening degree at cooling

	Start OD% 0 - 100 3:02:03	Opening degree after defrost
	Start del 0 - 120 3:02:04	Operating time for "Start OD%" (minutes)
Temperature Control 4	Alarm message(s) 4:01	Temperature function In case of alarm, an E is shown on the display (Error log becomes visible) See page 19, check of Alarm message
	4:01:01	
Thermostat Measurements 4:02	AlarmAir 4:02:01	Read.out of measuring values related to thermostat function.
	Ther.Air 4:02:02	Actual air temperature for the alarm function
	S3 °C 4:02:03	Actual air temperature
	S4 °C 4:02:04	Air temperature at S3 sensor
	CutOut °C 4:02:05	Air temperature at S4 sensor
	CutIn °C 4:02:06	Actual thermostat cut-out value
	RunTime 4:02:07	Actual thermostat cut-in value
Thermostat Ctrl. Settings 4:03	Ther. Mode 0 - 1 4:03:01	Actual thermostat cut-in time or duration of the latest finished cut-in
	Ther. Sx 1 - 3 4:03:02	Settings for thermostat function
	S4 % 0 - 100 4:03:03	Thermostat mode 0: Continuous cooling (thermostat not active) 1: Thermostat active
	CutOut °C -50 - 50 4:03:04	Definition of thermostat sensor(s) 1: S3 sensor is used 2: S4 sensor is used 3: Weighted value of S3 and S4 is used
	Diff. K 0.5 - 10 4:03:05	S4 contribution to weighted value of S3 and S4
Day/Night Ctrl. Settings 4:04	Day/Night OFF/ON 4:04:01	Setting of thermostat cut-out value MUST BE SET.
	Dt Night K -25 - 25 4:04:02	Setting of thermostat differential
		Settings of day/night function
		Choose day-/night operation function ON/OFF
		Night set back value

Air Temp. Alarm Settings 4:05	Alarm Mode 0 - 3 4:05:01	Help
	High Lim °C -50 - 50 4:05:02	
	High1Del m 0 - 240 4:05:03	Help
	High2Del m 0 - 60 4:05:04	Help
	Low Lim °C -50 - 50 4:05:05	
	Low Del m 0 - 60 4:05:06	
Display Setting 4:06	Disp. ctrl. 0 - 3 4:06:01	Help
Fan Pulsing during CutOut 4:07	Fan On % 0 - 100 4:07:01	
	FanCycl m 10.0 - 60.0 4:07:02	
Forced Closing 4:08	ON-mode 0 - 2 4:08:01	
	Output Ctrl. 1 - 2 4:08:02	Help
Safety Function Fan Stop by S5 4:09	FanStopS5 OFF/ON 4:09:01	Help
	FanStop °C -50 - 50 4:09:02	

Settings for alarm function

Definition of alarm thermostat

0: No alarm thermostat
 1: S3 used as alarm sensor
 2: S4 used as alarm sensor
 3: Thermostat temperature is used as alarm sensor
 (see 4:02:02 TherAir).

High air temperature alarm limit (absolute value).
 When there is night setback operation, the alarm limit is raised by the night setback value.

Time delay of high air temperature alarm during pull-down.
 This value will apply until the actual air temperature has dropped below the "upper alarm limit".
 Thereafter shift to the time delay "High2Del m".

Time delay of high air temperature alarm during normal regulation

Low air temperature alarm limit (absolute value)

Time delay for low air temperature alarm

Settings for external temperature display type AKA 14

Choose read-out for display

0: No display function
 1: S3 read-out
 2: S4 read-out
 3: Ther.Air read-out

Setting of fan pulsing

Setting of the fans' ON period in percent of the "FanCycl m" time (the function is only active in the cutout period)

Period time for total ON / OFF time

Definition of controller outputs at forced control signal (when the "ON" inlet is cut-out (terminal 32 - 33))

Define the operating mode of the "ON" inlet (terminal 32-33)

0: The ON input is disabled
 1: Cooling is forced stopped when no voltage is present on the inlet
 2: As "1", but the on-input may be overridden by the forced cooling input (DI1) when the voltage on the on-inlet is disabled.

Fan output function when cooling is forced off

1: Fan outlet is ON
 2: Fan outlet is OFF

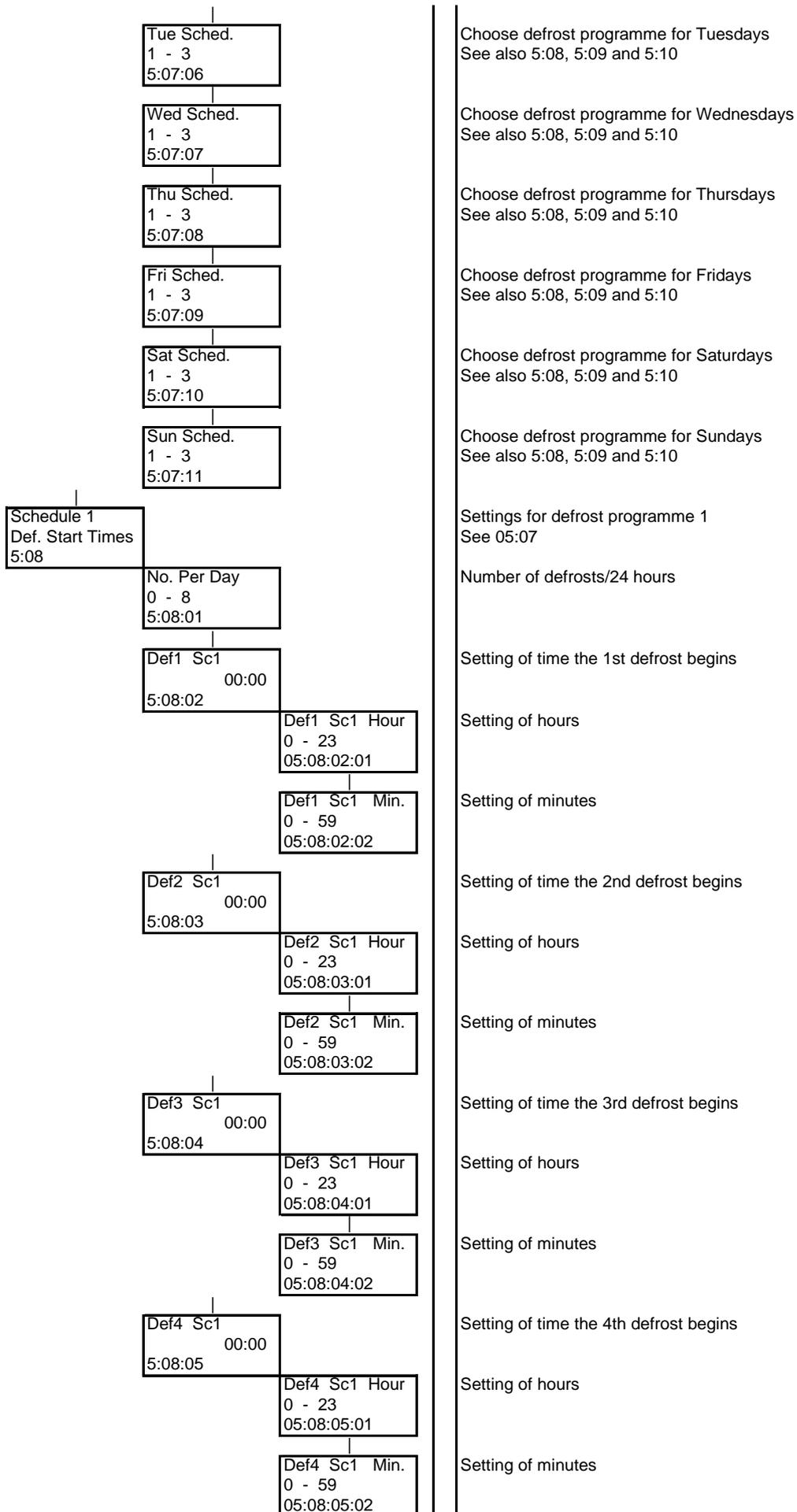
Settings for fan stop function

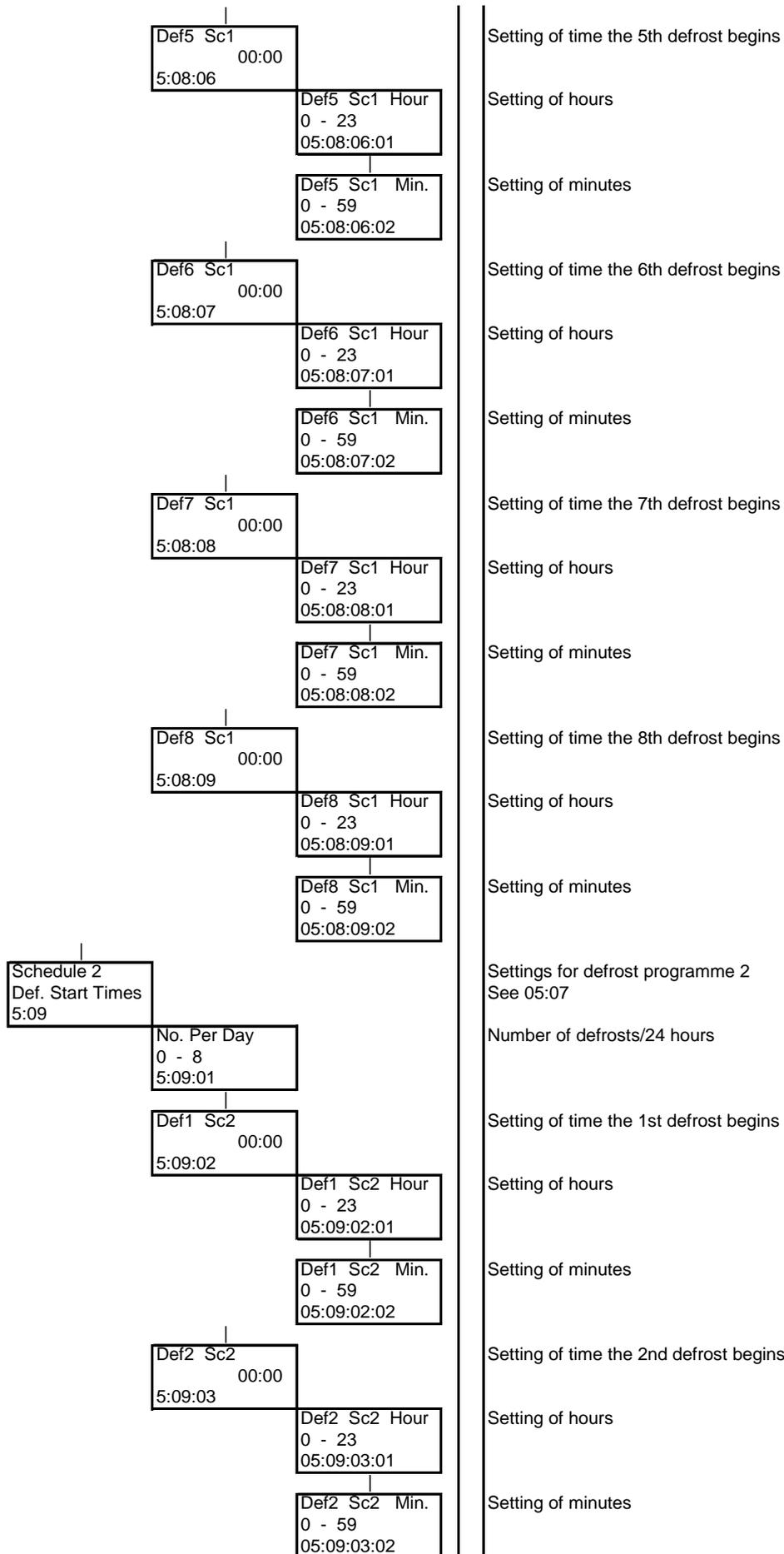
Fan stop function defines ON or OFF

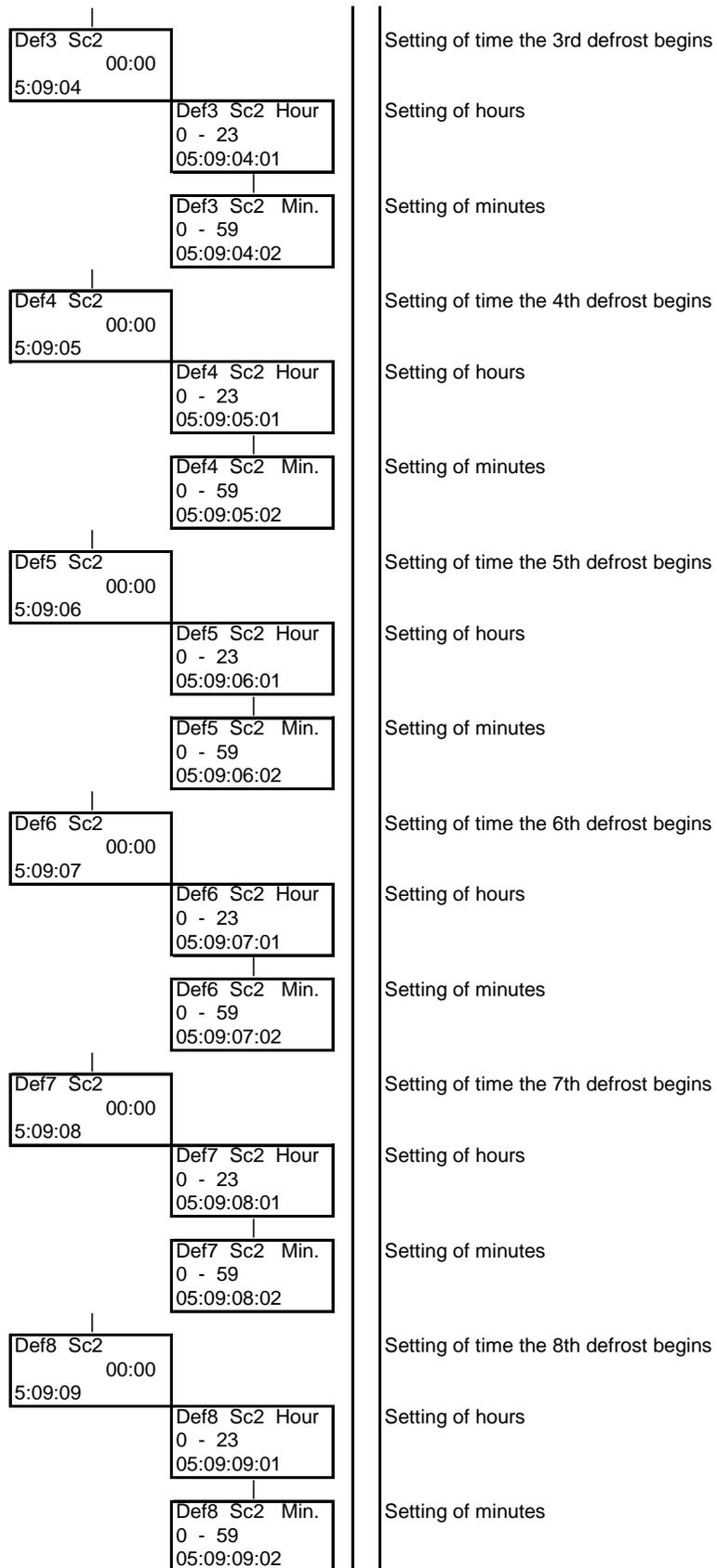
Temperature limit for fan stop (the fans are stopped when the S5A temperature is higher than this value. The fans will start again when S5A is lower than "FanStop °C" - 2K)

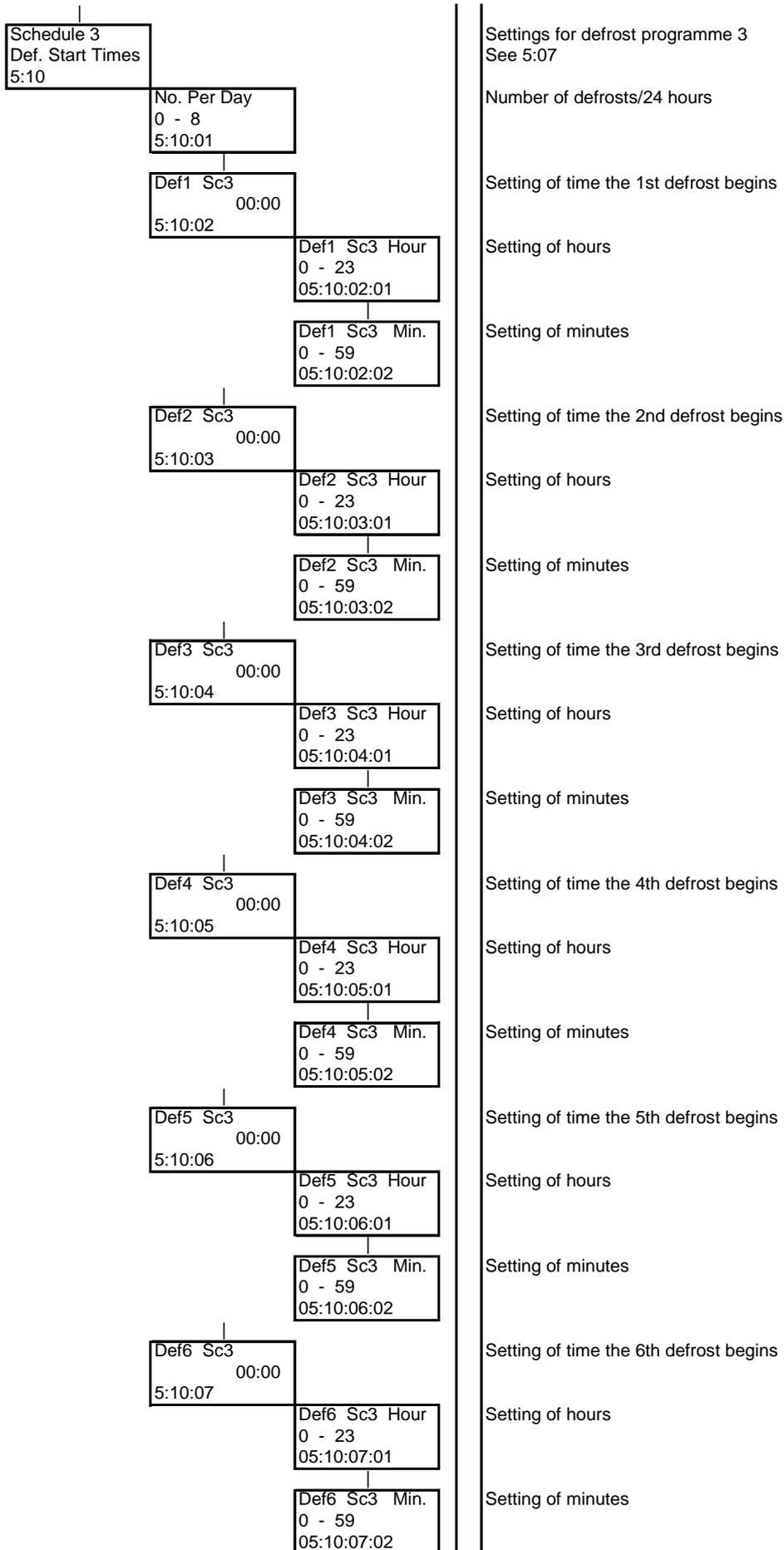
Suction during CutOut 4:10	Suct.Valve OFF/ON 4:10:01	Suction valve operating mode
Defrost Control 5:00	Alarm message(s) 5:01	Defrost function
	5:01:01	In case of alarm, an E is shown on the display (Error log becomes visible)
		See page 19, check of Alarm message
Defrost Measurements 5:02	Def. Cond. 5:02:01	Read-out of measuring values related to defrost function
		Defrost condition
		0: Defrost not started 5: Draining of evaporator
		1: HP float by-pass 6: Delayed injection
		3: Defrost 7: Delayed fan start
		8: Start up delay
	S5 °C 5:02:02	Defrost sensor temperature
	DefTime m 5:02:03	Actual defrost cut-in time or duration of the latest finished defrosting period.
	MDefTime m 5:02:04	Average value of the latest 4 defrosting periods.
Defrost Ctrl. Settings 5:03	Def. Ctrl. OFF/ON 5:03:01	Definition of defrosting method
	Man. Def. OFF/ON 5:03:02	Choose defrost function ON/OFF
	Hotgas Def OFF/ON 5:03:03	Manual defrost is activated when ON (changes automatically to OFF)
	Fan run OFF/ON 5:03:04	Define defrost form OFF: Electric defrost ON : Gas defrost
		Choose fan operation during defrost ON/OFF
Defrost Stop. Temp(1)/Time(2) 5:04	Temp/Time 1 - 2 5:04:01	Definitions of defrost stop
	MaxDefTime 5 - 180 5:04:02	1: Temperature stop (time as security) 2: Stop on time
	Def.Stop °C 0 - 60 5:04:03	Max. permissible defrost time in minutes (Security time on Temperature stop)
		Temperature value of defrost stop

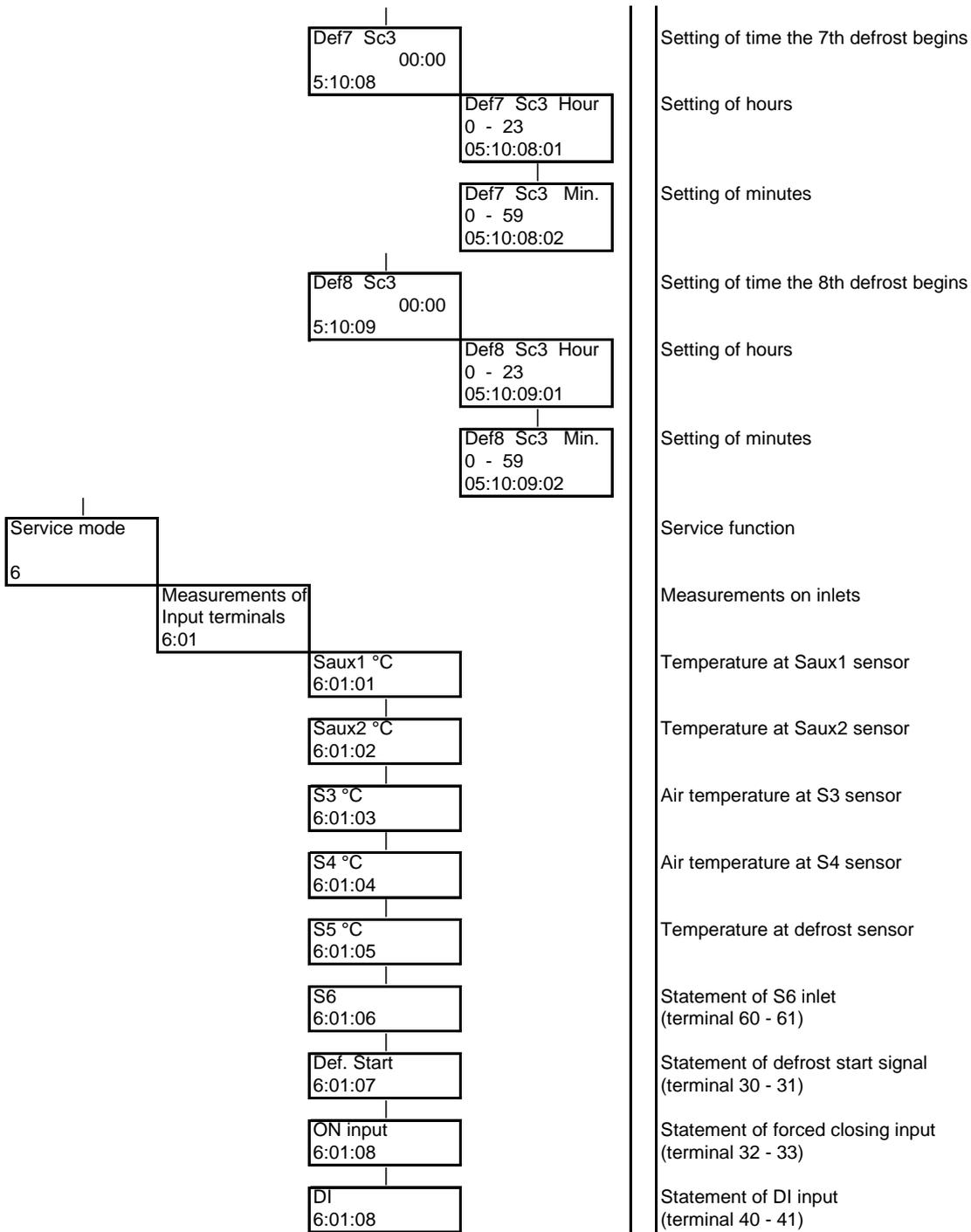
Defrost Sequence Settings 5:05	HP byp Del m 0 - 60 5:05:01	Defrost sequence	Setting the time the by-pass valve has to be open at the beginning of a defrost sequence.
	DrainDel m 0 - 60 5:05:02		Delay time when defrost completed The evaporator is drained of condensed refrigerant through the drain valve.
	Inj.Del m 0 - 60 5:05:03		Liquid injection delay time
	FanOnDel m 0 - 60 5:05:04		Fan start delay time after defrosting
Extended Ctrl. during Defrost 5:06	FanStopS4 OFF/ON 5:06:01	Help	Extended settings for defrost function
	FanStop °C -15 - 0 5:06:02		Define if there should be fan stop during defrost ON: Fans stops Function may only be used if 5:03:04 is set ON
	Compr. run OFF/ON 5:06:03		Temperature limit for stop of fans Stops when S4 temperature is higher than "FanStop °C" Starts when S4 temperature is lower than "FanStop°C" - 2 K
Extended Program Schedules 5:07	No. Per Day 2 - 8 5:07:01		Define if compressor must run during defrost. (Only if "Hotgas Def" = ON) ON: compressor output is cut-in during defrost
	FirstDef 00:00 5:07:02		Help function for setting of defrost times The defrost periods are distributed evenly during a defined period of time within a 24-hour period. Number of defrosts/24 hours
	FirstDef Hour 0 - 23 05:07:02:01		Setting of time the 1st defrost begins
	FirstDef Min. 0 - 59 05:07:02:02		Setting of hours
	LastDef 00:00 5:07:03		Setting of minutes
	LastDef Hour 0 - 23 05:07:03:01		Setting of time the last defrost begins
	LastDef Min. 0 - 59 05:07:03:02		Setting of hours
	Auto Set OFF/ON 5:07:04	Help	Setting of minutes
	Mon Sched. 1 - 3 5:07:05		Transfer the values to the three subsequent defrost programmes. In pos. ON they are entered in "5:08", "5:09" and "5:10". If the three defrost programmes are not to be identical, corrections subsequent must be made in the individual programmes.
			Choose defrost programme for Mondays See also 5:08, 5:09 and 5:10

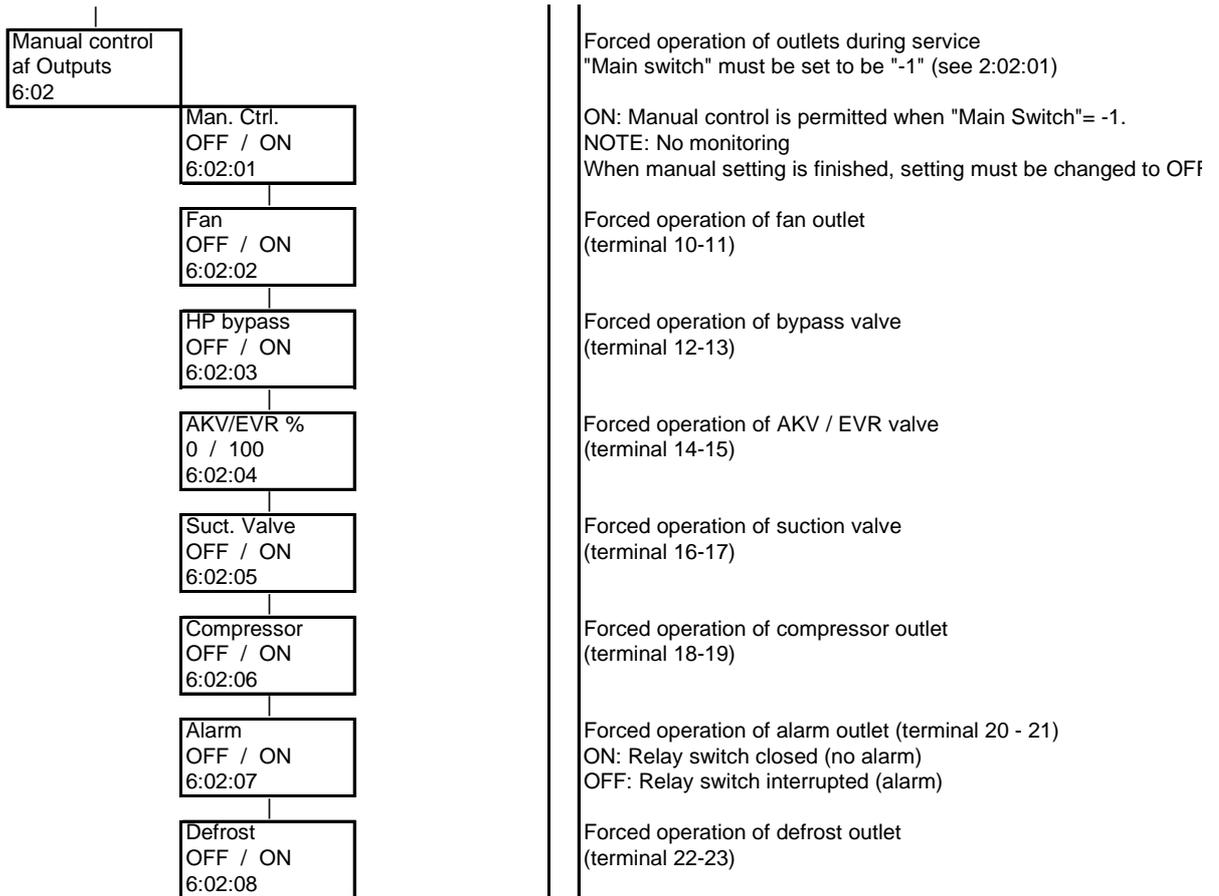












Alarm message

The following display read-outs are only visible if there is an active error.

When the error is corrected, the error message can be removed by pressing ENTER.
(If the code function has been selected, a code must also be entered).

S3 Error	S3 sensor error	Check sensor connection / sensor resistance
S4 Error	S4 sensor error	Check sensor connection / sensor resistance
S5 Error	S5 sensor error	Check sensor connection / sensor resistance
S3/4 Error	S3/4 sensor error	Check sensor connection / sensor resistance
Saux_ Error	Saux_ sensor error	Check sensor connection / sensor resistance
High air temp	Too high air temperature	
Low air temp	Too low air temperature	
Low S4 Temp	Too low S4 temperature	
Max. Def. period exceeded	Max. defrosting period exceeded	Defrosting finished according to time not as selected according to temperature
230 Volt on Def. start input	Wrong defrost demand	Active defrost signal on terminal 30 - 31 contrary to just finished defrosting.
Check clock settings		After power failure, timer must be set
Standby mode		The Main switch is either set in the position "Controller stop" or "Service" (see 2:02:01).

Communications/messages from AKA 21

Message not sent	There is no contact between control panel and a controller	Check the data communication system
Regulator message not received	- II -	Check the data communication system
No node	- II -	Check the data communication system (There is no gateway on the data communication system)
Initialisation error	- II -	Check the data communication system (There is a gateway on the data communication system) The message may be removed, if you disconnect AKA 21 briefly
Message not understood	Temporary communication problem or wrong setup	Wait, or if it is a newly started system, check the setup of the data communication system
Dansett supervising	Pause function	When you push a key, the display disappears.
Supervising no answer	Lack of contact to a controller	Check the data communication system
AKC Occupied	AKA 21 had been disconnected for a brief period	Wait. The message disappears on its own after three minutes.

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