Principle

Identification

Dimensions

Expansion valve

Brine valve
The controller is provided with signs from the factory indicating application 1. If you employ another use, signs are provided so that you can mount the relevant one.
Data communication

**Important** All connections to the data communication MODBUS, RS 485 and DANBUS must comply with the requirements for data communication cables. See literature: RC84C.

System manager / Gateway

AK-SM...

AKA 245 version 6.20° / AK-SM...

OEM

Display EKA 163 / 164

**L < 15 m**

**L > 15 m**
Connections

DI1
Digital input signal.
The defined function is active when the input is short-circuited/opened. The function is defined in o02.

DI2
Digital input signal.
The defined function is active when the input is short-circuited/opened. The function is defined in o37.

S3, S4, S5, S3B, S5B
Pt 1000 ohm sensor or PTC 1000 ohm sensor. All have to be of the same type.

S6, S6B
Pt 1000 ohm
S3, air sensor, placed in the warm air before the evaporator
S4, air sensor, placed in the cold air after the evaporator
(The need for either S3 or S4 can be deselected in the configuration)
S5, defrost sensor, placed on the evaporator
S6, product sensor

EKA Display
If there is be external reading/operation of the controller, display type EKA 163B or EKA 164B can be connected.

RS485 (terminal S1, S2, S3)
For data communication, but only if a data communication module is inserted in the controller. The module can be a LON RS485, DANBUSS or a MODBUS.
Terminal S1 = screen
Terminal S2 = A (A+)
Terminal S3 = B (B-)
(For LON RS485 and gateway type AKA 245 the gateway must be version 6.20 or higher.)

RJ45
For data communication, but only if a TCP/IP module is inserted in the controller. (OEM)

MODBUS
For data communication.
Terminal S6 = screen
Terminal S7 = A+
Terminal S8 = B-
(Alternatively the terminals can be connected to an external display type EKA 163A or 164A, but then they cannot be used for data communication. Any data communication must then be carried out by one of the other methods.)

Supply voltage
230 V a.c., 50/60 Hz

DO1
Connection of solenoid valve or relay for compressor. The coil must be a 230 V a.c. coil.

DO2
Alarm
There is a connection between terminal 7 and 8 in alarm situations and when the controller is without power.

Night blind
There is connection between terminal 7 and 9 when the night blind is up/down.

Suction line valve
There is connection between terminal 7 and 9 when the suction line must be open.

Rail heat
There is connection between terminal 7 and 8 when the function must be active.
Coordinated defrost via cable connections

Data communication

If data communication is used, it is important that the installation of the data communication cable is performed correctly. See separate literature No. RC8AC…

Electric noise

Cables for sensors, DI inputs and data communication must be kept separate from other electric cables:
- Use separate cable trays
- Keep a distance between cables of at least 10 cm
- Long cables at the DI input should be avoided

Installation considerations

Accidental damage, poor installation, or site conditions, can give rise to malfunctions of the control system, and ultimately lead to a plant breakdown. Every possible safeguard is incorporated into our products to prevent this. However, a wrong installation, for example, could still present problems. Electronic controls are no substitute for normal, good engineering practice. Danfoss will not be responsible for any goods, or plant components, damaged as a result of the above defects. It is the installer's responsibility to check the installation thoroughly, and to fit the necessary safety devices. Special reference is made to the necessity of signals to the controller when the compressor is stopped and to the need of liquid receivers before the compressors. Your local Danfoss agent will be pleased to assist with further advice, etc.

Coordinated defrost via data communication

The following controllers can be connected up in this way:
EKC 204A, AK-CC 210, AK-CC 250, AK-CC 450, AK-CC 550,

Refrigeration is resumed when all controllers have “released” the signal for defrost.

The setting of controllers to coordinate their defrosting takes place in the gateway/system manager.

Refrigeration is resumed when all controllers have “released” the signal for defrost.
Operation

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

Light-emitting diodes (LED) on front panel
The LED’s on the front panel will light up when the relevant relay is activated.
- = Refrigeration
= Defrost
+ = Fan running

The light-emitting diodes will flash when there is an alarm. In this situation you can download the error code to the display and cancel/accept for the alarm by giving the top button a brief push.

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

Examples

Set menu
1. Push the upper button until a parameter r01 is shown
2. Push the upper or the lower button and find that parameter you want to change
3. Push the middle button until the parameter value is shown
4. Push the upper or the lower button and select the new value
5. Push the middle button again to set the value.

Cutout alarm relay / receipt alarm/see alarm code
- A short press of the upper button
If there are several alarm codes they are found in a rolling stack. Push the uppermost or lowermost button to scan the rolling stack.

Set temperature
1. Push the middle button until the temperature value is shown
2. Push the upper or the lower button and select the new value
3. Push the middle button again to conclude the setting.

Reading the temperature at defrost sensor (Or product sensor, if selected in o92.)
- A short press of the lower button

Manual start or stop of a defrost
- Push the lower button for four seconds.

Get a good start
With the following procedure you can start regulation very quickly:
1. Open parameter r12 and stop the regulation (in a new and not previously set unit, r12 will already be set to 0 which means stopped regulation.)
2. Select electrical connection based on the drawings on page 2 and 3
3. Open parameter o61 and set the electric connection number in it
4. Now select one of the preset settings from the table

<table>
<thead>
<tr>
<th>Auxiliary schedule for settings (quick-setup)</th>
<th>Case</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defrost stop on time</td>
<td>Defrost stop on</td>
<td>Defrost stop on</td>
</tr>
<tr>
<td>time</td>
<td>SS</td>
<td>time</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Temperature (SP)
-2°C to +2°C
Max. temp. setting (r02)
6°C to +22°C
Min. temp. setting (r03)
0°C to -22°C
Sensor signal for thermostat. 54% (r15)
Alarm limit high (A13)
8°C to +22°C
Alarm limit low (A14)
-22°C to -2°C
Sensor signal for alarm funct. 54% (A36)
Interval between defrost (d03)
6h to 6h
Defrost sensor: 0=time, 1=S5, 2=S4 (d10)
0 1 1 0 1 1
DI1 config. (o02)
Case cleaning (=10) Door function (=2)
Sensor signal for display view 54% (017)

Note: For applications 6 and 7 the sensor weighting for the S3/S4 sensors is not used for the thermostat, alarm thermostat and display readings as the sensor uses are predefined.

5. Open parameter o62 and set the number for the array of presettings. The few selected settings will now be transferred to the menu.

6. Open parameter r12 and start the regulation

7. Go through the survey of factory settings. The values in the grey cells are changed according to your choice of settings. Make any necessary changes in the respective parameters.

8. For network. Set the address in o03

9. Send address to system unit:
- MODBUS: Activate scan function in system unit
- If another data communication card is used in the controller:
  - LON RS485: Activate the function o04
### Menu survey

**Parameter**  
<table>
<thead>
<tr>
<th>Code</th>
<th>Min.-value</th>
<th>Max.-value</th>
<th>Factory-setting</th>
<th>Actual-setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Normal operation

- **Temperature (setpoint)**
  - Function Code: 1 2 3 4 5 6 7 8 9
  - Value: -50°C 50°C

#### Thermostat

- **Differential**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0.1 K 20 K

- **Max. limitation of setpoint setting**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: -49°C 50°C

- **Min. limitation of setpoint setting**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: -50°C 49°C

- **Adjustment of temperature indication**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: -10 10

- **Temperature unit (°C/F)**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0/°C

- **Correction of the signal from S4**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: -10 K 10 K

- **Manual service, stop regulation, start regulation (-1, 0, 1)**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: -1 1 0

- **Displacement of reference during night operation**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: -50 K 50 K

- **Define thermostat function**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 1=ON/OFF, 2=Pulse width modulating (PWM)

- **Definition and weighting, if applicable, of thermostat sensors - S4% (100%=S4, 0%=S3)**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 % 100 %

- **Time between melt periods**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 hrs 10 hrs

- **Duration of melt periods**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 min. 30 min.

- **Temperature setting for thermostat band 2. As differential use r01 for application 1-8. R93 for application 9**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: -50°C 50°C

- **Correction of the signal from S3B**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: -10 K 10 K

- **Correction of the signal from S6**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: -10 K 10 K

- **Definition and weighting, if applicable, of thermostat sensors when night cover is on. (100%=S4, 0%=S3)**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 % 100 %

- **Heat function**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 K 50 K

- **Neutral zone between refrigeration and heat function**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 min. 240 min.

- **Differential for thermostat band 2**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0.1 20 K

#### Alarms

- **Delay for temperature alarm**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 min. 240 min.

- **Delay for door alarm**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 min. 240 min.

- **Delay for temperature alarm after defrost**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 min. 240 min.

- **High alarm limit for thermostat 1**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 50°C

- **Low alarm limit for thermostat 1**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: -50°C

- **High alarm limit for thermostat 2**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 50°C

- **Low alarm limit for thermostat 2**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: -50°C

- **High alarm limit for sensor S6 at thermostat 1**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 50°C

- **Low alarm limit for sensor S6 at thermostat 1**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: -50°C

- **High alarm limit for sensor S6 at thermostat 2**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 50°C

- **Low alarm limit for sensor S6 at thermostat 2**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: -50°C

- **S6 alarm time delay**
  - With setting = 240 the S6 alarm will be omitted
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 min. 240 min.

- **Alarm time delay or signal on the D11 input**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 min. 240 min.

- **Alarm time delay or signal on the D12 input**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 min. 240 min.

- **Signal for alarm thermostat. 54% (100%=S4, 0%=S3)**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 % 100 %

- **Delay for S6 (product sensor alarm) after defrost**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 min. 240 min.

- **Delay for S3B alarm during normal regulation**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 min. 240 min.

#### Compressor

- **Min. ON-time**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 min. 30 min.

- **Min. OFF-time**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 min. 30 min.

- **Time delay for cutin of comp.2**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 sec. 999 sec.

- **Step Mode 1= Sequential, 2=Cyclic**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 1 2

- **Comp.2 run in thermostat band 2 0: no 1: yes**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 1

- **Comp. on time when sensor fault**
  - Code: 0 1 2 3 4 5 6 7 8 9
  - Value: 0 min. 240 min.
## Defrost

<table>
<thead>
<tr>
<th>Code</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Min.</th>
<th>Max.</th>
<th>Fac.</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comp. off time when sensor fault</td>
<td>c87</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0 min</td>
<td>240 min</td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>

### Defrost Methods
- 0 = none
- 1 = EL
- 2 = Gas
- 3 = Brine

### Defrost Parameters

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Min.</th>
<th>Max.</th>
<th>Fac.</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defrost Method</td>
<td>d01</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td>0/No</td>
<td>3/bri</td>
<td></td>
<td>1/EL</td>
</tr>
<tr>
<td>Defrost Stop Temperature</td>
<td>d02</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td>0°C</td>
<td>50°C</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Interval Between Defrost Starts</td>
<td>d03</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td>0 hrs/Off</td>
<td>240 hrs</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Max. Defrost Duration</td>
<td>d04</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>360 min.</td>
</tr>
<tr>
<td>Displacement of Time on Cutin of Defrost at Start-Up</td>
<td>d05</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0 min.</td>
</tr>
<tr>
<td>Drip Off Time</td>
<td>d06</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>60 min.</td>
</tr>
<tr>
<td>Delay for Fan Start After Defrost</td>
<td>d07</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>60 min.</td>
</tr>
<tr>
<td>Fan Start Temperature</td>
<td>d08</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-50°C</td>
</tr>
<tr>
<td>Fan Cutin During Defrost</td>
<td>d09</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td>0</td>
<td>2</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Defrost Stop Temp. Thermostat Band 2</td>
<td>d28</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0°C</td>
<td>50°C</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Max. Defrost Duration Thermostat Band 2</td>
<td>d29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>360 min.</td>
</tr>
</tbody>
</table>

### Real Time Clock

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Min.</th>
<th>Max.</th>
<th>Fac.</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Six Start Times for Defrost: Setting of Hours</td>
<td>t01 - t06</td>
<td>0 hrs</td>
<td>23 hrs</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six Start Times for Defrost: Setting of Minutes</td>
<td>t11 - t16</td>
<td>0 min.</td>
<td>59 min.</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clock - Setting of Hours</td>
<td>t07</td>
<td>0 hrs</td>
<td>23 hrs</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clock - Setting of Minutes</td>
<td>t08</td>
<td>0 min.</td>
<td>59 min.</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clock - Setting of Date</td>
<td>t45</td>
<td>1 day</td>
<td>31 day</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clock - Setting of Month</td>
<td>t46</td>
<td>1 mon.</td>
<td>12 mon.</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clock - Setting of Year</td>
<td>t47</td>
<td>0 year</td>
<td>99 year</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Miscellaneous

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Min.</th>
<th>Max.</th>
<th>Fac.</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay of Output Signals After Start-Up</td>
<td>o01</td>
<td>0 sec</td>
<td>60 sec</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Signal on DI1: Function</td>
<td>o02</td>
<td>0</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- 0 = not used
- 1 = status on DI1
- 2 = door alarm when open
- 3 = door alarm when open
- 4 = defrost start (pulsed signal)
- 5 = ext. main switch
- 6 = night operation
- 7 = thermostat band changeover (activate r21)
- 8 = alarm function when closed
- 9 = alarm function when open
- 10 = case cleaning
- 11 = forced cooling at hot gas defrost
- 12 = night cover
- 13 = application shutdown
<table>
<thead>
<tr>
<th>Code</th>
<th>1</th>
<th>2</th>
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<td>240 min.</td>
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</tr>
</tbody>
</table>

**Continued**

Network address (0= off) 10/2013

- On/Off switch (Service Pin message) IMPORTANT: o61 must be set prior to o04 (used at LON 485 only)
- Access code 1 (all settings)
- Used sensor type: 0=Pt1000, 1=Ptc1000, 2=Pt
- Software Version
- Max hold time after coordinated defrost
- Select signal for display view: 54% (100%=S4, 0%=S3)
- Input signal on DI2. Function:
  - 0=not used
  - 1=status on DI2
  - 2=door function with alarm when open
  - 3=door alarm when open
  - 4=defrost start (pulse signal)
  - 5=ext. main switch
  - 6=night operation
  - 7=Thermostat band changeover
  - 8=alarm function when closed
  - 9=alarm function when open
  - 10=case cleaning (pulse signal)
  - 11=forced cooling at hot gas defrost
  - 12=night cover
  - 13=coordinated defrost
- Input signal on DI3. Function:
  - 0=not used
  - 1=status on DI2
  - 2=door function with alarm when open
  - 3=door alarm when open
  - 4=defrost start (pulse signal)
  - 5=ext. main switch
  - 6=night operation
  - 7=Thermostat band changeover
  - 8=alarm function when closed
  - 9=alarm function when open
  - 10=case cleaning (pulse signal)
  - 11=forced cooling at hot gas defrost
  - 12=night cover
  - 13=coordinated defrost
- Rail heat control
  - 0=not used
  - 1=pulse control with timer function (o41 and o42)
  - 2=pulse control with dew point function
- Fan operation on stopped refrigeration (forced closing):
  - 0=Stopped (defrosting permitted)
  - 1=Running (defrosting permitted)
  - 2=Stopped (defrosting not permitted)
  - 3=Running (defrosting not permitted)
- Definition of readings on lower button:
  - 1=defrost stop temperature
  - 2=S5 temperature
  - 3=S5_B temperature
  - 4=Readout of S3B temperature
- Display of temperature
  - 1= u56 Air temperature
  - 2= u36 product temperature
- Light and night blinds defined
  - 0: Light is switch off and night blind is open when the main switch is off
  - 1: Light and night blind is independent of main switch
### Forced control

If you need to force-control an output, you should set r12 to -1 (manual mode). You should then select the relevant relay function, e.g. u58. Go to the function by pressing the middle button. Select On.

### Factory setting

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

- Cut out the supply voltage to the controller
- Keep upper and lower button depressed at the same time as you reconnect the supply voltage
Fault message

In an error situation the LED's on the front will flash and the alarm relay will be activated. If you push the top button in this situation you can see the alarm report in the display. There are two kinds of error reports - it can either be an alarm occurring during the daily operation, or there may be a defect in the installation. A-alarms will not become visible until the set time delay has expired. E-alarms, on the other hand, will become visible the moment the error occurs. (An A alarm will not be visible as long as there is an active E alarm).

Here are the messages that may appear:

<table>
<thead>
<tr>
<th>Code / Alarm text via data communication</th>
<th>Description</th>
<th>Alarm relay groups (P41)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1/--- High t.alarm</td>
<td>High temperature alarm</td>
<td>1</td>
</tr>
<tr>
<td>A2/--- Low t. alarm</td>
<td>Low temperature alarm</td>
<td>2</td>
</tr>
<tr>
<td>A4/--- Door alarm</td>
<td>Door alarm</td>
<td>8</td>
</tr>
<tr>
<td>A5/--- Max hold time</td>
<td>The &quot;016&quot; function is activated during a coordinated defrost</td>
<td>16</td>
</tr>
<tr>
<td>A13/--- High temp S6</td>
<td>Temperature alarm. High S6</td>
<td>1</td>
</tr>
<tr>
<td>A14/--- Low temp S6</td>
<td>Temperature alarm. Low S6</td>
<td>2</td>
</tr>
<tr>
<td>A15/--- DI1 alarm</td>
<td>DI1 alarm</td>
<td>8</td>
</tr>
<tr>
<td>A16/--- DI2 alarm</td>
<td>DI2 alarm</td>
<td>8</td>
</tr>
<tr>
<td>A45/--- Standby mode</td>
<td>Standby position (stopped refrigeration via r12 or DI input)</td>
<td>-</td>
</tr>
<tr>
<td>A59/--- Case clean</td>
<td>Case cleaning. Signal from DI input</td>
<td>-</td>
</tr>
<tr>
<td>A70/--- High Temp.S3B</td>
<td>Temperature alarm. High S3B</td>
<td>1</td>
</tr>
<tr>
<td>A71/--- Low Temp.S3B</td>
<td>Temperature alarm. Low S3B</td>
<td>2</td>
</tr>
<tr>
<td>A72/--- High Temp.S6B</td>
<td>Temperature alarm. High S6B</td>
<td>1</td>
</tr>
<tr>
<td>A73/--- Low Temp.S6B</td>
<td>Temperature alarm. Low S6B</td>
<td>2</td>
</tr>
<tr>
<td>E1/--- Ctrl. state</td>
<td>Faults in the controller</td>
<td>32</td>
</tr>
<tr>
<td>E6/--- RTC error</td>
<td>Check clock</td>
<td>32</td>
</tr>
<tr>
<td>E25/--- S3 error</td>
<td>Error on S3 sensor</td>
<td>4</td>
</tr>
<tr>
<td>E26/--- S4 error</td>
<td>Error on S4 sensor</td>
<td>4</td>
</tr>
<tr>
<td>E27/--- S5 error</td>
<td>Error on S5 sensor</td>
<td>4</td>
</tr>
<tr>
<td>E28/--- S6 error</td>
<td>Error on S6 sensor</td>
<td>4</td>
</tr>
<tr>
<td>E34/--- S3 error B</td>
<td>Error on S3B sensor</td>
<td>4</td>
</tr>
<tr>
<td>E37/--- S5 error B</td>
<td>Error on S5B sensor</td>
<td>4</td>
</tr>
<tr>
<td>E38/--- S6 error B</td>
<td>Error on S6B sensor</td>
<td>4</td>
</tr>
<tr>
<td>---/--- Max Def.Time</td>
<td>Defrost stopped based on time instead of, as wanted, on temperature</td>
<td>16</td>
</tr>
</tbody>
</table>

Data communication

The importance of individual alarms can be defined with a setting. The setting must be carried out in the group "Alarm destinations"

<table>
<thead>
<tr>
<th>Settings from System manager AK-SM</th>
<th>Settings from AKM (AKM destination)</th>
<th>Send via Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>1</td>
<td>X</td>
</tr>
<tr>
<td>Middle</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>Low</td>
<td>3</td>
<td>X</td>
</tr>
<tr>
<td>Log only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disabled</td>
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<td></td>
</tr>
</tbody>
</table>

Additional information:
Manual RS8EU

Operating status

The controller goes through some regulating situations where it is just waiting for the next point of the regulation. To make these "why is nothing happening" situations visible, you can see an operating status on the display. Push briefly (1s) the upper button. If there is a status code, it will be shown on the display. The individual status codes have the following meanings:

<table>
<thead>
<tr>
<th>(Measurement)</th>
<th>Ctrl. state: (Shown in all menu displays)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S0</td>
<td>Normal regulation</td>
</tr>
<tr>
<td>S1</td>
<td>Waiting for end of the coordinated defrost</td>
</tr>
<tr>
<td>S2</td>
<td>When the compressor is operating it must run for at least x minutes.</td>
</tr>
<tr>
<td>S3</td>
<td>When the compressor is stopped, it must remain stopped for at least x minutes.</td>
</tr>
<tr>
<td>S4</td>
<td>The evaporator drips off and waits for the time to run out</td>
</tr>
<tr>
<td>S10</td>
<td>Refrigeration stopped by main switch. Either with r12 or a DI-input</td>
</tr>
<tr>
<td>S11</td>
<td>Refrigeration stopped by thermostat</td>
</tr>
<tr>
<td>S14</td>
<td>Defrost sequence. Defrost in progress</td>
</tr>
<tr>
<td>S15</td>
<td>Defrost sequence. Fan delay — water attaches to the evaporator</td>
</tr>
<tr>
<td>S16</td>
<td>Refrigeration stopped due to open ON input or stopped regulation</td>
</tr>
<tr>
<td>S17</td>
<td>Door is open. DI input is open</td>
</tr>
<tr>
<td>S18</td>
<td>Melt function in progress. Refrigeration is interrupted</td>
</tr>
<tr>
<td>S19</td>
<td>Modulating thermostat control</td>
</tr>
<tr>
<td>S20</td>
<td>Emergency cooling due to sensor error *)</td>
</tr>
<tr>
<td>S25</td>
<td>Manual control of outputs</td>
</tr>
<tr>
<td>S29</td>
<td>Case cleaning</td>
</tr>
<tr>
<td>S30</td>
<td>Forced cooling</td>
</tr>
<tr>
<td>S32</td>
<td>Delay on outputs during start-up</td>
</tr>
<tr>
<td>S33</td>
<td>Heat function r36 is active</td>
</tr>
<tr>
<td>S45</td>
<td>Case shut down</td>
</tr>
<tr>
<td>S49</td>
<td>Other displays:</td>
</tr>
<tr>
<td></td>
<td>The defrost temperature cannot be displayed.</td>
</tr>
<tr>
<td></td>
<td>There is stop based on time</td>
</tr>
<tr>
<td></td>
<td>Defrost in progress / First cooling after defrost -d-</td>
</tr>
<tr>
<td></td>
<td>Password required. Set password</td>
</tr>
<tr>
<td></td>
<td>Regulation is stopped via main switch OFF</td>
</tr>
</tbody>
</table>

*) Emergency cooling will take effect when there is lack of signal from a defined S3 or S4 sensor. The regulation will continue with a registered average cutin frequency. There are two registered values – one for day operation and one for night operation.