Menu operation via AKA 21

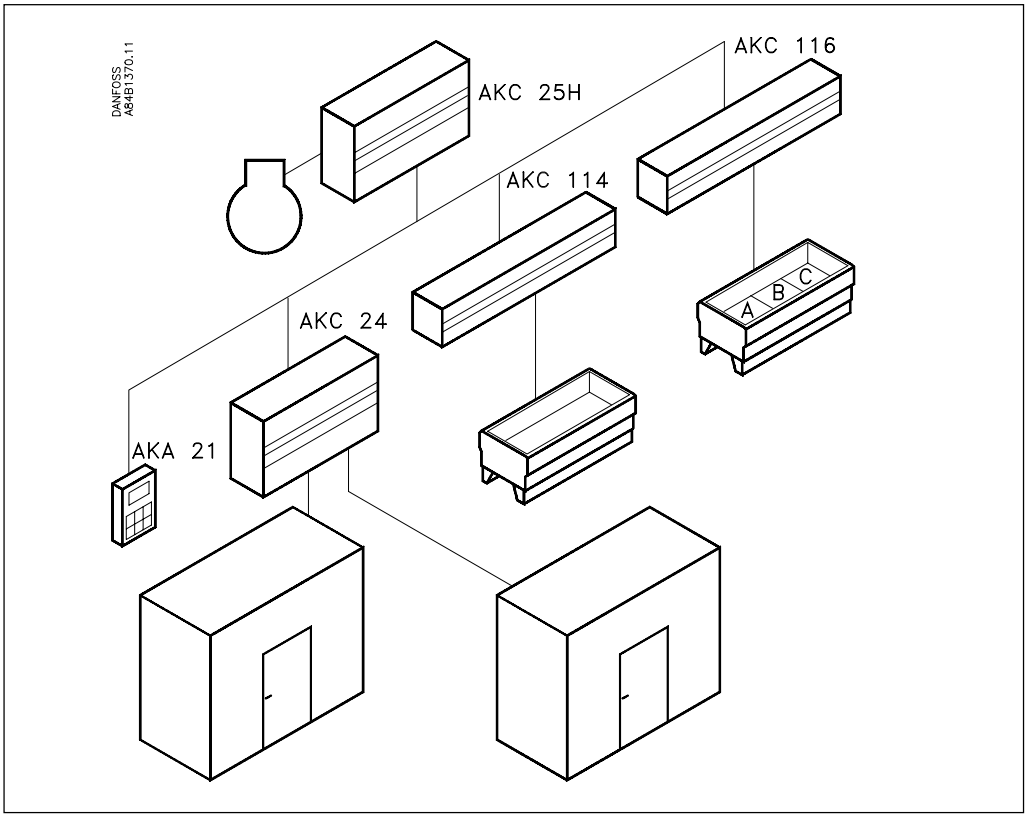
ADAP-KOOL®

Monitoring unit for monitoring of refrigeration plant

AKL 25

Software version 1.2x

System survey

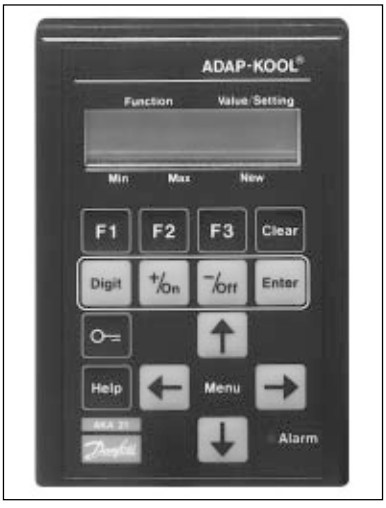


A refrigerating plant fitted with ADAP-KOOL® refrigeration controls will mostly consist of several controllers where each controller will regulate its own refrigeration appliance/cold room.

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

Operation

The individual controllers can be operated in two ways:
1. With control panel type AKA 21.
   Use this document when operation takes place in this way.
2. With PC and system software type AKM. Use another document with literature number
   RC.1J.Q-..



Validity

This menu operation was worked out in June 2000 and applies to AKL 25 with the following code number: 084B2012 that are fitted with software version 1.2x.

Select a controller

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

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

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

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

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

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

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

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

Settings of a controller

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

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

```
                   ON
  OFF / ON         ON
```

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

How to localise an error

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

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

```
DANFOSS AKL 25
E          Mon-11:27
```

```
Standby mode
```

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

Functions of a controller

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

e.g.

DANFOSS AKL 25
E Mon-11:27

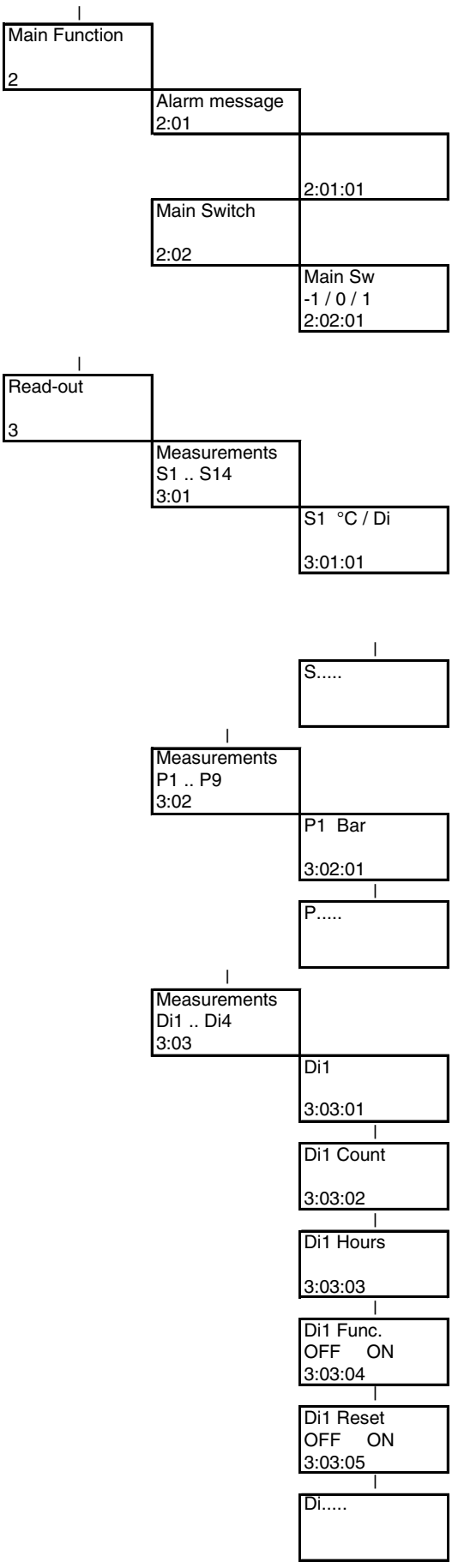
Move to and from the individual functions by pushing the four arrow keys.
On page 3 you can see how a setting is changed.

List of functions on level 1:

1. Controller's access display and access to system information
2. Interruption of regulation
3. Measurements
4. Configuration of voltage measurements
5. Configuration of temperature measurements
6. Configuration of pressure measurements
7. Service function

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

Level 1	Level 2	Level 3	Description
DANFOSS AKL 25			Shows controller type, weekday and time An E on the display means an error has been recorded.
1			
	Clock: Day (Mon)1 (Sun)7 1:01		Setting of day (1 = Monday, 7 = Sunday)
	Clock: Hour 0 23 1:02		Setting of hours
	Clock: Min. 0 59 1:03		Setting of minutes
	Code No. Prog. ver. 1:04		Reading of the actual controller's code no. and programme version
	System address Addr. yyy xxx 1:05		Reading of the actual controller's system address yyy = network no. and xxx = address. The system address can only be set via PC.
	Address Addr. xxx 1:06		Reading of the actual controller's address (settings on the controller's DIP-switches)
	Alarm report to Addr. yyy xxx 1:07		Reading of the system address (end receiver) the alarms are to be sent to. The system address can only be set via PC
	Gateway Address Addr. xxx 1:08		Reading of the address on the nearest gateway which has to effect alarms (see 1:07). The address can only be set via PC



Main function

In case of alarm, an E is shown in the display
Error register becomes visible
For survey of alarm messages, see page 10

Access to main switch

Main switch: 1: Measuring
0: Controller stopped
-1: Service mode

Measurements

S1 -S14 measurements

S1 inlet
- Temperature connection: S1 temperature
(filtered and corrected according to "S1 ...S14 Config.". Cf. 5:0)
- ON/OFF connection: Statement of S1 inlet
1 = closed, 0 = open
***** will be displayed, if input is not used

As above for S2 to S14

Pressure measurements

P1 pressure
(filtered and corrected according to "P1... P9 Config.". Cf. 6:0)
***** will be displayed, if input is not used

As above for P2 to P9

Registrations for digital ON/OFF inputs

Di1 input status:
ON = closed, OFF = open

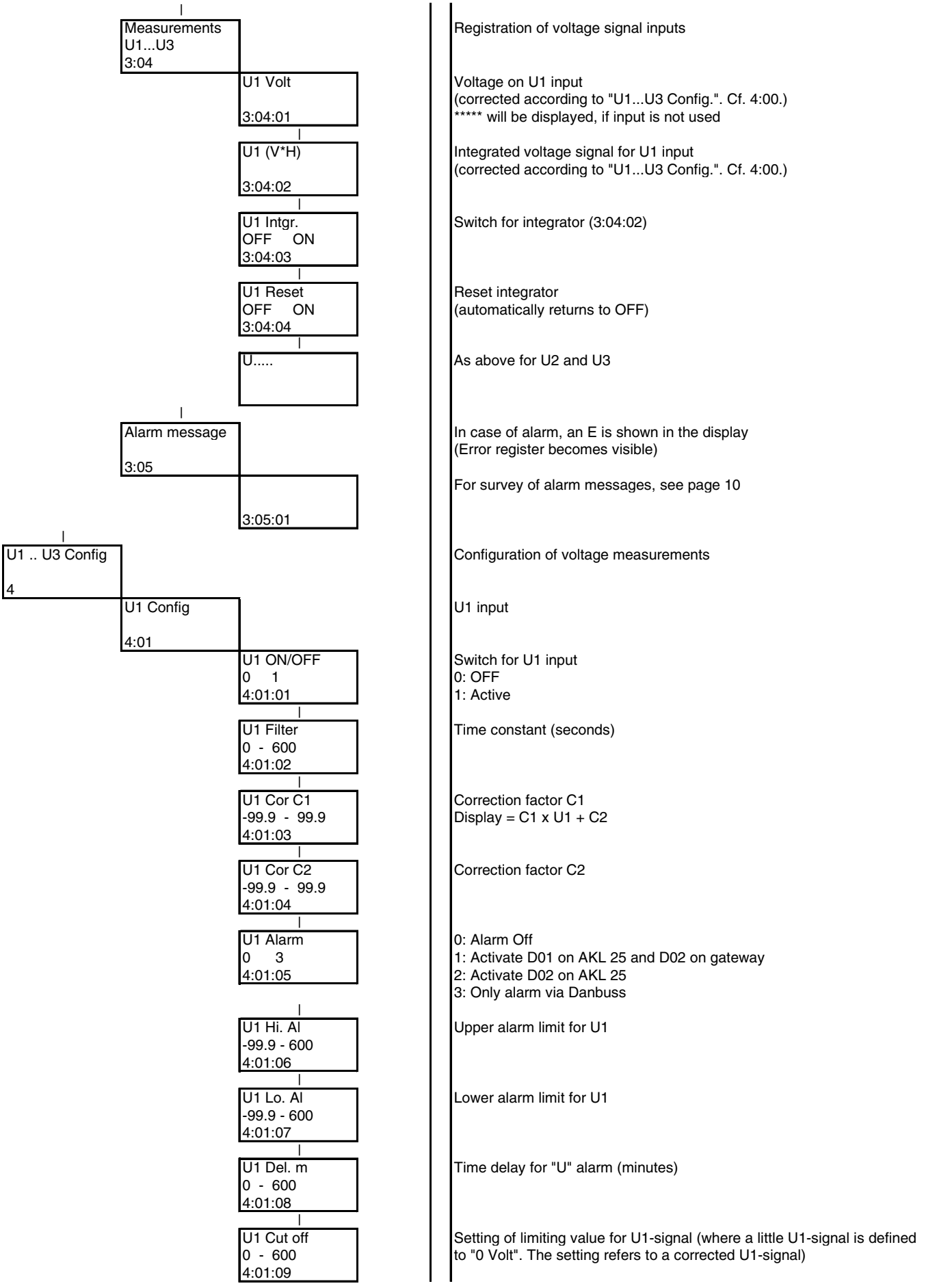
Registration of number of pulses (counter)
Ex.: If 1200.0 is displayed, the number of pulses is 12000

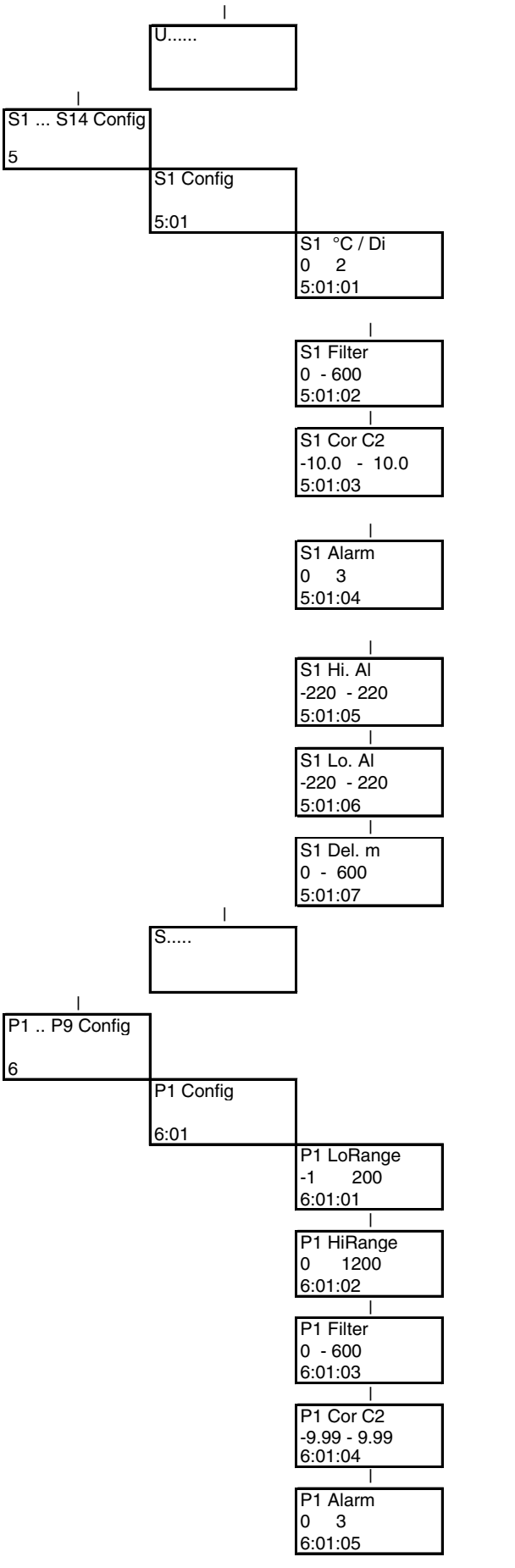
Registration of ON time

Switch for pulse counter and time registration (3:03:02 and 3:03:03).
The values in the menus are frozen)

Reset pulse counter and time registration
(automatically returns to OFF)

As above for Di2 to Di4


Measurements
U1...U3
3:04
U1 Volt
3:04:01
U1 (V*H)
3:04:02
U1 Intgr.
OFF ON
3:04:03
U1 Reset
OFF ON
3:04:04
U.....
Alarm message
3:05
3:05:01
U1 .. U3 Config
4
U1 Config
4:01
U1 ON/OFF
0 1
4:01:01
U1 Filter
0 - 600
4:01:02
U1 Cor C1
-99.9 - 99.9
4:01:03
U1 Cor C2
-99.9 - 99.9
4:01:04
U1 Alarm
0 3
4:01:05
U1 Hi. Al
-99.9 - 600
4:01:06
U1 Lo. Al
-99.9 - 600
4:01:07
U1 Del. m
0 - 600
4:01:08
U1 Cut off
0 - 600
4:01:09
Registration of voltage signal inputs
Voltage on U1 input
(corrected according to "U1...U3 Config.". Cf. 4:00.)
***** will be displayed, if input is not used
Integrated voltage signal for U1 input
(corrected according to "U1...U3 Config.". Cf. 4:00.)
Switch for integrator (3:04:02)
Reset integrator
(automatically returns to OFF)
As above for U2 and U3
In case of alarm, an E is shown in the display
(Error register becomes visible)
For survey of alarm messages, see page 10
Configuration of voltage measurements
U1 input
Switch for U1 input
0: OFF
1: Active
Time constant (seconds)
Correction factor C1
Display = C1 x U1 + C2
Correction factor C2
0: Alarm Off
1: Activate D01 on AKL 25 and D02 on gateway
2: Activate D02 on AKL 25
3: Only alarm via Danbuss
Upper alarm limit for U1
Lower alarm limit for U1
Time delay for "U" alarm (minutes)
Setting of limiting value for U1-signal (where a little U1-signal is defined to "0 Volt". The setting refers to a corrected U1-signal)



As above for U2 and U3

Configuration of temperature measurements

S1 input

Switch for S1 input
0: Off
1: Temperature measurement with Pt 1000 ohm (analog)
2: ON/OFF connection (digital function)

Time constant in seconds (when temperatures are measured)
At digital function (setting in 5:01:01 = 2) the filter function cannot be used (factory setting = 1)

Correction factor C2
Display = S1 + C2
At digital function (setting in 5:01:01 = 2) the correction function cannot be used (factory setting = 0)

0: No alarm
1: Activate D01 on AKL 25 and D02 on gateway
2: Activate D02 on AKL 25
3: Only via Danbuss

Analog: Upper alarm limit for S1
Digital: If alarm is required for shortcircuited input, the setting must be 1
If no alarm is required, the setting must be 2 or higher

Analog: Lower alarm limit for S1
Digital: If alarm is required for open input, the setting must be 0.
If no alarm is required, the setting must be negative.

Time delay for alarm (minutes)

As above for S2 to S14

Configuration of pressure measurements

P1 input

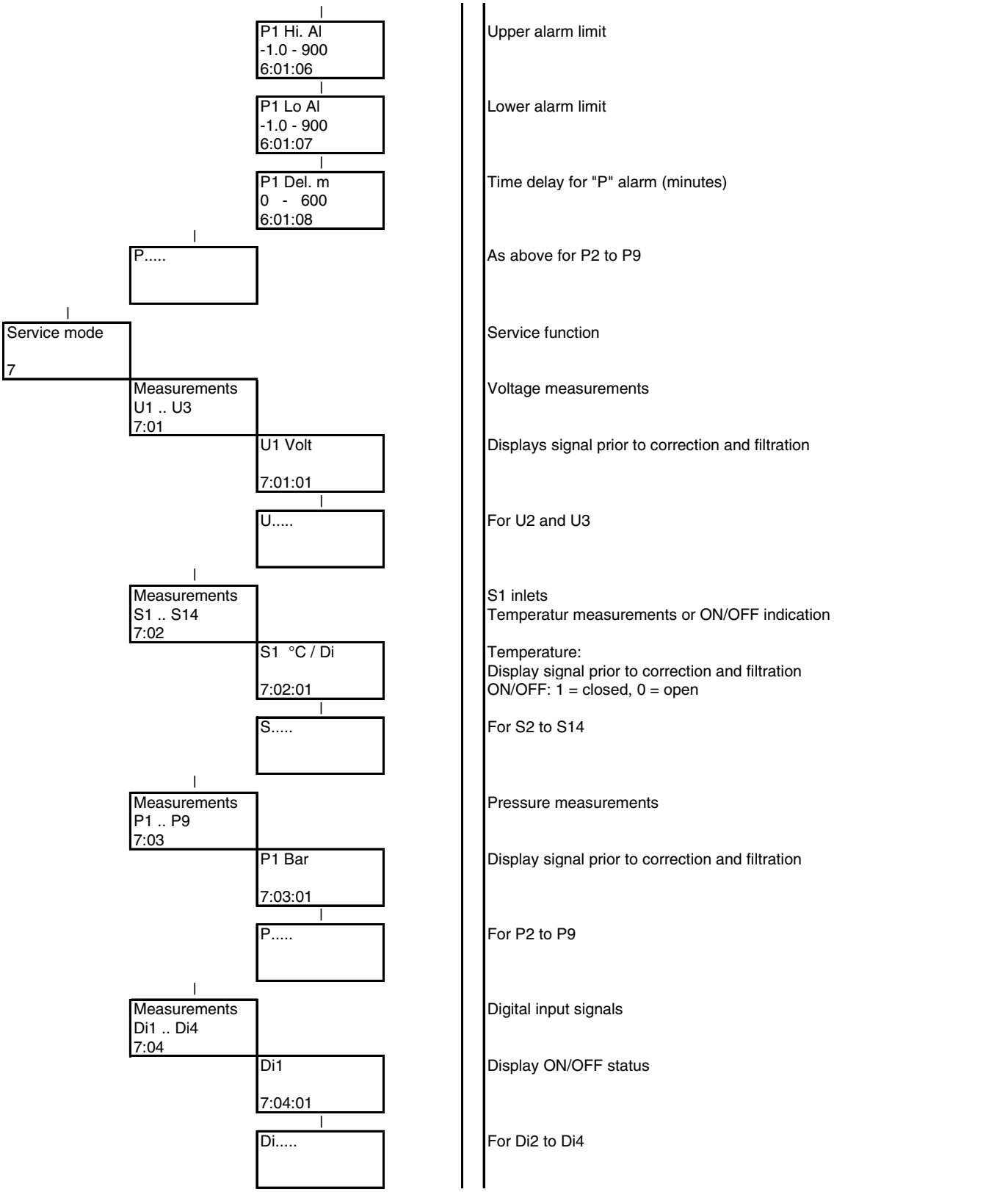
Pressure transmitters working range
Min. Value (fx -1 bar)

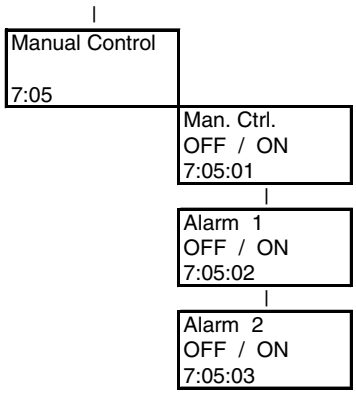
Pressure transmitters working range
Max. Value (fx 12 bar)

Time constant (seconds)

Correction factor C2
Display = P1 + C2

0: No alarm
1: Activate D01 on AKL 25 and D02 on gateway
2: Activate D02 on AKL 25
3: Only via Danbuss


P1 Hi. Al
-1.0 - 900
6:01:06
Upper alarm limit
P1 Lo Al
-1.0 - 900
6:01:07
Lower alarm limit
P1 Del. m
0 - 600
6:01:08
Time delay for "P" alarm (minutes)
P.....
As above for P2 to P9
Service mode
7
Service function
Measurements
U1 .. U3
7:01
Voltage measurements
U1 Volt
7:01:01
Displays signal prior to correction and filtration
U.....
For U2 and U3
Measurements
S1 .. S14
7:02
S1 inlets
Temperatur measurements or ON/OFF indication
S1 °C / Di
7:02:01
Temperature:
Display signal prior to correction and filtration
ON/OFF: 1 = closed, 0 = open
S.....
For S2 to S14
Measurements
P1 .. P9
7:03
Pressure measurements
P1 Bar
7:03:01
Display signal prior to correction and filtration
P.....
For P2 to P9
Measurements
Di1 .. Di4
7:04
Digital input signals
Di1
7:04:01
Display ON/OFF status
Di.....
For Di2 to Di4



Forced control of outputs during service

ON: Manual setting allowed
When manal setting has been completed, setting must be changed to OFF.

Forced control of alarm output 1
(terminals A1-A2)

Forced control of alarm output 2
(terminals A3-A4)

Alarm messages

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

AKA 21 operation:
When the error is corrected, the error message can be removed by pressing ENTER.

Sx error	S1 ... S14 sensor error	Check sensor connection/sensor resistance
Low Sx temp.	Too low S_temperature and time delay lapsed	
High Sx temp.	Too high S_temperature and time delay lapsed	
Low Sx DI=0	S1...14 input OFF	
High Sx DI=1	S1...14 input closed	
Px error	P1 ... P9 sensor error	Check sensor signal
Low Px press.	Too low P_pressure and time delay lapsed	
High Px press.	Too high P_pressure and time delay lapsed	
Ux error	U1 ... U3 error	Check voltage signal
Low Ux voltage	Too low U_voltage and time delay lapsed	
High Ux voltage	Too high U_voltage and time delay lapsed	
Standby mode	Control stopped	Function switch (Main switch) is either in pos. "Controller stopped" or "Service" (cf. 2:02:01)

AC-RDT