Operating Guide

ECL Comfort 210 / 296 / 310, Floor (Screed) Drying Program

1.0 Table of Contents

1.1 Important safety and product information

1.1.1 Important safety and product information

This Operating Guide is associated with ECL Application Keys which have the floor drying program implemented. The application Key must have version 2.42 or higher. The ECL Comfort controller software must have version 1.56 or higher.

The described functions are related to the floor drying process only.

See the Installation Guide (delivered with the application key) for application examples and electrical connections.

See also the related Installation Guide
(find it on *http://danfoss.com*) for description of the functions.

The Application Keys comply with ECL Comfort 210 / 296 / 310 controllers as of software version 1.11 (visible at start-up of the controller and in 'Common controller settings' in 'System').

Additional documentation for ECL Comfort 210, 296 and 310, modules and accessories is available on *http://danfoss.com*.

Documentation for Leanheat® Monitor: See:
Leanheat® Monitor | Danfoss

⚓

Application keys might be released before all display texts are translated. In this case the text is in English.

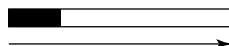
⚓

Automatic update of controller software (firmware):
The software of the controller is updated automatically when the key is inserted:

- ECL 210 / 310, as of controller version 1.11

- ECL 296, as of controller version 1.58

The following animation will be shown when the software is being updated:

Progress bar

During update:

- Do not remove the KEY
  If the key is removed before the hour-glass is shown, you have to start afresh.

- Do not disconnect the power
  If the power is interrupted when the hour-glass is shown, the controller will not work.

- Manual update of controller software (firmware):
  See the section "Automatic / manual update of firmware"

⚠️

Safety Note
To avoid injury of persons and damages to the device, it is absolutely necessary to read and observe these instructions carefully.

Necessary assembly, start-up, and maintenance work must be performed by qualified and authorized personnel only.

Local legislations must be respected. This comprises also cable dimensions and type of isolation (double isolated at 230 V).

A fuse for the **ECL Comfort 296 / 210 / 310** installation is max. 10 A typically.
A fuse for the **ECL Comfort 120 / 220** installation is **max. 6 A.**

The ambient temperature ranges for ECL Comfort in operation are:
ECL Comfort 120 / 220: −5–50 ℃
ECL Comfort 210 / 310: 0–50 ℃
ECL Comfort 296: 0 - 45 ℃.
Exceeding the temperature range can result in malfunctions.

Installation must be avoided if there is a risk for condensation (dew).

The warning sign is used to emphasize special conditions that should be taken into consideration.

🖑

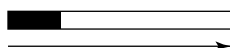This symbol indicates that this particular piece of information should be read with special attention.

🖑

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• Manual update of controller software (firmware):
  See the section "Automatic / manual update of firmware"

As this Operating Guide covers several system types, special system settings will be marked with a system type. All system types are shown in the chapter: 'Identifying your system type'.

°C (degrees Celsius) is a measured temperature value whereas K (Kelvin) often is used for temperature differences.

The ID no. is unique for the selected parameter.

Example	First digit	Second digit	Last three digits
11174	1	1	174
	-	Circuit 1	Parameter no.
12174	1	2	174
	-	Circuit 2	Parameter no.

If an ID description is mentioned more than once, it means that there are special settings for one or more system types. It will be marked with the system type in question (e.g. 12174 - A266.9).

Parameters indicated with an ID no. like "1x607" mean a universal parameter.
x stands for circuit / parameter group.

Disposal Note
This symbol on the product indicates that it may not be disposed of as household waste.
It must be handed over to the applicable take-back scheme for the recycling of electrical and electronic equipment.

- Dispose of the product through channels provided for this purpose.

- Comply with all local and currently applicable laws and regulations.

2.0 Installation

2.1 Description, in general

Application keys for the ECL Comfort 210 / 296 / 310 series, which control heating circuits, offer a floor drying program, also called screed drying program.

The floor drying program is used after a new floor heating circuit has been placed and fresh-from-factory concrete covers the floor heating pipes. The floor drying program can also be used, when the self-leveling screed has been distributed.

The floor drying program can be started immediately in order to dry-out the concrete / screed according to a set time / temperature plan.

Navigation to the menu for 'Floor drying':
Common controller > MENU > Floor drying:

Functional heating:	The flow temperature is controlled according to a set time / temperature plan in order to dry-out the concrete / screed.
Curing heating:	The flow temperature is controlled according to a set time / temperature plan in order to cure the concrete / screed. The curing must be done before mounting of, for example, tiles.

Functional and curing heating can work as one process or separated.

The time / temperature plan is set and is common for selected circuits.
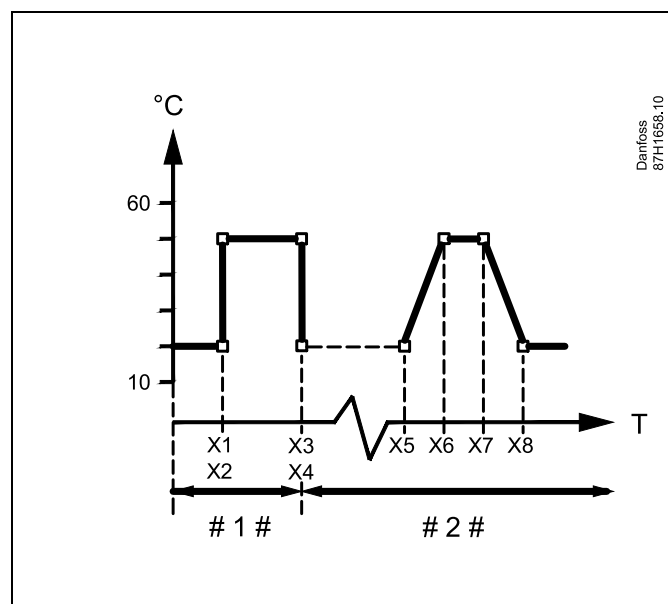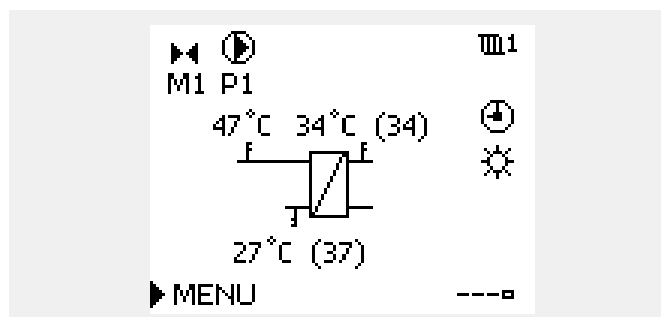

T   =   Time
\# 1 \#   =   Functional heating
\# 2 \#   =   Curing heating

When the floor drying process is finished, a data log can be read from the ECL Comfort controller by means of the "ECL Tool". The data log can be used for documenting the process.

The favorite display with temperature information of the heating circuit(s) can, as an example, look like this:
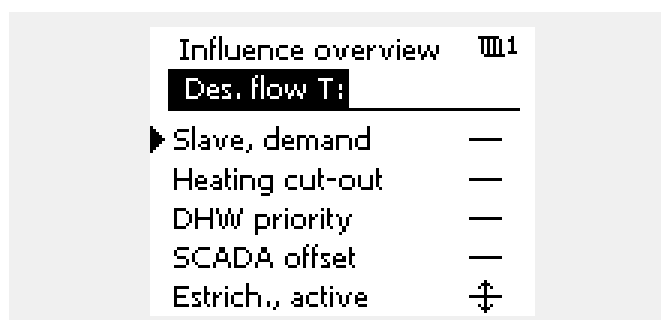
Floor drying process not active:

Floor drying process active:
The progress bar is filled up from left side, according to time elapsed since process start. The elapsed time and total process time is also indicated in hours.
Return temperature related indications are not present, as the return temperature limitation is cancelled during the floor drying process.
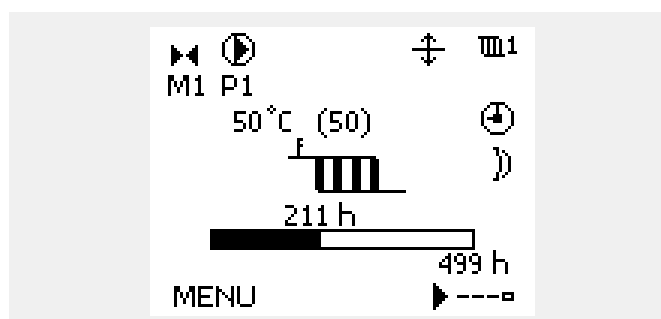
Floor drying process being active can also be seen:
Circuit x > MENU > Influence overview > Des. flow T:

Before start of the floor drying process:

- The control parameters must be set correctly (Circuit x > MENU > Settings > Control parameters). See the Operating Guide for the application in question.

- The Time & Date must be set correctly (Common controller > MENU > Time & Date). See the Operating Guide for the application in question. The Time & Date settings are used in the log facilities.

The mode selector of the ECL Comfort controller must not be in Manual mode when the floor drying process is in progress.

3.0 Settings

3.1 Parameters and descriptions

Parameter tables contain parameter name, ID and descriptions.

Parameters' setting range and factory settings are listed in the
section "Parameter ID overview" at the end of this Operating Guide.

Desired flow T (Desired flow temperature)	**Read-out**
Read-out of the desired flow temperature.	

- - - **:**   The floor drying process is not active

Value: The floor drying process is active

Push the dial to:

- select / deselect circuit(s) for floor drying

- enter / change the graph of the "Functional heating" or "Curing heating" process

The desired flow temperature can be set at:

- X1, X2, X3 and X4 (Functional heating)

- X5, X6, X7 and X8 (Curing heating)

Selection of circuit(s) for floor drying:

▣ 1   ▣ 2   Circuit number selected

☐ 1   ☐ 2   Circuit number not selected

☝

Important: The desired flow temperature values, set at X4 and X8 are used as controlling temperatures:

- after the floor drying process, if the application is not to be started

- after a power failure

Examples of graph:

Times for X1, X2, X3 and X4 are the same (0 h)

Desired temperature at X1 is 20 °C

Desired temperature at X2 is 20 °C

Desired temperature at X3 is 20 °C

Desired temperature at X4 is 20 °C

Times for X1, X2, X3 and X4 are different, as shown.

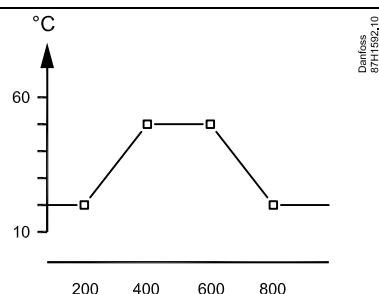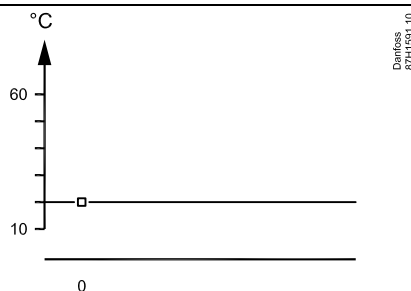Desired temperature at X1 is 20 °C

Desired temperature at X2 is 50 °C

Desired temperature at X3 is 50 °C

Desired temperature at X4 is 20 °C

☝

Application with one heating circuit:
If the floor drying process is in operation and the circuit, by accident, is changed not to be selected, the floor drying process must be restarted.

Application with two or three heating circuits:
If the floor drying process is in operation for two or three circuits and one of the circuits, by accident, is changed not to be selected, the floor drying process continues. Just select the circuit in question again.

Prog. execution (Program execution)	**10512**
Start or stop the floor drying process. *Press and hold the dial for 5 seconds in order to start or stop the process.*	

OFF: The floor drying process is not active

ON: The floor drying process is active

✍ If the ECL Comfort controller is set to manual mode, the floor drying process can be started, but will not be active.

✍ If "Prog. execution" is set to ON and returns to OFF after 5 seconds, none of the circuits in the graph (Desired flow T) have been selected for floor drying.

✍ If the parameter "Appl. continue" (ID 10912) is set to STOP, the "Prog. execution" remains ON after elapse of the floor drying process.

Max. pwr. failure (Max. power failure period acceptance)	**10514**
Setting the max. accepted time for power failure. *If the ECL Comfort controller is without power for more than the set time, the alarm will be activated when the controller is powered up.*	

Value: Set the accepted time

✍ After a power failure, the alarm is indicated / activated. If the parameter "After power fail." (ID 10913) is set to STOP, the desired flow temperature is maintained at the value, set in X1.

The alarm can be reset (MENU > Alarm > Alarm overview)

To restart the floor drying process:
If the parameter "After power fail." (ID 10913) is set to STOP, the "Prog. execution" must be set to OFF and then to ON.

Ramp X5 - X6 (Temperature ramping from time X5 to X6)	**10903**
Ramp X7 - X8 (Temperature ramping from time X7 to X8)	**10904**
Setting the number of steps for the change of the desired flow temperature in selected period.	

OFF: The stepwise change is disabled

Value: The period is divided in the number of steps

Example:
"X5" time is set to 100
"X5" temperature is set to 25 °C

"X6" time is set to 150
"X6" temperature is set to 35 °C

"Ramp X5 - X6" is set to 5

Result:
Period between X5 and X6 is 50 hours. Temperature change is 10 K.
The process will be:
Start temperature: 25 °C, after 10 hours the temperature changes to 27 °C. After further 10 hours the temperature changes to 29 °C and so on.

| **Appl. continue (Application continue)** | **10912** |
| *Selection how the ECL Comfort controller must continue after having finished the floor drying process.* | |

OFF: The desired flow temperature will be the value set at "X8" time

ON: The controller continues with the selected application and the set mode of the function selector

When using only "Functional heating" and no demand for control after the floor drying process, it is important to set the desired temperature at X8.
(Common controller > MENU > Floor drying > Curing heating > "Desired flow T" > Graph's right point).

After power fail. (After power failure)	**10913**
Selection how the ECL Comfort controller must continue after a power failure (power has been away for more than accepted time, set in "Max. pwr. failure", ID 10514).	
If power failure happens in "Functional heating" process, the floor drying can be restarted according to time and temperature setting for X1 or stopped. If stopped, the desired flow temperature is maintained at the value, set for X1.	
If power failure happens in "Curing heating" process, the floor drying can be restarted according to time and temperature setting for X4. If stopped the desired flow temperature is maintained at the value, set for X1.	

After a power failure, the alarm is indicated.
The alarm can be reset.

STOP: The controller stops the floor drying process and maintains the temperature, set at X1

START: The controller starts the floor drying process from settings in X1 or X4

To restart the floor drying process:
If the parameter "After power fail." (ID 10913) is set to STOP, the "Prog. execution" must be set to OFF and then to ON.

X1 (Start time for period 1)	10930
X2 (Start time for period 2)	10931
X3 (Start time for period 3)	10932
X4 (Start time for period 4)	10933

*The time that must elapse from process start for controlling the set flow temperature in the **functional heating** period.*

If the functional heating period should not be used, X4 can be set 0 h (zero hours).

Values: Set the times

Example 1:

X1 = 50 hours
X2 = 50 hours
X3 = 200 hours
X4 = 200 hours

Result:
The desired flow temperature, which will be maintained from process start, is the value, which is indicated / set at X1 in "Desired flow T".
50 hours after process start, the desired flow temperature, which is indicated / set at X2 in "Desired flow T", will be maintained.
200 hours after process start, the desired flow temperature, which is indicated / set at X3 in "Desired flow T", will be maintained.
200 hours after process start, the desired flow temperature, which is indicated / set at X4 in "Desired flow T", will be maintained.

Example 2:

X1 = 50 hours
X2 = 100 hours
X3 = 150 hours
X4 = 200 hours

Result:
The desired flow temperature, which will be maintained from process start, is the value, which is indicated / set at X1 in "Desired flow T".
50 hours after process start, the desired flow temperature will gradually rise / fall to the value, which is indicated / set at X2 in "Desired flow T".
150 hours after process start, the desired flow temperature will gradually rise / fall to the value, which is indicated / set at X3 in "Desired flow T".
200 hours after process start, the desired flow temperature will gradually rise / fall to the value, which is indicated / set at X4 in "Desired flow T".

X5 (Start time for period 5)	**10934**
X6 (Start time for period 6)	**10935**
X7 (Start time for period 7)	**10936**
X8 (Start time for period 8)	**10937**

*The time that must elapse from time X4 for controlling the set flow temperature in the **curing heating** period.*

Values: Set the times

If the temperature values, set at X4 and X5, are different, the desired flow temperature changes gradually from the X4 value to the X5 value.

When X5 is set to a time value, the desired flow temperature starts with the value, set at X4.

If the curing heating period should not be used, X8 can be set 0 h (zero hours).

4.0 ECL Tool

4.1 Data logging for report with ECL Tool

By means of the ECL Tool a data log can be read from the ECL Comfort controller in order to document the process.

The log makes a stamp each 15 minutes. Max. log time is 40 days. When the log memory is full, the logging stops. A start of the floor drying might delete the existing log in the ECL controller.

The ECL Tool is found here: *http://heating.danfoss.com*

Choose Tools & Software, select Download. Download the USB driver and ECL Tool installer.
The exe-file also contains an ECL Tool instruction in PDF file format.

When running the ECL Tool, be sure the version is 1.9.8.1 or higher.

Connection cable between PC and ECL Comfort controller is an USB cable, having USB-A plug (for PC) at one end and USB-B plug (for the ECL Comfort controller) at the other end.

Version information, example:
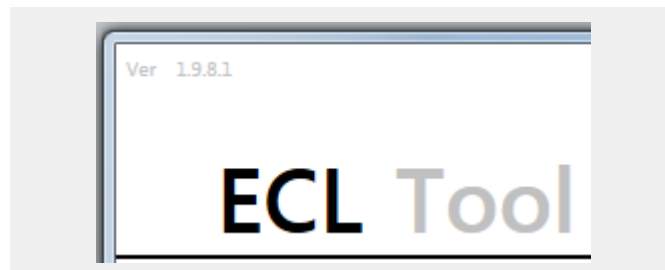
4.2 Short get-going instruction

After having established connection between the PC and the
ECL controller, the "Load standard parameters (recommended)"
is selected.

All parameters and settings are listed in groups.

At the bottom of the view a graph button is
present. The name is "Read logs".

By selecting the read logs button, a default graph is shown.

At the bottom of the default graph view some buttons are present:

Help.
Opens ECL Tool instruction in PDF format.

Print

Read ECL log from ECL and show graph

Read extended log from ECL and show graph.
This is possible with ECL Comfort controllers having
firmware 1.56 or higher.

Select the log button; a graph shows the loggings of the listed
items.
A file with the indicated name is created and saved.
If choosing Yes for opening in an external program (for example
Excel), the program opens with the data.

The graph can be zoomed / dragged in order to get a desired
picture for the report.
A right-click on the graph allows copy facilities.

Select the button "Copy graph to report page" in order to include
the currently shown graph in the report.
The print button will start the report printing.

5.0 Miscellaneous

5.1 Parameter ID overview

ID	Parameter Name	Setting range	Factory	Unit	Own settings
10512	Prog. execution	OFF ; ON	OFF		
10514	Max. pwr. failure	5 ... 3000	30	Min	
10903	Ramp X5-X6	OFF, 1 ... 20	5		
10904	Ramp X7-X8	OFF, 1 ... 20	5		
10912	Appl. continue	OFF ; ON	OFF		
10913	After power fail.	STOP / START	STOP		
10930	X1	0 - 1200	0	h	
10931	X2	0 - 1200	0	h	
10932	X3	0 - 1200	0	h	
10933	X4	0 - 1200	0	h	
10934	X5	0 - 1200	0	h	
10935	X6	0 - 1200	360	h	
10936	X7	0 - 1200	720	h	
10937	X8	0 - 1200	1080	h	

Functional heating	Factory settings
Desired flow T:	0.20 (0 = time; 20 = desired flow temperature)

Curing heating	Factory settings
Desired flow T:	0.25 (0 = time; 25 = desired flow temperature)
-||-	360.50 (360 = time; 50 = desired flow temperature)
-||-	720.50 (720 = time; 50 = desired flow temperature)
-||-	1080.25 (1080 = time; 25 = desired flow temperature)

*0 8 7 H 9 2 6 2 *

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