

Operating Guide

ECL Comfort 210, 296 and 310, return temperature limitation



1.0 Table of Contents

| | |
|--|----------|
| 1.0 Table of Contents | 1 |
| 1.1 Important safety and product information..... | 2 |
| 2.0 Settings..... | 5 |
| 2.1 Return temperature limitation in a master / slave system | 5 |
| 3.0 Miscellaneous..... | 7 |
| 3.1 Several controllers in the same system | 7 |

ECL Comfort 210, 296 and 310, return temperature limitation

1.1 Important safety and product information

1.1.1 Important safety and product information

This Installation Guide is an appendix to installation guides associated with ECL application keys produced as from September 2013 and contains only a description of the return temperature limitation functionality in a master / slave system.

The return temperature limitation functionality can be realized with ECL Comfort 210, ECL Comfort 296 and ECL Comfort 310.

For information on general functions please consult the installation guide for the application key in question.

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



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 installation is max. 10 A typically.

The ambient temperature ranges for ECL Comfort in operation are:

ECL Comfort 210 / 310: 0 - 55 °C

ECL Comfort 296: 0 - 45 °C.

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.



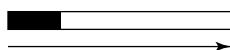
This symbol indicates that this particular piece of information should be read with special attention.

ECL Comfort 210, 296 and 310, return temperature limitation



Automatic update of controller software (firmware):

The software of the controller is updated automatically when the key is inserted (as of controller version 1.11 (ECL 210 / 310) and version 1.58 (ECL 296)). 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"



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).

ECL Comfort 210, 296 and 310, return temperature limitation



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



Disposal Note

This product should be dismantled and its components sorted, if possible, in various groups before recycling or disposal.
Always follow the local disposal regulations.

ECL Comfort 210, 296 and 310, return temperature limitation

2.0 Settings

2.1 Return temperature limitation in a master / slave system

The circuit 1 menu for return temperature limit parameters contains an additional parameter "DHW, ret. T limit" (= Domestic Hot Water, return temperature limit).

When a slave in a master / slave system is in DHW-tank heating / charging mode, the desired flow temperature value is transferred to the master. The master will react by controlling a flow temperature being a number of degrees higher ("Demand offset") than the desired flow temperature from the slave.

When the master is fulfilling a DHW-tank heating / charging demand from a slave, the return temperature limitation can be done in relation to a set value.

The return temperature limitation will always be related to the highest limitation value.

An example: Return temperature limitation (DHW) = 55 °C and return temperature limitation (heating) = 60 °C.

The result will be a return temperature limitation at 60 °C.

If the master is not controlling a desired flow temperature from a slave, the return temperature limitation can be done in relation to the outdoor temperature.

The parameter "DHW, ret. T limit" is not present in applications with DHW-tank heating / charging.

Examples: A237, A247, A367, A377.

MENU > Settings > Return temperature limitation in a master / slave system

| DHW, ret. T limit | | 11029 |
|-------------------|-------------------|-----------------|
| Circuit | Setting range | Factory setting |
| 1 | OFF / 10 – 110 °C | OFF |

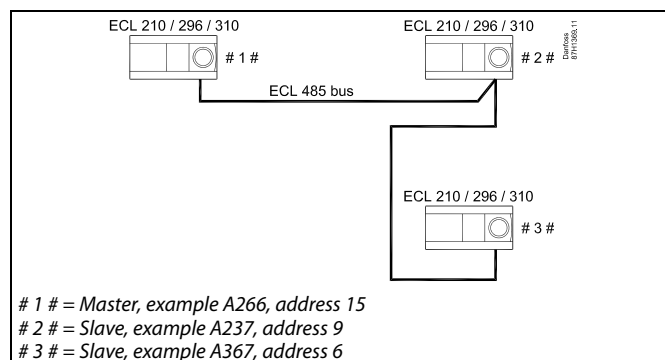
When an addressed slave is active in DHW-tank heating / charging, the return temperature limitation in the master can be set.

Notes:

- The master circuit must be set to react on the desired flow temperature in the slave(s). See "Demand offset" (ID 11017).
- The slave(s) must be set to send its / their desired flow temperature to the master. See "Send desired T" (ID 1x500).

OFF: No influence from slaves. The return temperature limitation is related to settings in "Return limit".

10 – 110 °C: Return temperature limitation value when slave is in DHW tank heating / charging operation.



Some examples of applications with DHW-tank heating / charging are:

- A217, A237, A247, A367, A377

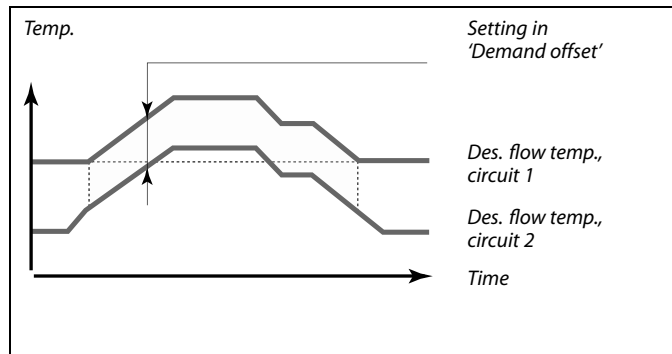
ECL Comfort 210, 296 and 310, return temperature limitation

MENU > Settings > Return temperature limitation in a master / slave system

| Demand offset | | | 11017 |
|---------------|------------------|-----------------|-------|
| Circuit | Setting range | Factory setting | |
| 1 | OFF / 1 ... 20 K | OFF | |

The desired flow temperature in heating circuit 1 can be influenced by the demand for a desired flow temperature from another controller (slave) or another circuit.

- OFF:** The desired flow temperature in circuit 1 is not influenced by the demand of any other controller (slave or circuit 2).
- 1 ... 20:** The desired flow temperature is increased by the set value in 'Demand offset', if the demand of the slave / circuit 2 is higher.



The function of 'Demand offset' can compensate for heat losses between master and slave controlled systems.

MENU > Settings > Return temperature limitation in a master / slave system

| Send desired T | | | 1x500 |
|----------------|---------------|-----------------|-------|
| Circuit | Setting range | Factory setting | |
| | OFF / ON | ON | |

Sub-circuit in the same ECL controller:
Information about the desired flow temperature can be sent to circuit 1.

The ECL controller acts as a slave controller in a master / slave system:
Information about the desired flow temperature can be sent to the master controller via the ECL 485 bus.

- OFF:** Information about the desired flow temperature is not sent to circuit 1 / master circuit / the master controller.
- ON:** Information about the desired flow temperature is sent to circuit 1 / master circuit / the master controller.



Slave circuits are circuits in other ECL controllers.
Sub-circuits are circuits besides the master or circuit 1 in the ECL controller.



In the master controller, 'Demand offset' must be set to a value in order to react on a desired flow temperature from a slave controller.



When the controller acts as a slave, its address must be 1, 2, 3 ... 9 in order to send the desired temperature to the master (see the section 'Miscellaneous', 'Several controllers in the same system').

ECL Comfort 210, 296 and 310, return temperature limitation

3.0 Miscellaneous

3.1 Several controllers in the same system

When ECL Comfort controllers are interconnected by means of the ECL 485 communication bus (cable type: 2 x twisted pair), the master controller will broadcast the following signals to the slave controllers:

- Outdoor temperature (measured by S1)
- Time and date
- DHW tank heating / charging activity

Furthermore, the master controller can receive information about:

- the desired flow temperature (demand) from slave controllers
- and (as from ECL controller version 1.48) DHW tank heating / charging activity in slave controllers

Situation 1:

SLAVE controllers: How to make use of the outdoor temperature signal sent from the MASTER controller

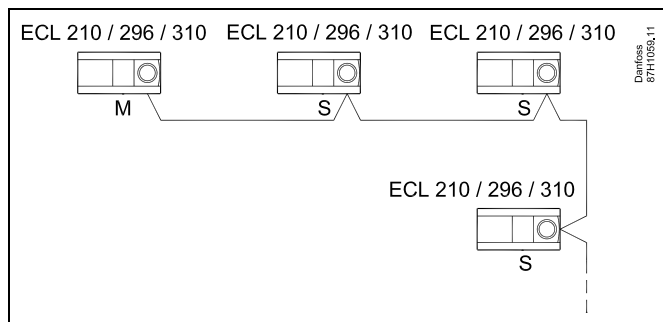
The slave controllers only receive information about outdoor temperature and date / time.

SLAVE controllers:

Change the factory set address from 15 to address 0.

- In , go to System > Communication > ECL 485 addr.

| ECL 485 addr. (master / slave address) | | 2048 |
|--|---------------|--------|
| Circuit | Setting range | Choose |
| <input type="text"/> | 0 ... 15 | 0 |



ECL 485 bus cable

Maximum recommended length of the ECL 485 bus is calculated like this:

Subtract "Total length of all input cables of all ECL controllers in the master - slave system" from 200 m.

Simple example for total length of all input cables, 3 x ECL:

| | | |
|---------|-----------------------|------|
| 1 x ECL | Outdoor temp. sensor: | 15 m |
| 3 x ECL | Flow temp. sensor: | 18 m |
| 3 x ECL | Return temp. sensor: | 18 m |
| 3 x ECL | Room temp. sensor: | 30 m |
| Total: | | 81 m |

Maximum recommended length of the ECL 485 bus:
200 - 81 m = 119 m



In a system with MASTER / SLAVE controllers, only one MASTER controller with address 15 is allowed.

If by mistake more MASTER controllers are present in an ECL 485 communication bus system, decide which controller is to be MASTER. Change the address in the remaining controllers. However, the system will operate but not be stable with more than one MASTER controller.



In the MASTER controller, the address in 'ECL 485 addr. (master / slave address)'; ID no. 2048, must always be 15.
Navigation:

- In , go to System > Communication > ECL 485 addr.

SLAVE controllers must be set to another address than 15:
Navigation:

- In , go to System > Communication > ECL 485 addr.



'Demand offset' with a value is to be used in the Master controller only.

ECL Comfort 210, 296 and 310, return temperature limitation

Situation 2:

SLAVE controller: How to react on a DHW tank heating / charging activity sent from the MASTER controller

The slave receives information about a DHW tank heating / charging activity in the master controller and can be set to close the selected heating circuit.

ECL controller versions 1.48 (as from August 2013):

The master receives information about DHW tank heating / charging activity in the master controller itself and also slaves in the system.

This status is broadcasted to all ECL controllers in the system and each heating circuit can be set to close the heating.

SLAVE controller:

Set the desired function:

- In circuit 1 / circuit 2, go to 'Settings' > 'Application' > 'DHW priority':

| | | |
|---|---------------|----------------------|
| DHW priority (closed valve / normal operation) | | 11052 / 12052 |
| Circuit | Setting range | Choose |
| 1 / 2 | OFF / ON | OFF / ON |

OFF: The flow temperature control remains unchanged during active DHW heating / charging in the master / slave system.

ON: The valve in the heating circuit is closed during active DHW heating / charging in the master / slave system.

ECL Comfort 210, 296 and 310, return temperature limitation

Situation 3:

SLAVE controller: How to make use of the outdoor temperature signal and send information about the desired flow temperature back to the MASTER controller



In the MASTER controller, the address in 'ECL 485 addr. (master / slave address)'; ID no. 2048, must always be 15.

The slave controller receives information about outdoor temperature and date / time. The master controller receives information about the desired flow temperature from slave controllers with an address from 1 ... 9:

SLAVE controller:

- In , go to System > Communication > ECL 485 addr.
- Change the factory set address from 15 to an address (1 ... 9). Each slave must be configured with its own address.

| ECL 485 addr. (master / slave address) | | 2048 |
|--|---------------|---------|
| Circuit | Setting range | Choose |
| <input type="checkbox"/> | 0 ... 15 | 1 ... 9 |

Furthermore, each slave can send information about the desired flow temperature (demand) in each circuit back to the master controller.

SLAVE controller:

- In the circuit in question, go to Settings > Application > Send desired T
- Choose ON or OFF.

| Send desired T | | 11500 / 12500 |
|----------------|---------------|------------------|
| Circuit | Setting range | Choose |
| 1 / 2 | OFF / ON | ON or OFF |

OFF: Information about the desired flow temperature is not sent to the master controller.

ON: Information about the desired flow temperature is sent to the master controller.

ECL Comfort 210, 296 and 310, return temperature limitation



Danfoss A/S
Heating Segment • heating.danfoss.com • +45 7488 2222 • E-Mail: heating@danfoss.com

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without subsequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and all Danfoss logotypes are trademarks of Danfoss A/S. All rights reserved.