



# Electronic controllers

## ECL comfort 210

Remote Control Units ECA 30 / 31 and Application Keys

## Description

The ECL Comfort 210 is an electronic weather compensated temperature controller in the ECL Comfort controller family for use in district heating, central heating and cooling systems. Energy savings can be achieved by correct control of the flow temperature in heating and cooling systems. Up to 3 circuits can be controlled. The weather compensation function in the ECL Comfort controllers measures the outdoor temperature and controls the flow temperature to the heating system accordingly. The weather compensated heating system increases the comfort level and saves energy.

The ECL Comfort 210 controller is configured with a selected application by means of an ECL application key.

## Features & benefits

- Stand-alone controller for multiple heating and cooling applications with up to 2 circuits + thermostatic function
- Intelligent ECL Application Keys, series A2xx
- 2x 3-point control outputs optimized for actuators
- 8 inputs: 6 Pt 1000, 2 configurable
- 4 relay outputs
- Turn/push dial navigation and large graphical display with backlight
- Data logging readout on display or via USB interface
- Modbus RS485 for short cable distances
- Master/slave option
- Optional ECA 30/31 Remote Control Unit

## Applications

- District heating
- Central heating/HVAC
- Cooling systems

## Ordering

### Accessories code numbers



087N0011

**ESMC, Pt 1000**

Related products

087H3020

087H3030



084N1012

**ESMT, Sensor type:  
Outdoor, Pt 1000**ESMT, Pt 1000 outdoor  
sensor

Related products

087H3020

087H3030



087B1164

**ESM-10, Sensor  
type: Room, Pt  
1000**ESM-10, Pt 1000 room  
temperature sensor

Related products

087H3020

087H3030



087H3236

**ECL Mounting kit**

ECA 30/31 FRAME KIT

Related products

087H3020

087H3030



087H3801

**ECL Application  
keys, A260**ECL Application key  
A260. 2 x heating  
control

Related products

087H3020

087H3030



087H3201

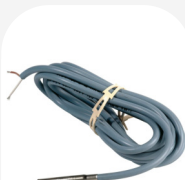
**ECA 31**

ECA 31

Related products

087H3020

087H3030



087B1184

**ESMB-12, Pt 1000**

ESMB-12, Pt 1000

Universal sensor

Related products

087H3020

087H3030



087H3806

**ECL Application keys, A237**

ECL Application key A237. Heating / DHW tank control

Related products

087H3020

087H3030



087H3800

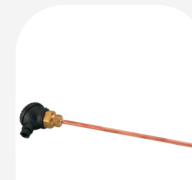
**ECL Application keys, A266**

ECL Application key A266. Heating and DHW control

Related products

087H3020

087H3030



087B1180

**ESMU-100, Pt 1000, COPPER||COPPER**

ESMU-100, Pt 1000 immersion sensor, 100 mm, copper

Related products

087H3020

087H3030



087H3805

**ECL Application keys, A231**

ECL Application key A231. Heating control with one or two circulation pump control. Refill water function with one or two pumps.

Related products

087H3020

087H3030



087H3807

**ECL Application keys, A217**

ECL Application key A217. DHW - / DHW-tank temperature control

Related products

087H3020

087H3030



087B1165

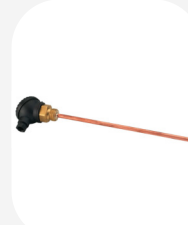
**ESM-11, Pt 1000**

ESM-11, Pt 1000 Surface sensor

Related products

087H3020

087H3030



087B1181

**ESMU-250, Pt 1000, COPPER||COPPER**

ESMU-250, Pt 1000 immersion sensor, 250 mm, copper

Related products

087H3020

087H3030



087B1183

**ESMU-250, Pt 1000, Stainless steel**

ESMU-250, Pt 1000 immersion sensor, 250 mm, stainless steel

Related products

087H3020

087H3030



087H3808

**ECL Application keys, A247**

ECL Application key A247. Heating and DHW-tank control

Related products

087H3020

087H3030



087B1156

**ECA 99, Supply voltage [V] AC: 24, Output voltage [V] AC: 24**

ECA 99 TRANSFORMER 24 V

Related products

087H3020

087H3030



087B1182

**ESMU-100, Pt 1000, Stainless steel**

ESMU-100, Pt 1000 immersion sensor, 100 mm, stainless steel

Related products

087H3020

087H3030



087H3811

**ECL Application keys, A214**

ECL Application key A214. Heating / cooling control of ventilation systems

Related products

087H3020

087H3030



087H3812

**ECL Application keys, A232**

ECL Application key A232 Heating / cooling control of floor heating / ceiling cooling systems

Related products

087H3020

087H3030



087H3220

**ECL Base part**

ECL COMFORT 210 BASE PART

Related products

087H3020

087H3030



087H3814

**ECL Application keys, A275**

ECL Application key A275. Boiler ON-OFF control with 2 x heating and 1 x DHW-tank control

Related products

087H3020

087H3030



087H3802

**ECL Application keys, A230**

ECL Application key A230. Heating control with wind compensation. Cooling control.

Related products

087H3020

087H3030



087H3200

**ECA 30**

ECA 30

Related products

087H3020

087H3030



087H3230

**ECL Base part**

ECL COMFORT 310 BASE PART

Related products

087H3020

087H3030

**Accessories and spare parts (for Pt 1000 temperature sensors)**

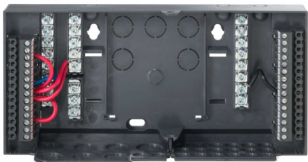
| Type   | Designation                                                    | Code No. |
|--------|----------------------------------------------------------------|----------|
| Pocket | Immersion, stainless steel 100 mm, for ESMU-100, Cu (087B1180) | 087B1190 |
| Pocket | Immersion, stainless steel 250 mm, for ESMU-250, Cu (087B1181) | 087B1191 |
| Pocket | Immersion, stainless steel 100 mm, for ESMB-12, (087B1184)     | 087B1192 |
| Pocket | Immersion, stainless steel 250 mm, for ESMB-12, (087B1184)     | 087B1193 |

**Typical ordering, types**

| ECL Comfort Controller | Base part   | Appl. key | Remote Control Unit | Temperature sensors   | Actuators / valves       |
|------------------------|-------------|-----------|---------------------|-----------------------|--------------------------|
| ECL 210, 230 V a.c.    | for ECL 210 | A2xx      | ECA 30              | ESMT (outdoor)        | see dedicated literature |
| ECL 210 B, 230 V a.c.  | for ECL 310 |           | ECA 31              | ESM-11 (pipe surface) |                          |
|                        |             |           |                     | ESMC (pipe surface)   |                          |
|                        |             |           |                     | ESMU (immersion)      |                          |
|                        |             |           |                     | ESM-10 (room)         |                          |
|                        |             |           |                     | ESMB-12 (universal)   |                          |

## Overview

### Product portfolio

| ECL Comfort 210 Controller                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p>The ECL Comfort 210 is easily operated by means of a dial (multi-functional knob) or a Remote Control Unit (RCU). The dial and the backlit display guide the user through the text menus in the selected language.</p> <p>The ECL Comfort 210 controller has electronic output for motorized valve control, relay output for circulation pump / changeover valve control among others, as well as alarm output.</p> <p>The enclosure is designed for mounting on wall and DIN rail. A variant ECL Comfort 210B (without display and dial) is available. It can be used for mounting inside a panel and is operated by means of the RCU ECA 30 / 31 which can be placed in front of the panel.</p> <p>The ECL Comfort 210 is a stand-alone controller which communicates with the RCU and other ECL Comfort 210 / 296 / 310 controllers via the ECL 485 communication bus.</p> |
| Base part                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|   | <p>Danfoss ECL Comfort mounting base part. For mounting on wall or DIN rail (35 mm). Depending on application, one of the internal extension modules ECA 32 or ECA 35 (inserted into the controller's base part) can give additional input and output signals.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Application key                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|  | <p>The ECL Comfort 210 controller is loaded with the desired application by means of the ECL Application Key, which contains information about applications (basic application sketches are shown in the display), languages, factory settings and firmware.</p> <p>The ECL Application Keys, series A2xx can be used in ECL Comfort 210, ECL Comfort 296 and ECL Comfort 310. Most of the A2xx application keys give extended functionalities when used in ECL Comfort 310, such as additional temperature sensors and M-bus communication.</p> <p>The ECL Application Keys, series 3xx can be used in ECL Comfort 310 only.</p> <p>The application parameters are stored in the controller and are not affected by power break.</p> <p>The relevant ECL Application Keys for the ECL Comfort 210 / 296 / 310 controller can be found in the ordering section.</p>              |

|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Remote Control Unit</b>                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|  | <p>The Remote Control Units (RCU ECA 30 and ECA 31) are used for room temperature control and override of the ECL Comfort 310. The display has backlight. The RCUs are connected to the ECL Comfort controllers by means of 2 × twisted pair cable for communication and power supply (ECL 485 communication bus).</p> <p>The ECA 30 / 31 has a built-in room temperature sensor. An external room temperature sensor can be connected substituting the built-in temperature sensor.</p> <p>Furthermore, the ECA 31 has a built-in relative humidity sensor and the signal is used in relevant applications. It is possible to connect up to 2 RCUs on the ECL 485 communication bus. One RCU can monitor max. 10 ECL Comfort controllers (master/ slave system).</p> <p>The ECL Comfort 310 can also work with up to 2 x RCUs, ECA 32 / 35 and other ECL Comfort 210 / 296 / 310 controllers via the ECL 485 communication bus.</p> |
| <b>Temperature sensors</b>                                                        |  <p>6 Pt 1000 temperature sensors can be connected. In addition, 4 inputs are configured when uploading the application. The configuration can be Pt 1000 temperature sensor input, analogue input (0 – 10 V) or digital input.</p> <p>Platinum-based sensors, 1000 Ω at 0 °C</p> <p>All the temperature sensors are two-wire devices, and all connections are interchangeable.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

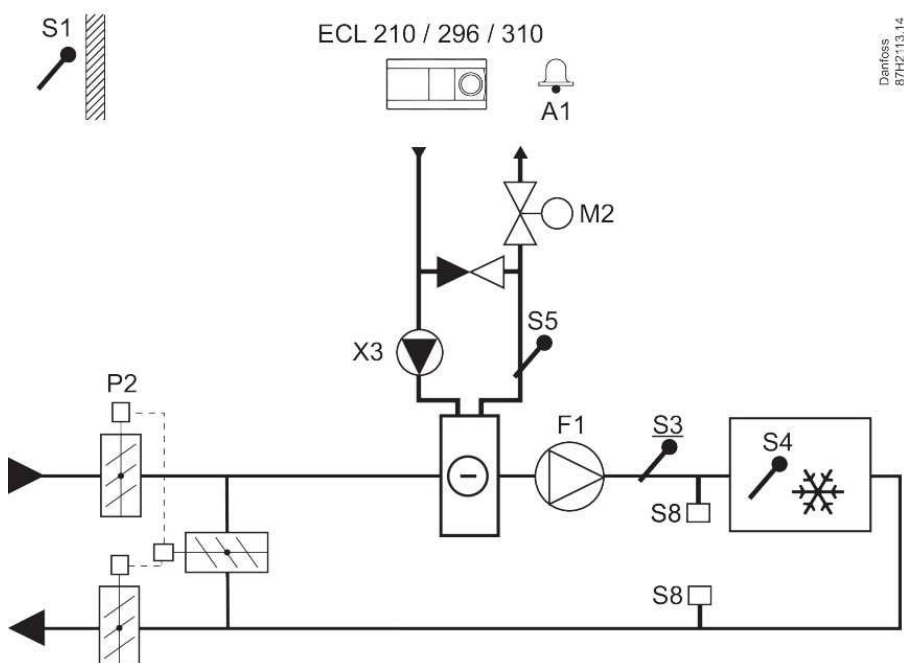
## Application examples

All mentioned components (S = temperature sensor, P = pump, M = Motorized control valve and so on) are wired to the ECL Comfort 210.

**A214.1, ex. a:**

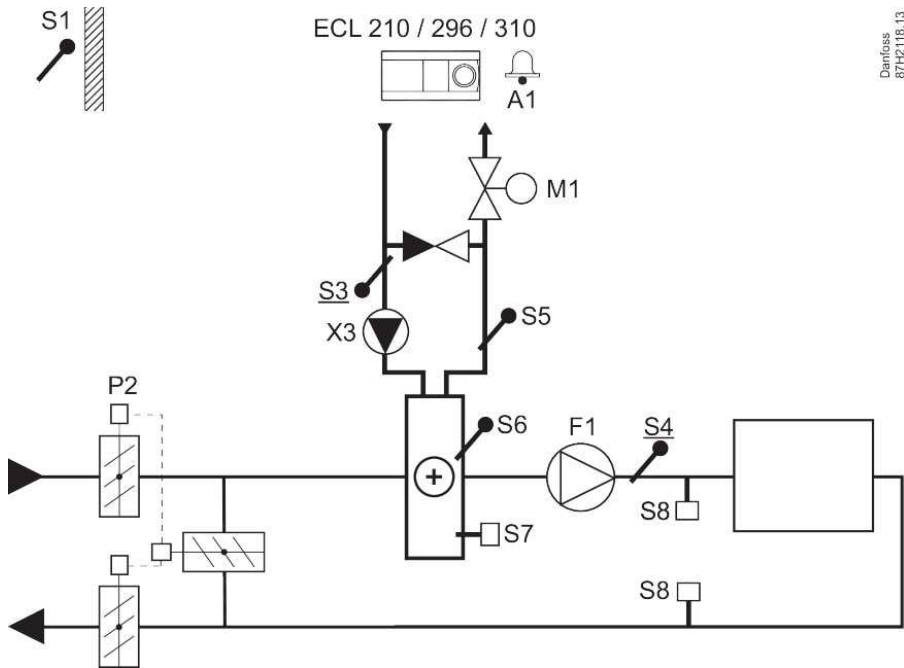
Cooling application, duct temperature based on room temperature

Further application examples can be found on <http://heating.danfoss.com>

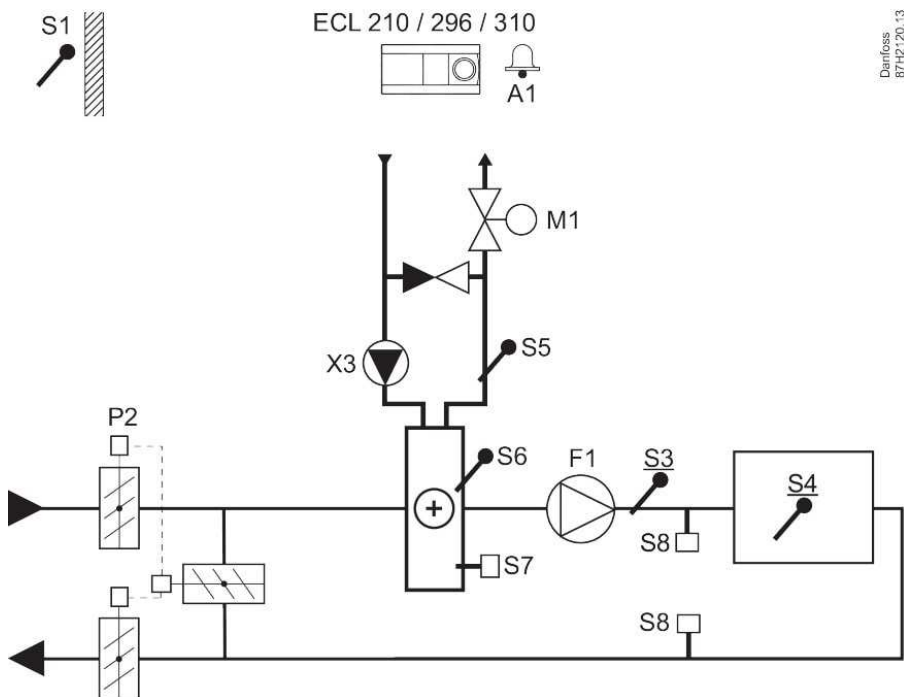


**A214.2, ex. a:**

Heating application, heating temperature based on duct temperature

Danfoss  
87H2118.13**A214.3, ex. a:**

Heating application, duct temperature based on room temperature

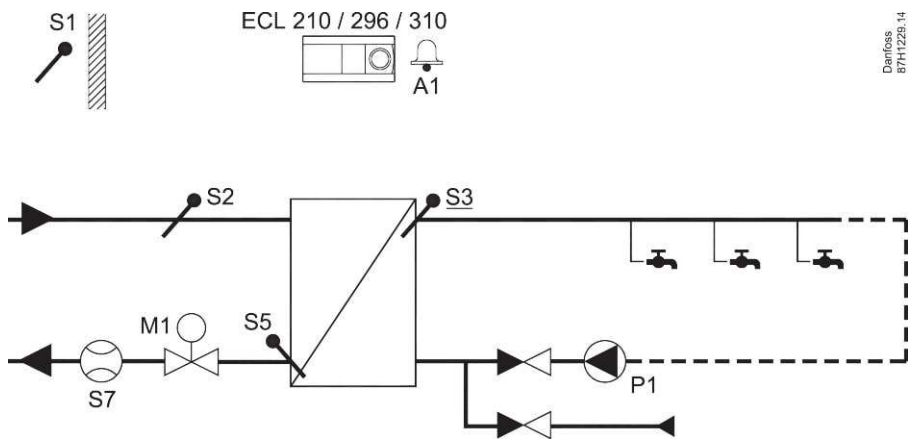
Danfoss  
87H2120.13



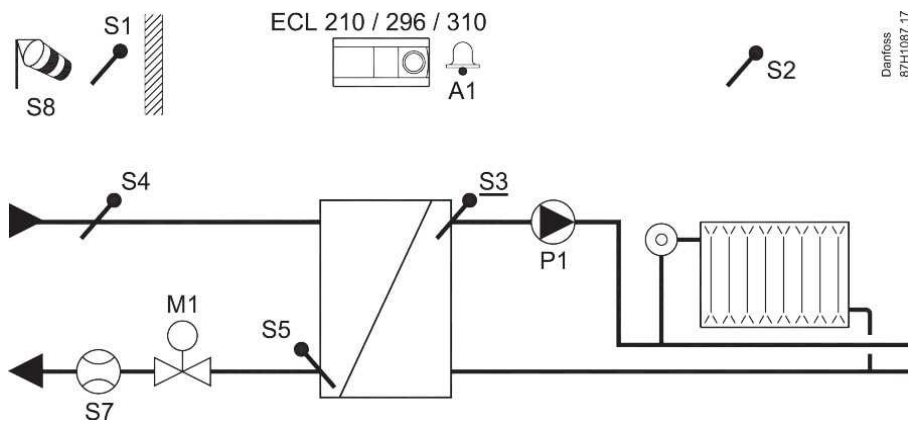


**A217.3, ex. a:**

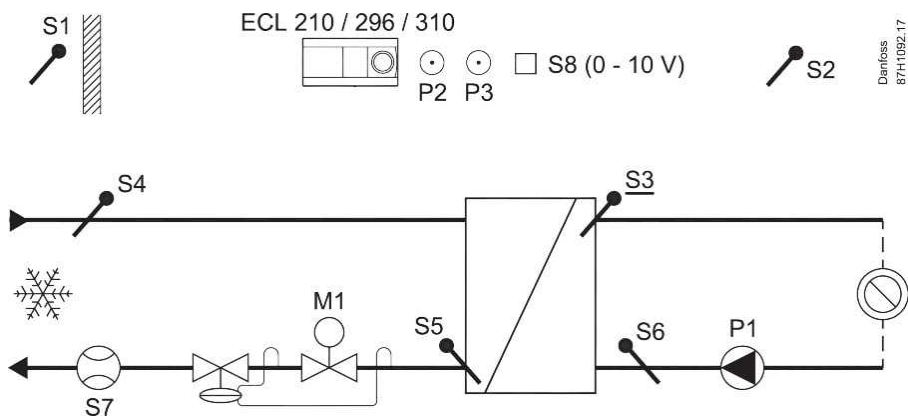
DHW heating

**A230.1, ex. a:**

Indirectly connected heating system. Wind compensation as option

**A230.2, ex. a:**

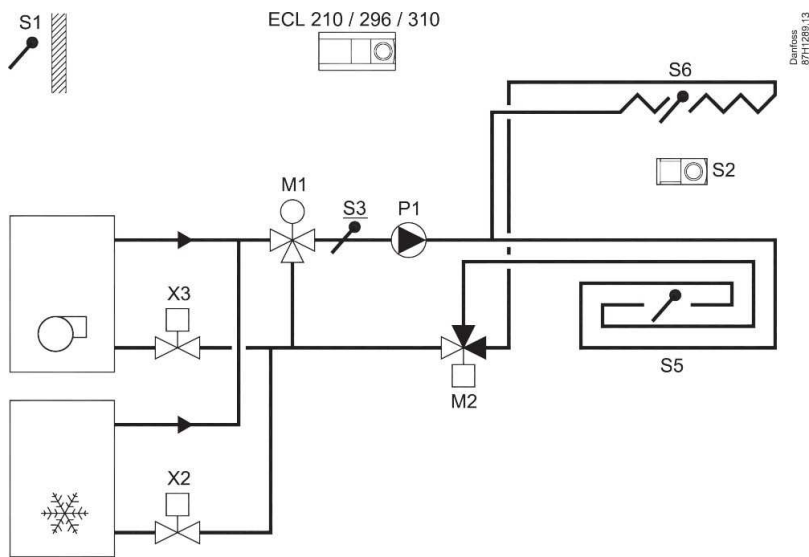
Indirectly connected cooling system (district cooling)



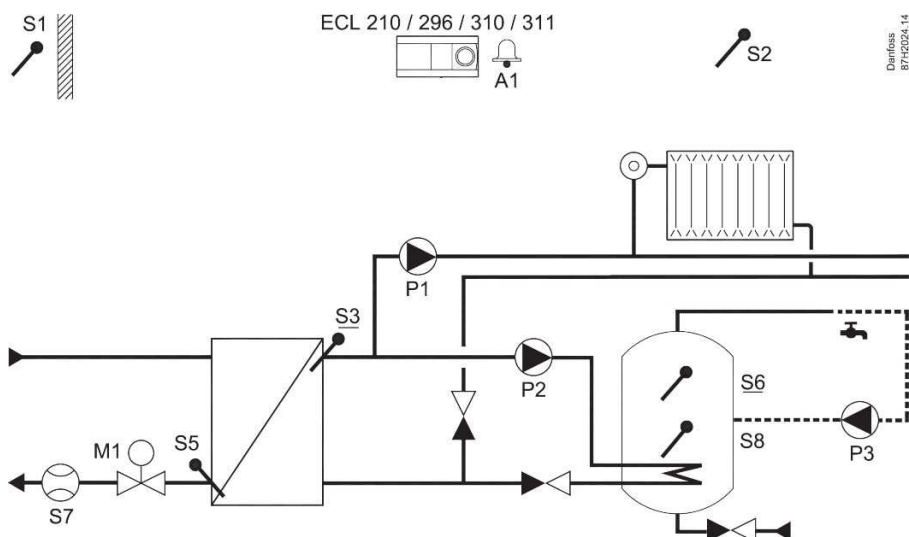


**A232.1, ex. a:**

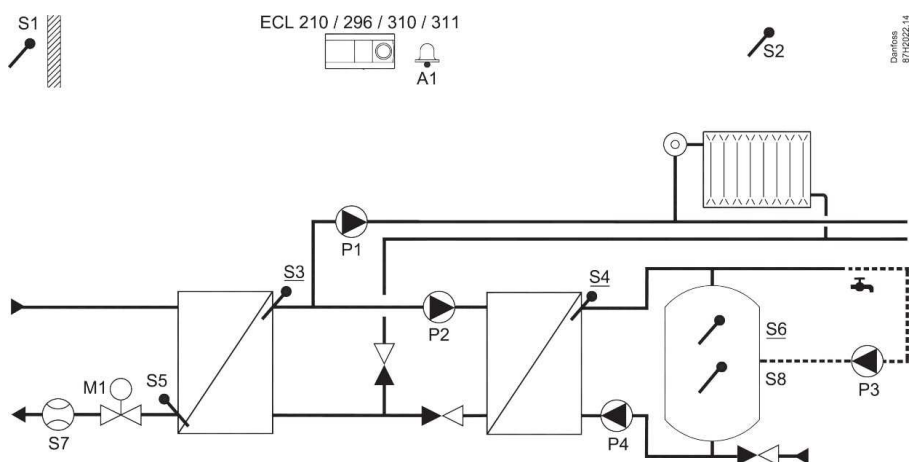
Control of flow temperature (heating in floor / cooling in ceiling) in relation to outdoor, room and dew point temperature

**A237.1, ex. a:**

Indirectly connected heating and DHW system

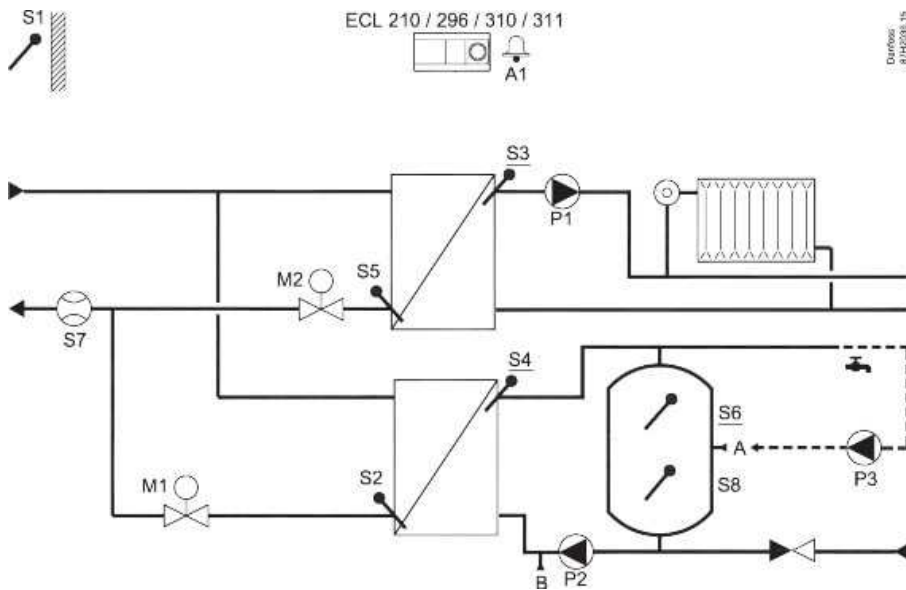
**A237.2, ex. a:**

Indirectly connected heating and DHW charging system

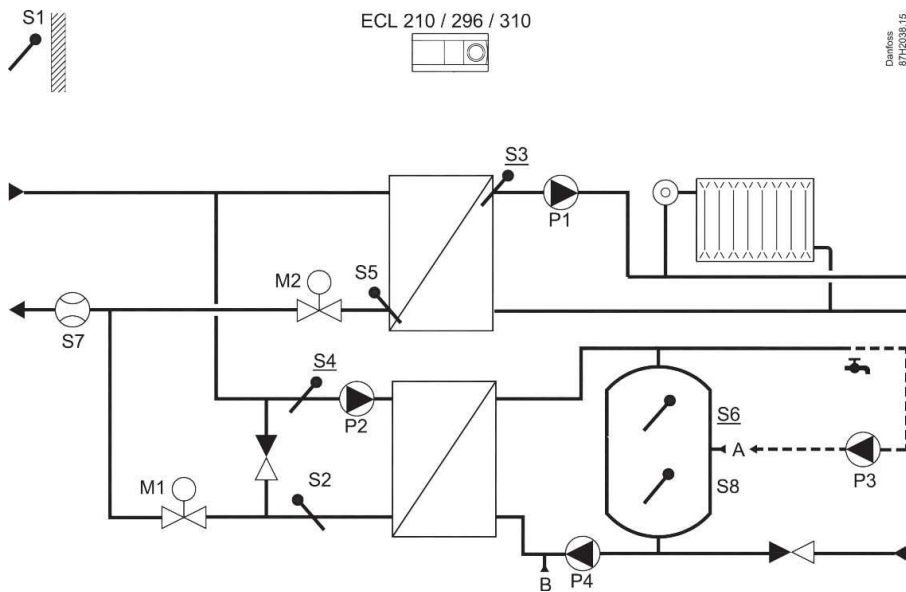


**A247.1, ex. a:**

Indirectly connected heating and DHW tank charging system. Parallel mode or DHW priority



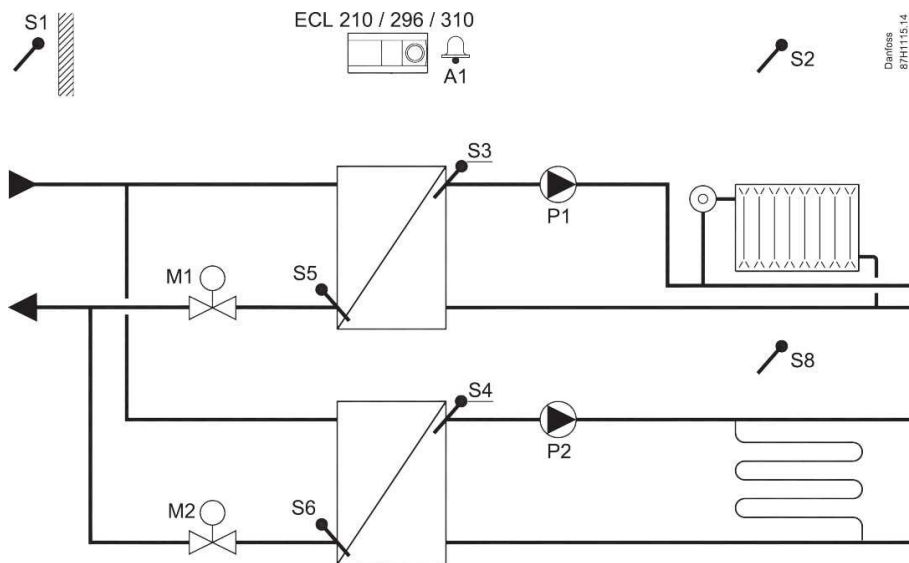
(S7\*) = optional in ECL Comfort 310

**A247.2, ex. a:**Indirectly connected heating and DHW tank charging system with preheating circuit.  
Parallel mode or DHW priority

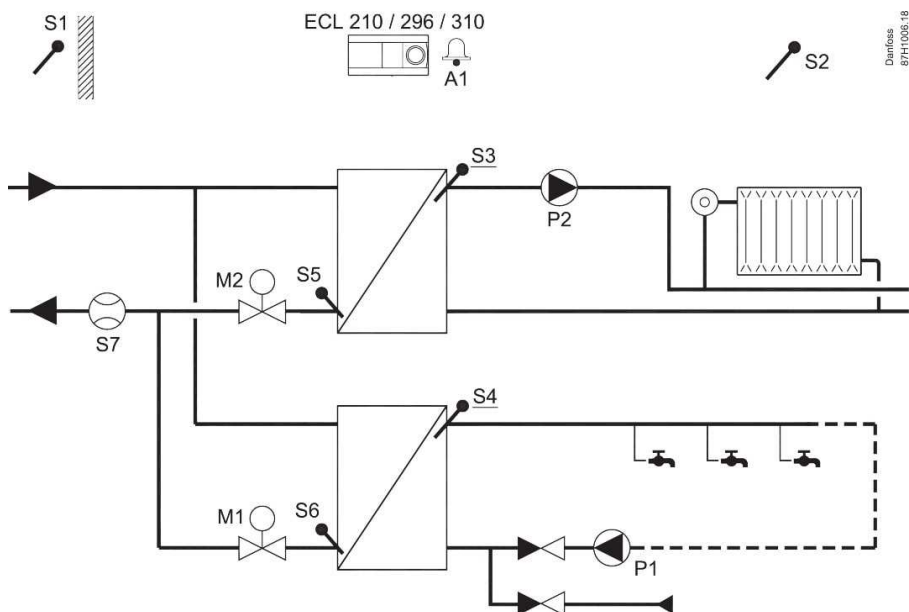
(S7\*) = optional in ECL Comfort 310

**A260.1, ex. a:**

Two heating systems

**A266.1, ex. a:**

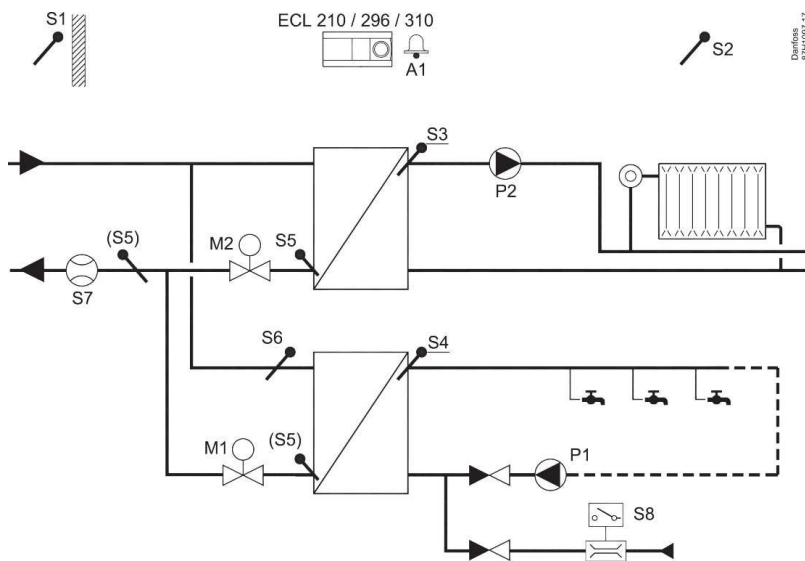
Heating and direct DHW heating system. Parallel mode or DHW priority



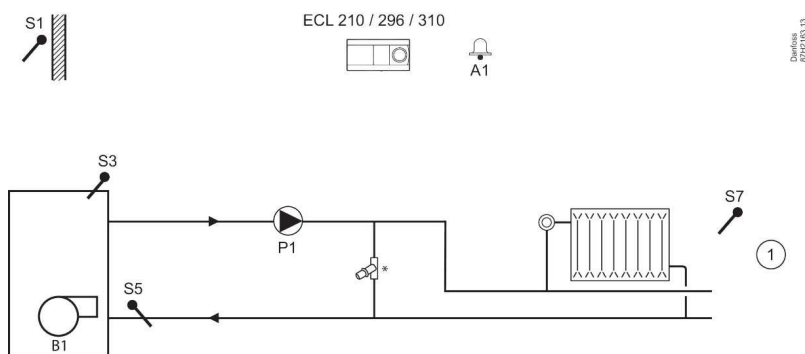
0 - 10 Volt control (modulated control) of actuator is only possible with ECL Comfort 310 with built-in extension module ECA 32.

**A266.2:**

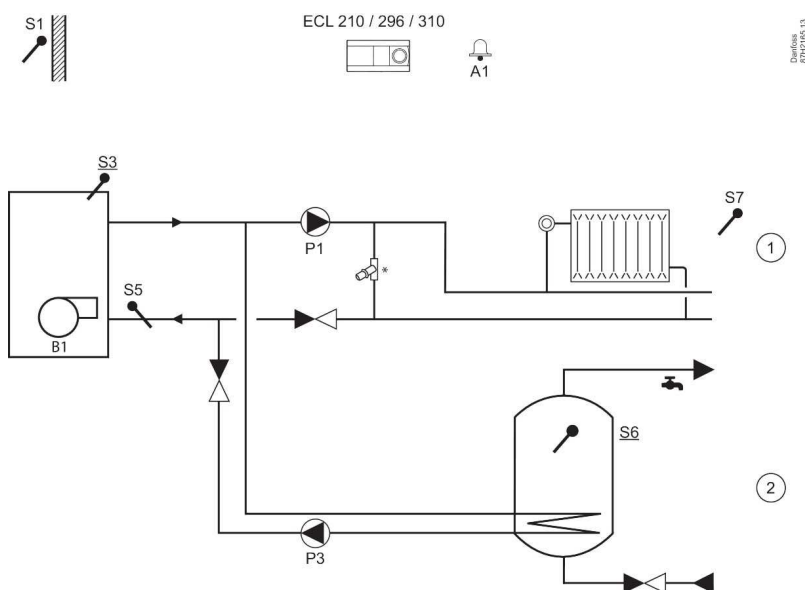
Heating and direct DHW heating system. Parallel mode or DHW priority. DHW heating on demand (flow switch)

**A275.1, ex. a:**

Heating system with 1-stage boiler

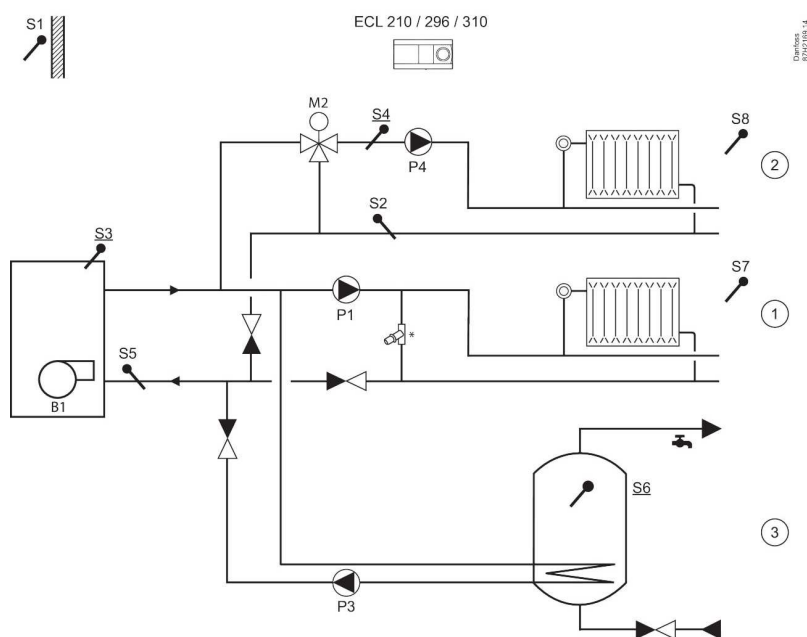
**A275.2, ex. a:**

Heating system with 1-stage boiler and DHW tank



**A275.3, ex. a:**

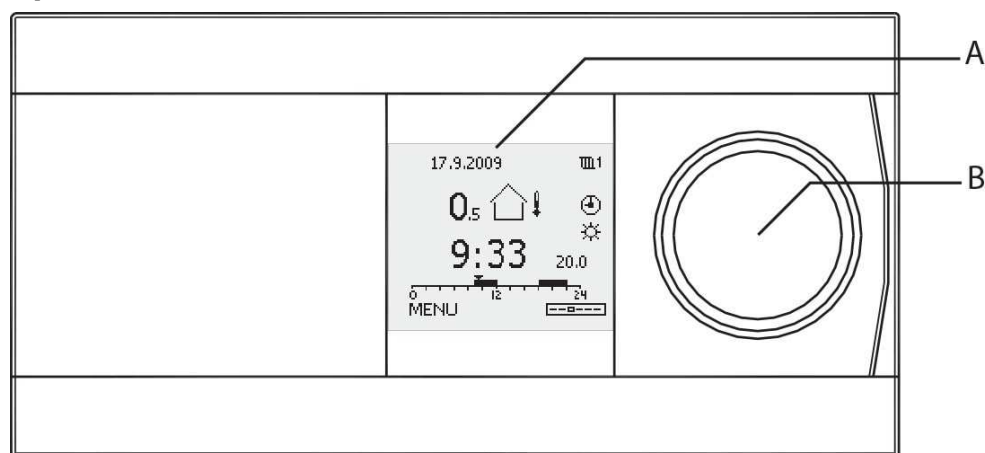
Heating system with 1-stage boiler, mixing circuit and DHW tank



Modulated burner control (0 - 10 Volt) is only possible with ECL Comfort 310 with built-in extension module ECA 32.

## Functions

### Operation



The graphical monochrome display (A) shows all temperature values as well as status information and is used for the setting of control parameters. The display has backlight. Different favorite displays can be selected. Navigation, browsing and selecting the current item in the menus is done by means of the dial (multi-functional knob (B)).

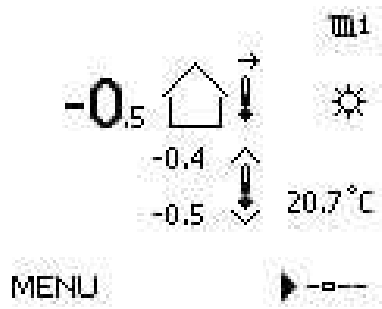
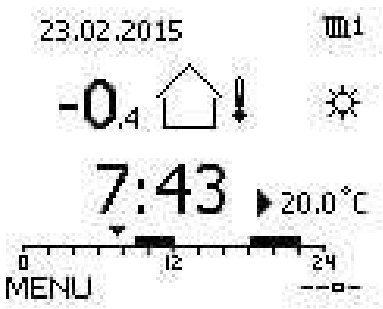
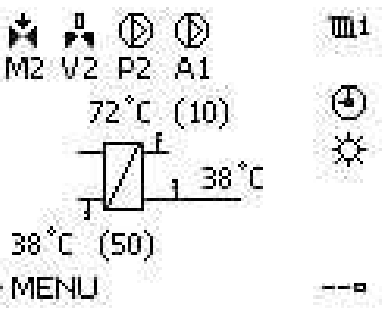
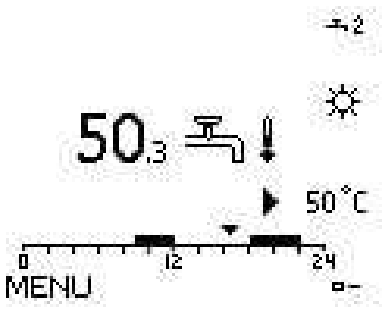
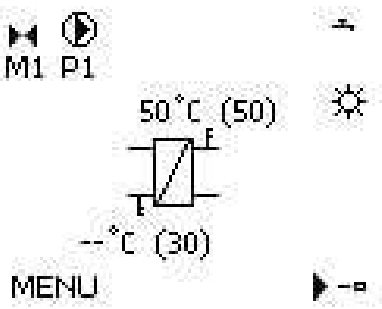
The RCUs ECA 30 / 31 are used for remote setting and override of ECL Comfort controller. By means of the built-in room temperature sensor, the flow temperature can be corrected to keep a constant room temperature at comfort or saving temperature. The ECA 30 / 31 is operated as an ECL Comfort 210 with dial and backlit display.

### Languages

Menu languages are selectable among approx. 22 languages. See "Language list". Furthermore, English is always uploaded in parallel to the selected language.



### Examples of favorite displays:

|                                                                                     |                                                                                      |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|    |    |
|    |    |
|  |  |

## Settings

### General functions:

- The ECL Comfort 210 has all the required functions of a modern electronic temperature controller for heating, cooling, ventilation and DHW applications.
- The controller can be used as master or slave in systems with master / slave ECL Comfort 210 / 296 / 310 controllers.
- The ECL application key contains the application software for flexible configuration. Furthermore, an update of the controller software is done automatically, if required.
- The ECL Comfort 210 contains, besides the standard functions, log and alarm functions.
- The built-in real time clock gives automatic summer / winter time changeover, week and holiday schedule.
- Motor protection, which ensures stable control and a long life of the motorized control valve, is available for most of the applications. In periods without heat demand, the motorized control valve can be exercised to avoid blocking.
- Scheduled control (comfort and saving mode) is based on a week program. A holiday program gives the possibility to select days with comfort or saving mode.
- The ECL Comfort 210 can receive pulses from a heat or flow meter to limit the power or the flow.
- In many applications analog input (0 – 10 V) is configured for pressure measuring among others. The scaling is set in the controller.
- Some applications are configured to handle digital input. This function can be used to have an external switch to run comfort or saving mode or react on a flow switch signal.
- The control parameters, proportional band (Xp), integration time (Tn), running time of the motorized control valve and neutral zone (Nz) can be set individually for each output (3-point control).

### Heating functions:

- The heat curve (relationship between outdoor temperature and desired flow temperature) is set by means of 6 coordinate points or a slope value. Max. / min. limitation of the desired flow temperature can be set.
- The return temperature limitation can work in relation to the outdoor temperature or be a fixed value.
- The heating cut-out function can switch OFF the heating and stop the circulation pump at high outdoor temperatures.
- Based on the room temperature the ECL Comfort 210 can correct the desired flow temperature in order to increase the comfort level.
- The optimizer function ensures heating in the desired periods (the lower outdoor temperature, the earlier cut-in of the heating).
- The ramping function makes a smooth cut-in of the heating valuable (district heating installations).
- The boost function makes a powerful cut-in of the heating (boiler based installations).
- The circulation pump is controlled in relation to heat demand and frost protection. In periods without heat demand, the circulation pump can be exercised to avoid blocking.
- The saving function gives two possibilities: • reduced flow temperature with fixed reduction or reduction in relation to outdoor temperature (the lower the outdoor temperature, the less the reduction), • heating off, still with active frost protection.

### DHW functions:

- The auto tuning function with automatic setting of control parameters for constant DHW temperature is integrated in the application A217 and A266. However, auto tuning is only applicable with valves that are approved for auto tuning, i.e. the Danfoss types VB 2 and VM 2 with split characteristic as well as logarithmic valves such as VF and VFS.
- The anti-bacteria function can follow a dedicated schedule program.
- The heating circuit can have sliding DHW priority.

### Data communication

The ECL Comfort 210 has an ECL 485 communication bus (non-galvanically separated), which is used for closed communication between master, slave and RCUs.

Additionally, the ECL Comfort 210 has a non-galvanically separated RS 485 bus for limited (cable length) Modbus communication. A USB connection (type B) can be used for the ECL Tool.

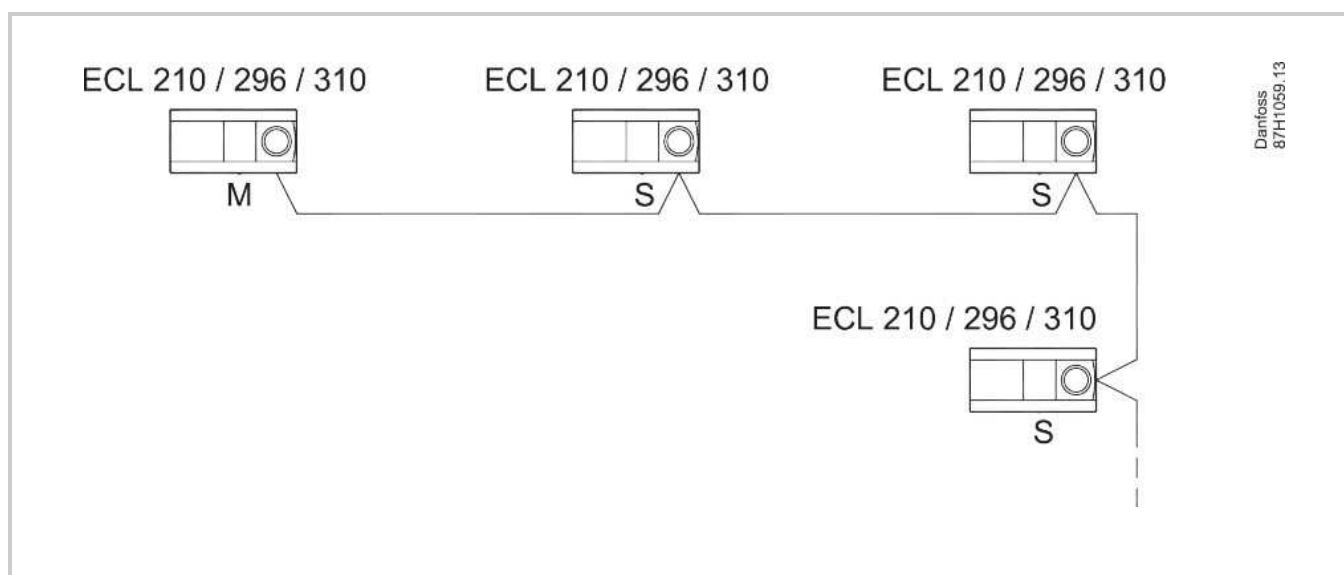
The ECL Tool can be downloaded for free from the internet:

[ECL tool | Danfoss](#)

<https://www.danfoss.com/en/service-and-support/downloads>

If M-bus is required, this option is available in ECL Comfort 296 / 310.

If communication to Leanheat® Monitor is required, this option is available in ECL Comfort 296 / 310.



Master / slave connections

## Languages

Menu languages are selectable among approx. 22 languages. See "Language list".  
Furthermore, English is always uploaded in parallel to the selected language.

## Product details

### General data

#### ECL Comfort controller and RCU data

|                                                      | ECL Comfort 210 / 210B                                                                                                      | ECA 30 / 31                                                                              |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Ambient temperature                                  | 0 - 55 °C                                                                                                                   |                                                                                          |
| Storage and transportation temperature               | -40 - 70 °C                                                                                                                 |                                                                                          |
| Mounting                                             | Vertically, on wall or DIN rail (35 mm)                                                                                     | Vertically, on wall or in panel cut-out                                                  |
| Connections                                          | Terminals in base part                                                                                                      | Terminals in base part                                                                   |
| Number of inputs                                     | 8 in total:<br>6 temperature sensors<br>2*) Pt 1000 sensor, digital, analog or pulse                                        | -                                                                                        |
| Temperature sensor type                              | Pt 1000 (1000 ohm at 0 °C), IEC 751B<br>Range: -60 – 150 °C                                                                 | Alternative to built-in room temperature sensor:<br>Pt 1000 (1000 ohm at 0 °C), IEC 751B |
| Digital input                                        | 12 V pull-up possible<br>Activation of a digital input must be done with a potential free switch / contact.                 | -                                                                                        |
| Analog input                                         | 0 - 10 V, resolution 9 bits                                                                                                 | -                                                                                        |
| Pulse input, frequency range (selected applications) | For monitoring: 0.01 - 200 Hz<br>For limitation: Minimum 1 Hz (recommended) and regular pulses for having a stable control. | -                                                                                        |
| Weight                                               | 0.46 / 0.42 kg                                                                                                              | 0.14 kg                                                                                  |
| Display (ECL Comfort 210 and ECA 30 / 31 only)       | Graphical monochrome with backlight<br>128 × 96 dots<br>Display mode: Black background, white text                          |                                                                                          |
| Setting (ECL Comfort 210 and ECA 30 / 31 only)       | Dial with intuitive push and turn function                                                                                  |                                                                                          |
| Setting (ECL Comfort 210 B)                          | ECA 30 / 31                                                                                                                 |                                                                                          |
| Min. backup time for time and date                   | 72 hours                                                                                                                    | -                                                                                        |
| Backup of settings and data                          | Storage in EEPROM (timeless)                                                                                                | -                                                                                        |
| Grade of enclosure                                   | IP 41                                                                                                                       | IP 20                                                                                    |
| CE-marking in accordance with the standards          | EMC directive<br>LVD directive<br>RoHS directive                                                                            |                                                                                          |

\*) Configured at application upload.

**ECL application key**

|               |                                                                                                                                                                                                       |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Storage type  | EEPROM                                                                                                                                                                                                |
| Segmentation  | Part 1: Application data, not changeable<br>Part 2: Factory settings, not changeable<br>Part 3: Updating firmware for the ECL Comfort controller, not changeable<br>Part 4: User settings, changeable |
| Applications  | A2xx keys work in ECL Comfort 210, 296, and ECL Comfort 310<br>A3xx keys work in ECL Comfort 310 only                                                                                                 |
| Lock function | If the application key is not inserted in the ECL Comfort controller, all settings can be seen, but not changed                                                                                       |

**ECL 485 communication bus data**

|                                                        |                                                                                                                                                           |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Purpose                                                | For internal ECL Comfort 210 / 296 / 310 and ECA 30 / 31 use only<br>(Danfoss proprietary bus)                                                            |
| Connection                                             | Terminals in base part<br>Non-galvanically isolated                                                                                                       |
| Cable type                                             | 2 × twisted pair                                                                                                                                          |
| Max. total cable length<br>(bus cable + sensor cables) | 200 m in total (inclusive sensor cables)                                                                                                                  |
| Max. number of ECL slaves connected                    | Units with unique address (1 - 9): 9<br>Units with address "0": 5                                                                                         |
| Max. number of Remote Control Units connected          | 2                                                                                                                                                         |
| Data sent from master                                  | Date<br>Time<br>Outdoor temperature<br>Desired room temperature<br>DHW-priority signal                                                                    |
| Data sent from addressed slave controller              | Desired flow temperature from each circuit                                                                                                                |
| Data sent from ECA 30 / 31                             | <ul style="list-style-type: none"> <li>Actual and desired room temperature</li> <li>Function selector mode</li> <li>(ECA 31) Relative humidity</li> </ul> |

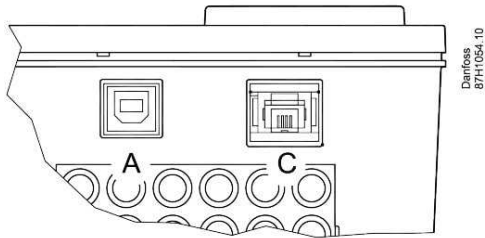
**Modbus communication data**

|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| Modbus RS 485         | For service purposes                                |
| Connection            | Terminals in base part<br>Non-galvanically isolated |
| Cable type            | 2 x twisted pair                                    |
| Max. bus cable length | 20 m                                                |



USB communication data

|                                      |                                                                                                                 |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| USB CDC (Communication Device Class) | For service purposes (Windows driver is needed, to enable that Windows recognize the ECL as a virtual COM port) |
| Modbus over USB                      | Similar to the serial Modbus, but with relaxed timing                                                           |
| Connection, cable type               | Standard USB cable (USB A .....USB B)                                                                           |



A port: USB (type B female plug)

C port: ECL application key

Language list

|           |           |            |           |
|-----------|-----------|------------|-----------|
| Bulgarian | Estonian  | Italian    | Russian   |
| Croatian  | Finnish   | Latvian    | Serbian   |
| Czech     | French    | Lithuanian | Slovak    |
| Danish    | German    | Polish     | Slovenian |
| English   | Hungarian | Romanian   | Swedish   |
| Dutch     | Spanish   |            |           |

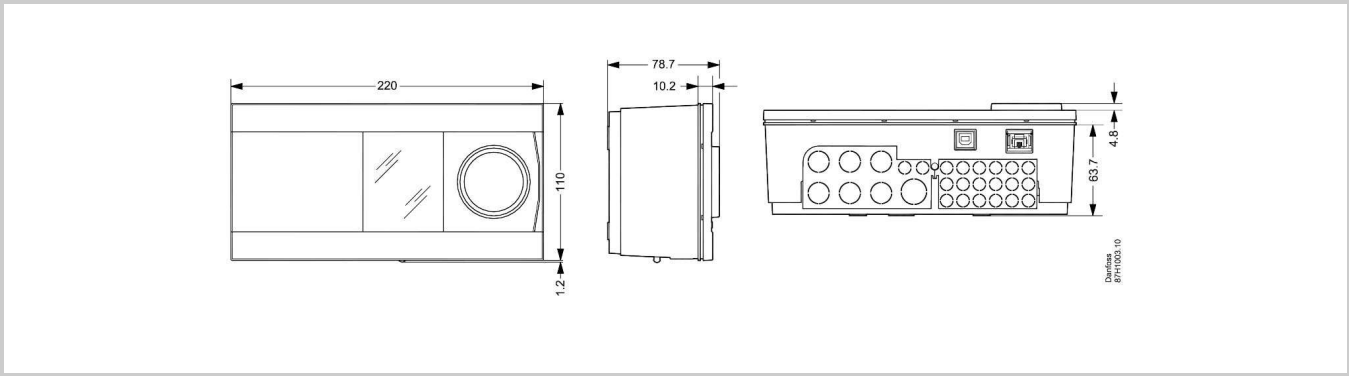
The selected language + English is uploaded at application upload.

References

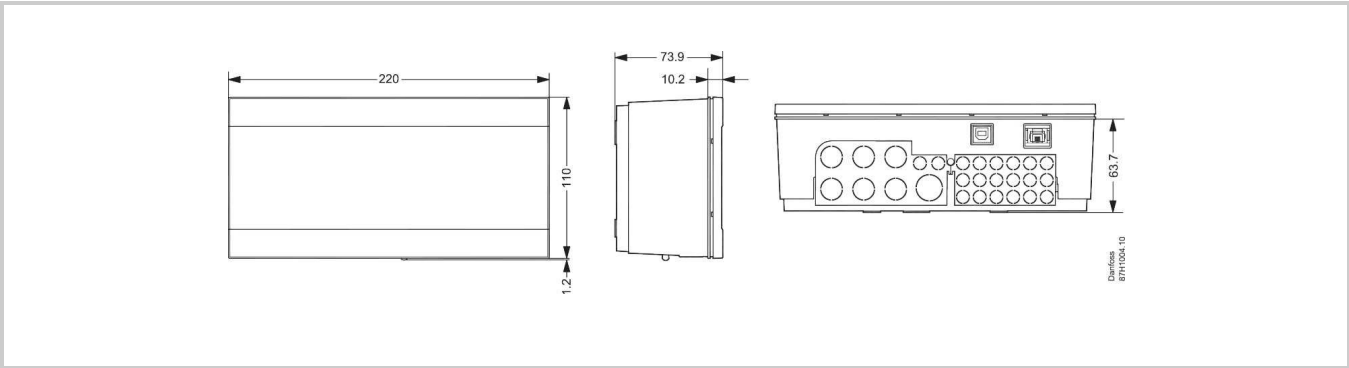
|                                                  |                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| M-bus communication (non-galvanically separated) | ECL Comfort 296 / 310                                                                                                                                                                                                                                                                                                  |
| Modbus connection (galvanically separated)       | ECL Comfort 296 / 310                                                                                                                                                                                                                                                                                                  |
| Ethernet                                         | ECL Comfort 296 / 310 has Ethernet connection, RJ45, Modbus / TCP. For SCADA solutions                                                                                                                                                                                                                                 |
| Extension of input / outputs                     | ECL Comfort 310 (2 extra inputs, 1 extra output for actuator, 2 extra relays)<br>ECL Comfort 310 + ECA 32 (6 inputs, 2 pulse inputs, 3 analog outputs (0 - 10 V) and 4 relays)<br>The analog outputs (0 - 10 V) can in some applications be used for control of analog controlled actuators, fan speed and pump speed. |



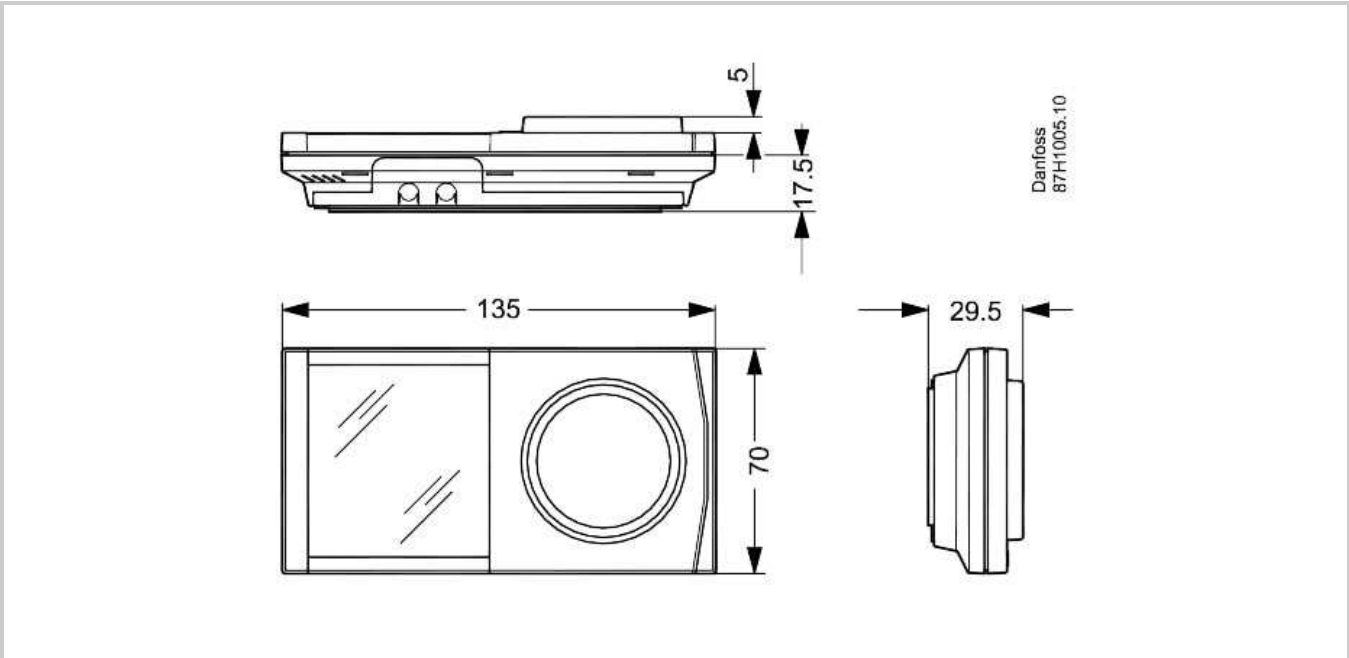
Dimensions



ECL Comfort 210



ECL Comfort 210B

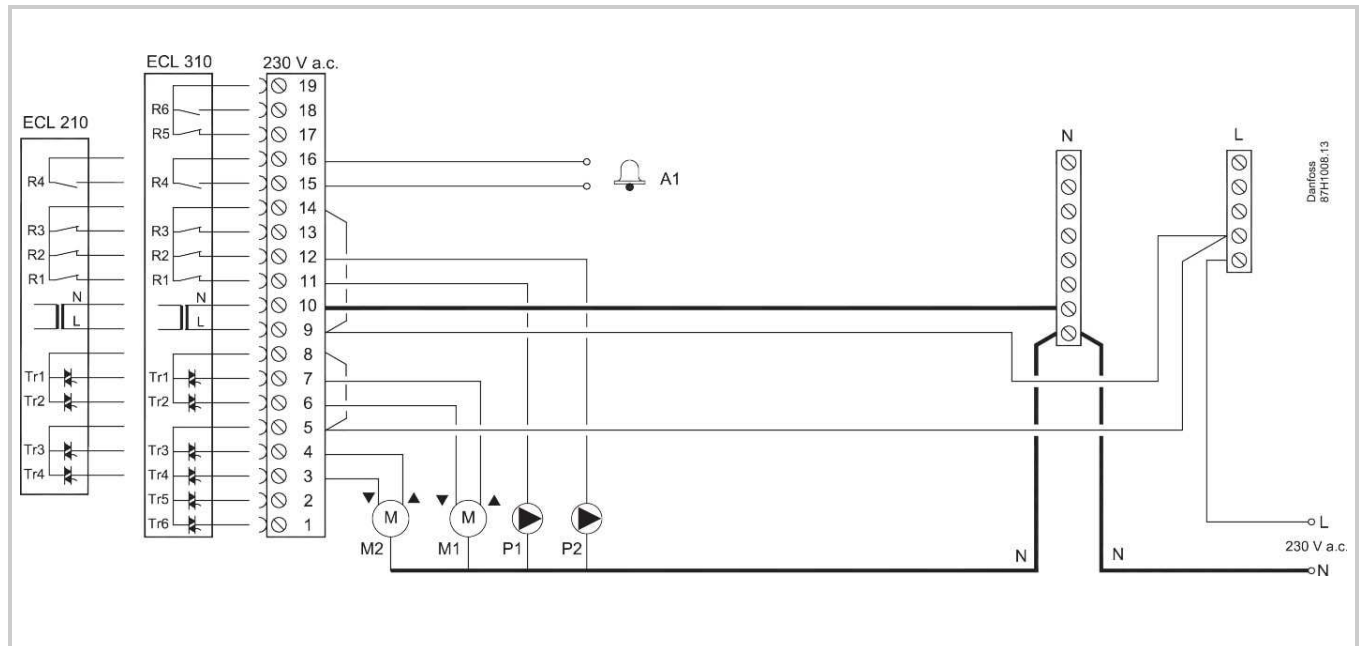


ECA 30 / 31

| Weight | ECL Comfort 210/ 210B | ECA 30 /31 | Base part | ECA 32   |
|--------|-----------------------|------------|-----------|----------|
|        | 0.44 / 0.40 kg        | 0.14 kg    | 0.24 kg   | 0.096 kg |

## Installation

### Wiring - 230 V a.c.



ECL Comfort 210 wiring example: Application A266.1

|                                                           |                                                                  |
|-----------------------------------------------------------|------------------------------------------------------------------|
| Supply voltage                                            | 230 V a.c. - 50 Hz                                               |
| Voltage range                                             | 207 to 244 V a.c. (IEC 60038)                                    |
| Power consumption                                         | 5 VA                                                             |
| Max. load on relay outputs                                | 4(2) A - 230 V a.c. (4 A for ohmic load, 2 A for inductive load) |
| Relay contact material                                    | Silver alloy                                                     |
| Max. load on triac outputs for actuators (a.c. load only) | 0.2 A - 230 V a.c.                                               |



#### Warning:

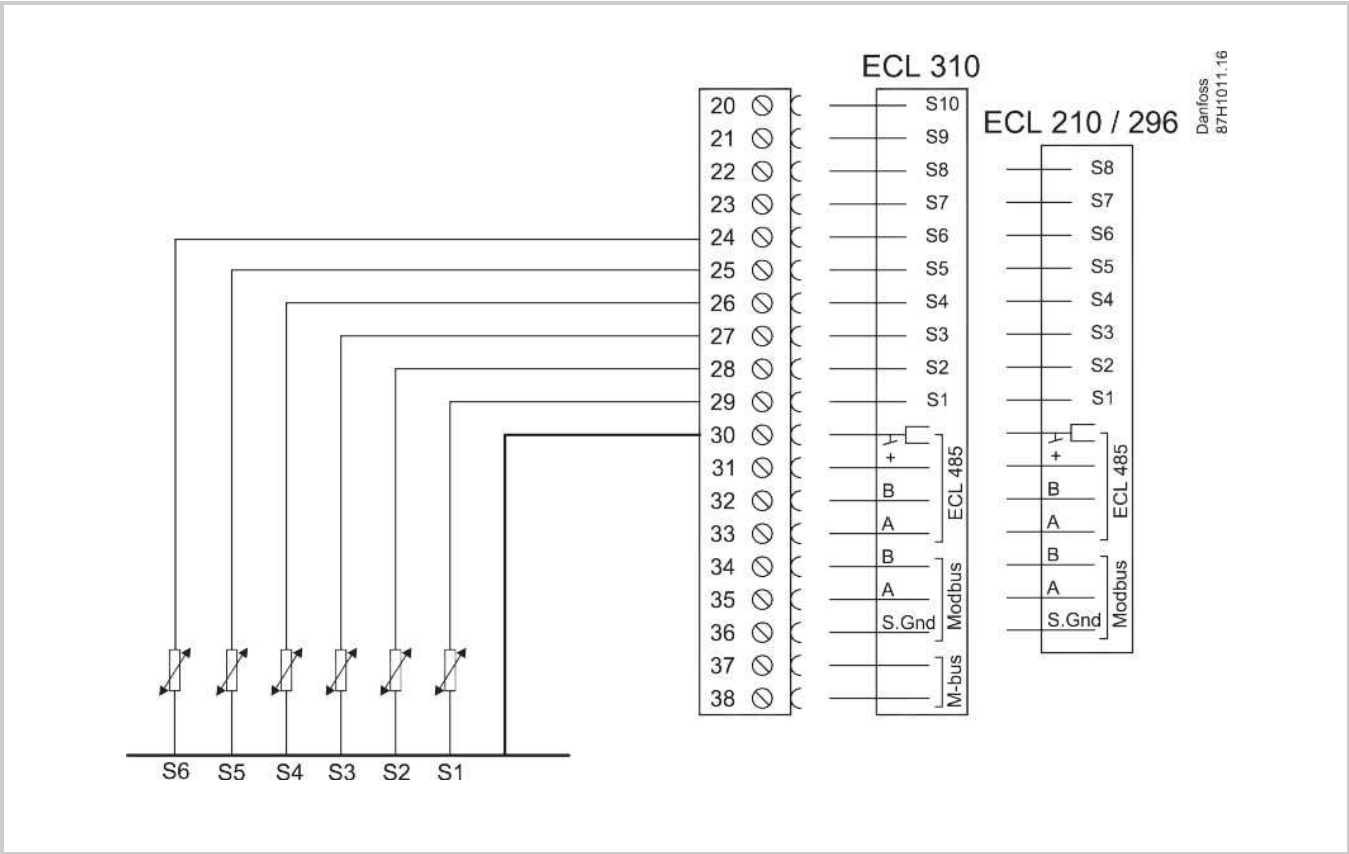
Electric conductors on PCB (**P**rinted **C**ircuit **B**oard) for supply voltage, relay contacts and triac outputs do not have mutual safety distance of minimum 6 mm. The outputs are not allowed to be used as galvanic separated (volt free) outputs.

If a galvanic separated output is needed, an auxiliary relay is recommended.

24 Volt controlled units, for example actuators, are to be controlled by means of ECL Comfort 310, 24 Volt version.

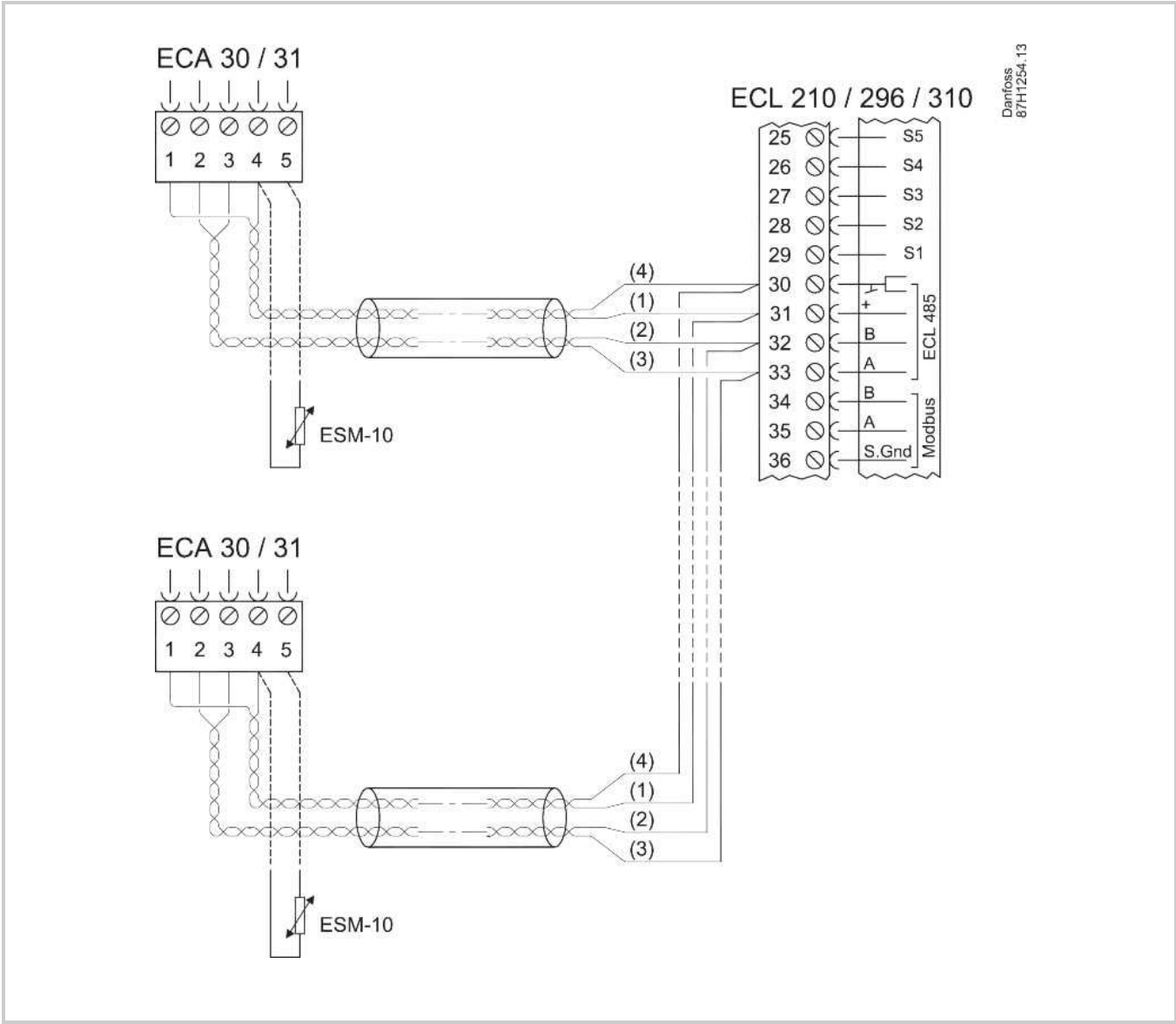


Wiring - input





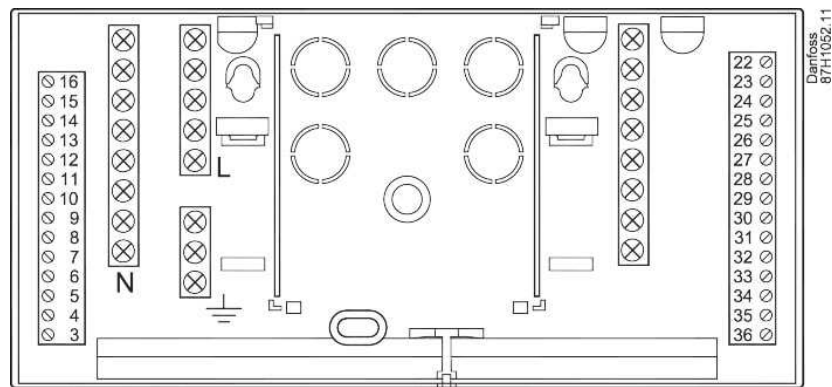
Wiring - ECA 30 / 31 Remote Control Unit



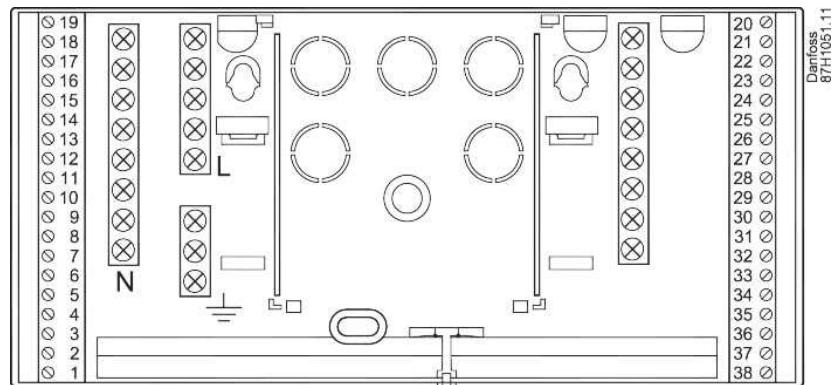
Wiring of ECL Comfort 210 and ECA 30 / 31, 230 V a.c.

|                                  |                                                                    |
|----------------------------------|--------------------------------------------------------------------|
| Supply voltage                   | From ECL 485 communication bus                                     |
| Power consumption                | 1 VA                                                               |
| External room temperature sensor | Pt 1000 (ESM-10), substitutes the built-in room temperature sensor |
| ECA 31 only                      | Contains humidity sensor, used for special applications            |

## Base part

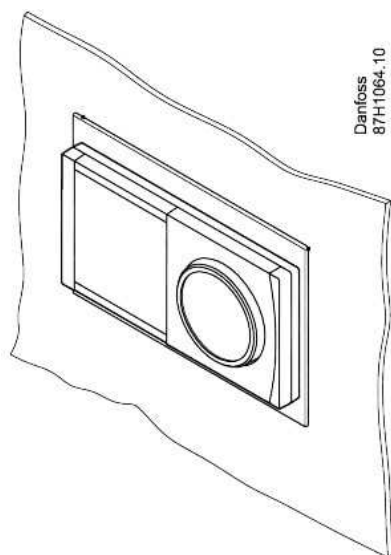


ECL Comfort 210 base part



ECL Comfort 310 base part (can be used for ECL Comfort 210 too)

## ECA 30 / 31 cut-out for mounting in panel front



A frame (code no. 087H3236) is placed in the cut-out (139 × 93 mm) in which the ECA 30 / 31 is placed.

## Certificates, declarations and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

| Approval type                 | Title                                      | Certification body           | Approval topic |
|-------------------------------|--------------------------------------------|------------------------------|----------------|
| UA Declaration                | <a href="#">UA Controllers 2024-07-25</a>  | Danfoss                      | LVD            |
| Electrical Safety Certificate | <a href="#">EAC KZ 7100841.01.01.01245</a> | EAC - Eurasian Customs Union | LVD            |
| EU Declaration                | <a href="#">Danfoss EU VJAOA502.01</a>     | Danfoss                      | LVD            |

## Tender text

### Electronic controller for heating and domestic hot water applications

#### 1a

Electronic weather compensator for flow temperature control in heating and domestic hot water installations.

Turn-push-dial, backlighted graphic display and menu-based operation in local languages.

The controller can operate multiple application uploaded by means of application software keys.

#### 1b

- Heat curve setting in 6 coordinates or as slope.
- Flow temperature limitations.
- Room temperature compensation and comfort / saving periods according to week schedule.
- Holiday schedule.
- Return temperature limitation as a set value (DHW) or in relation to outdoor temperature (heating).
- Pumps controlled in relation to heat demand and frost protection.
- Alarm functions and log pictures for all sensors.
- Manuel override of the individual outputs.
- Communication: Modbus (max. 20 m), ECL 485 (internal data bus).
- Connection for commissioning / service via PC
- 6 temperature sensor (Pt 1000) inputs.
- 2 application related and configured inputs.
- 4 relay outputs.
- 2 pairs of electronic output for noiseless operation of the motorized control valve.

Remote control unit ECA 30 / 31:

- Turn-push-dial, backlighted graphic display
- Integrated room temperature sensor
- Integrated humidity sensor (ECA 31 only)

#### 1c

Main data:

- Supply voltage, 230 V a.c., 50 Hz: ECL 210 and ECL 210 B
- Power consumption: max. 5 VA
- Ambient temperature: 0 – 55 °C
- Storage temperature: -40 – 70 °C

## 2

### Product characteristics:

- Protection class: IP 41
- DIN rail adaptor integrated
- Dimension (inclusive base part) L\*W\*H, 220\*110\*80 mm
- Ordering code no.: ECL Comfort 210, 230 V: 087H3020
- Ordering code no.: ECL Comfort 210B, 230 V: 087H3030
- Ordering code no.: Base part for ECL Comfort 210 / 210B: 087H3220
- Ordering code no.: ECA 30: 087H3200
- Ordering code no.: ECA 31: 087H3201
- Ordering code no. for application key depends on preferred application

## Contact details

### Online support

Danfoss offers a wide range of support along with our products, including digital information, software, mobile apps and expert guidance. See the possibilities below.



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