



Electronic controllers

ECL Comfort 296

Remote Control Units ECA 30 / 31 and Application Keys

Description

The ECL Comfort 296 is an electronic weather compensated temperature controller in the ECL Comfort controller family for use in district heating, central heating, cooling and ventilation systems.

Energy savings can be achieved by correct control of the flow temperature in heating and cooling systems. The controller has 2 control circuits and one additional thermostatic function.

The weather compensation function in the ECL Comfort controllers measures the outdoor temperature and controls the flow temperature to the heating system accordingly. In case it is available it also controls the domestic hotwater installation.

The weather compensated heating system increases the comfort level and saves energy.

The ECL Comfort 296 controller is configured with a selected application by means of an ECL Application Key.

The ECL Comfort 296 can work as a stand-alone controller and communicate with up to two RCUs.

The ECL Comfort 296 can also work with other ECL Comfort 296 / 210 / 310 controllers via the ECL 485 communication bus.

ECL 296 controls 3-point based actuators:

If need for control of 0 - 10 Volt based actuators, the ECL 310 and extension module ECA 32 or ECA 35 is recommended for dedicated applications. Here the 0 - 10 Volt signal comes from the extension module.

Features & benefits

- Designed for comfortable temperatures and optimum energy consumption
- Integrated communication interfaces
 - Modbus RS485 for longer distances
 - M-bus master dedicated for heat meters
 - Modbus TCP
 - Connection to Leanheat® Monitor – easy to install, access and adjust / monitor
- Easy installation by means of the ECL Application Key (Plug-and-Play)
- User-friendly operation
- Small size, 144 x 96 mm
 - Optional ECA 30/31 Remote Control Unit
- 2 control circuits + one thermostatic function

Applications

- District heating
- Central heating/HVAC
- Cooling systems
- Ventilation systems

Ordering

Product code numbers

Type	Description	Code number
ECL Comfort 296	ECL Comfort 296	087H3000

Accessories code numbers



087B1164

ESM-10, Sensor type: Room, Pt 1000

ESM-10, Pt 1000 room temperature sensor

Related products

087H3000



087H3236

ECL Mounting kit

ECA 30/31 FRAME KIT

Related products

087H3000



087H3801

ECL Application keys, A260

ECL Application key A260. 2 x heating control

Related products

087H3000



087H3201

ECA 31

ECA 31

Related products

087H3000



087B1184

ESMB-12, Pt 1000

ESMB-12, Pt 1000 Universal sensor

Related products

087H3000



087H3806

ECL Application keys, A237

ECL Application key A237. Heating / DHW tank control

Related products

087H3000



087H3800

ECL Application keys, A266

ECL Application key A266. Heating and DHW control

Related products

087H3000



087B1180

ESMU-100, Pt 1000, COPPER||COPPER

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

Related products

087H3000



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

087H3000



087H3807

ECL Application keys, A217

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

Related products

087H3000



087H3240

ECL Base part

ECL Comfort 296 base part

Related products

087H3000



087B1165

ESM-11, Pt 1000ESM-11, Pt 1000
Surface sensor

Related products

087H3000



087B1181

**ESMU-250, Pt 1000,
COPPER||COPPER**ESMU-250, Pt 1000
immersion sensor, 250
mm, copper

Related products

087H3000



087B1183

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

Related products

087H3000



087H3808

**ECL Application
keys, A247**ECL Application key
A247. Heating and
DHW-tank control

Related products

087H3000



087B1182

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

Related products

087H3000



087H3811

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

Related products

087H3000



087H3812

**ECL Application
keys, A232**ECL Application key
A232Heating / cooling
control of floor heating
/ ceiling cooling
systems

Related products

087H3000



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

087H3000



087H3802

**ECL Application
keys, A230**ECL Application key
A230. Heating control
with wind
compensation. Cooling
control.

Related products

087H3000



087H3242

ECL Mounting kitPanel mounting kit for
ECL Comfort 296

Related products

087H3000



087H3200

ECA 30

ECA 30

Related products

087H3000



087H3828

**ECL Application
keys, A267**ECL Application key
A267 DE. 2 x heating
and 1 x DHW-tank
control

Related products

087H3000



087N0011

ESMC, Pt 1000

Related products

087H3000



084N1012

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

Related products

087H3000

Application keys A214, A217, A231, A232, A237, A247, A275 also contains subtypes for ECL Comfort 310.

Each of the above-mentioned code nos. comprises: ECL application key, installation guide and user guides.

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	Mounting	Appl. key	Optional: Remote Control Unit	Temperature sensors	Actuators / valves
ECL Comfort 296	Base part or Panel kit	A2xx	ECA 30 ECA 31	ESMT (outdoor) ESM-11 (pipe surface) ESMC (pipe surface) ESMU (immersion) ESM-10 (room) ESMB-12 (universal)	see dedicated literature

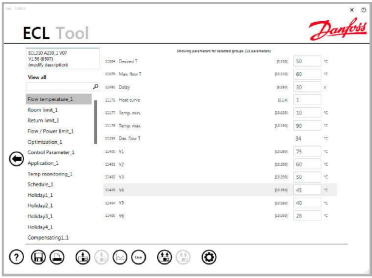
Reference, additional products / software

Leanheat® Monitor	Internet-based communication. Access to the ECL Comfort 296 via a web browser. After having arranged an account, access to the ECL Comfort 296 can also be done via a smartphone.	See separate data sheet Download from Internet: Leanheat® Monitor Danfoss
ECL Tool	Software for PC or laptop. Connect the ECL Comfort 296 directly to a PC or laptop for e.g. parameter lists, commissioning reports.	Download from Internet: ECL tool Danfoss

Overview

Product portfolio

ECL Comfort 296 Controller	
	The ECL Comfort 296 is easily operated by means of a dial (multi-functional knob) or a Remote Control Unit (RCU). The dial and the backlighted display guide the user through the text menus in the selected language. The ECL Comfort 296 controller has electronic output for motorized valve control, relay output for circulation pump / changeover valve control among others, as well as alarm output. 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. The ECL Comfort 296 is a stand-alone controller which communicates with the RCU and other ECL Comfort 296 / 296 / 310 controllers via the ECL 485 communication bus. The ECL Comfort 296 controller is designed for comfortable temperatures, optimum energy consumption, easy installation by means of the ECL Application Key (Plug-and-Play) and user friendly operation. Improved energy savings are facilitated by weather compensation, adjustment of temperature according to schedule, optimization as well as limitation of return temperature, flow and power.
Base part	
	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.
Application key	
	Different ECL Application Keys make it easy for the ECL Comfort 296 hardware to run different applications. The ECL Comfort 296 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. The ECL Application Keys, series A2xx can be used in ECL Comfort 296, 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. The ECL Application Keys, series 3xx can be used in ECL Comfort 310 only. The application parameters are stored in the controller and are not affected by power break. The relevant ECL Application Keys for the ECL Comfort 296 / 296 / 310 controller can be found in the ordering section.

Remote Control Unit	
	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). 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. 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). The ECL Comfort 310 can also work with up to 2 x RCUs, ECA 32 / 35 and other ECL Comfort 296 / 296 / 310 controllers via the ECL 485 communication bus.
Temperature sensors	
	Six 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. Platinum-based sensors, 1000 Ω at 0 °C All the temperature sensors are two-wire devices, and all connections are inter-changeable.
Service software	
	The ECL Tool software for ECL Comfort 296 controller offers possibilities for an alternative remote control in relation to the Leanheat® Monitor and OPC server software. ECL Tool lets service personnel connect to an ECL Comfort 210/310 controller and load, modify and save settings of all its parameters. It can also print a report of current/changed settings i.e. after commissioning of a heating installation.
Cloud Remote Control	
	The web-based Leanheat® Monitor communicates with the ECL Comfort 310 for an effective and easy-to-use turnkey SCADA Supervisory Control And Data Acquisition) tool for all users, service personnel and at commissioning. Service level can be increased and/or service costs reduced. The heating and/or cooling installation is made accessible from virtually anywhere at any time via laptops or Smartphones which increases service level and reduces response time to alarms. Ethernet connection is integrated in the controller. Furthermore, Modbus communication to SCADA systems (Supervisory Control and Data Acquisition) and M-bus communication to heat meters are integrated.

Application keys

Key	Subtypes usable in ECL Comfort 296:
A214	A214.1, A214.2, A214.3, A214.4, A214.5, A214.6
A217	A217.1, A217.2, A217.3
A230	A230.1 *, A230.2 *, A230.3 *, A230.4 *
A231	A231.1, A231.2
A232	A232.1
A237	A237.1, A237.2
A247	A247.1, A247.2, A247.3
A260	A260.1
A266	A266.1 *, A266.2 **, A266.9 *, A266.10 *
A267 DE	A267.1
A275	A275.1, A275.2, A275.3

* When used in ECL 310 + ECA 32 / 35, 0 - 10 Volt controlled actuators can be used alternatively.

** When used in ECL 310 + ECA 32 / 35 a 0 - 10 Volt controlled actuator can, alternatively, be used for the heating circuit.

This is an overview of currently available application keys which can work in the ECL Comfort 296. The application keys can work in ECL Comfort 210 / 310 too.

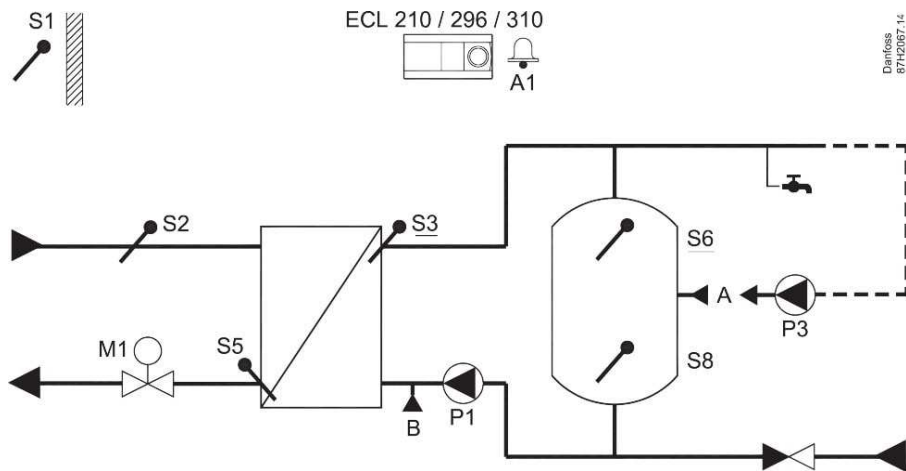
Not all keys are marketed in all countries. Please contact your local Danfoss sales company.

Application examples

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

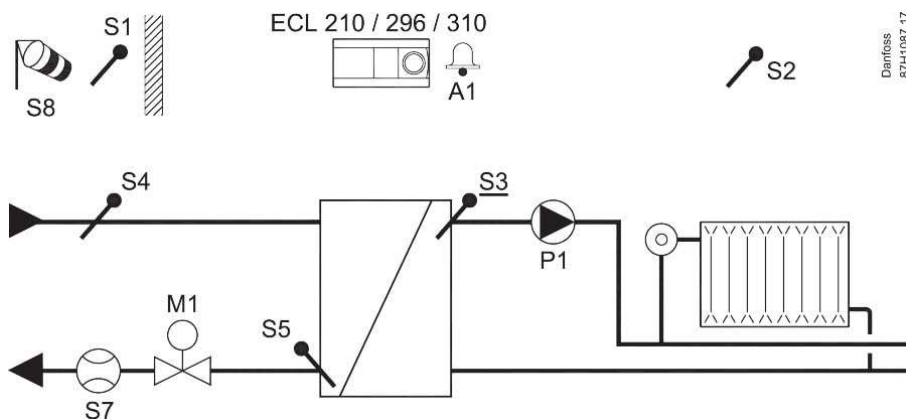
A217.1:

DHW tank charging application



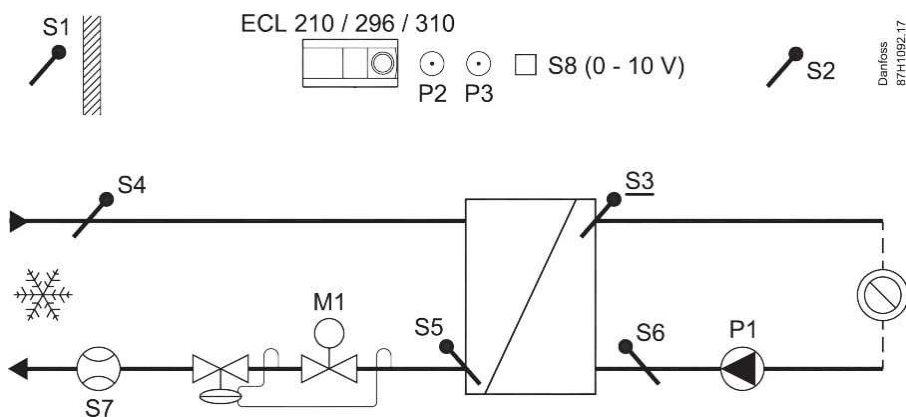
A230.1:

Indirectly connected heating system. Wind compensation as option



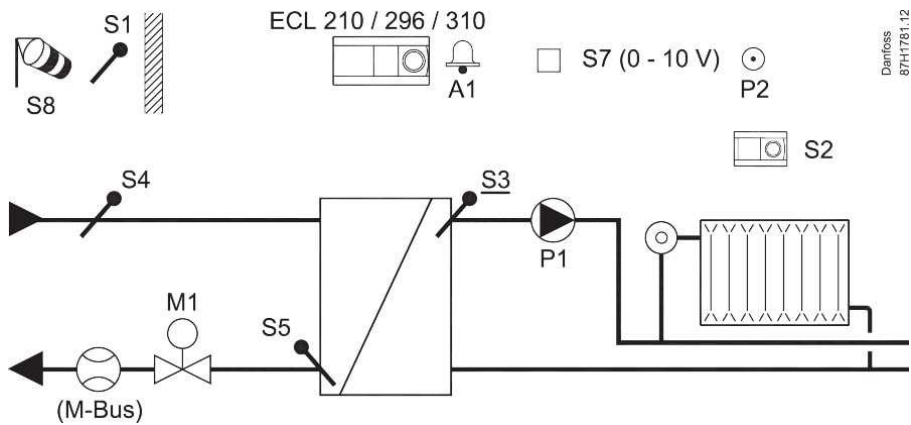
A230.2:

Indirectly connected cooling system (district cooling)

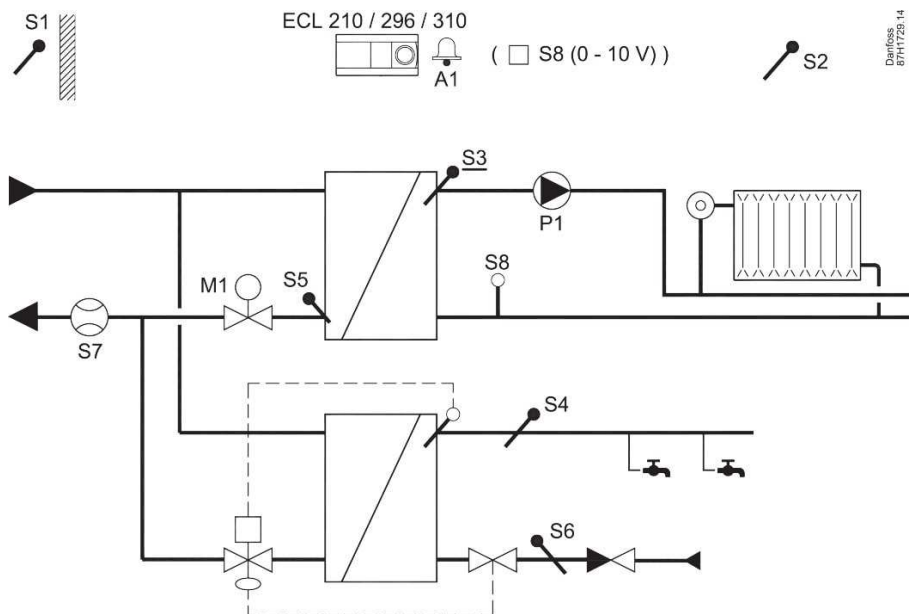


A230.3:

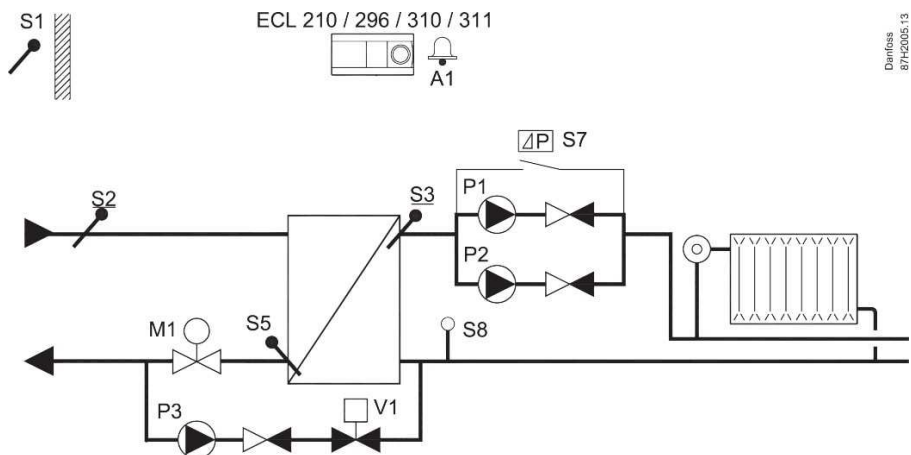
Indirectly connected heating system. Compensation for too high Relative Humidity (measured by ECA 31). Wind compensation as option.

**A230.4:**

Indirectly connected heating system. Static pressure measurement / alarm. Monitoring of DHW - and DHW circulation return temperatures.

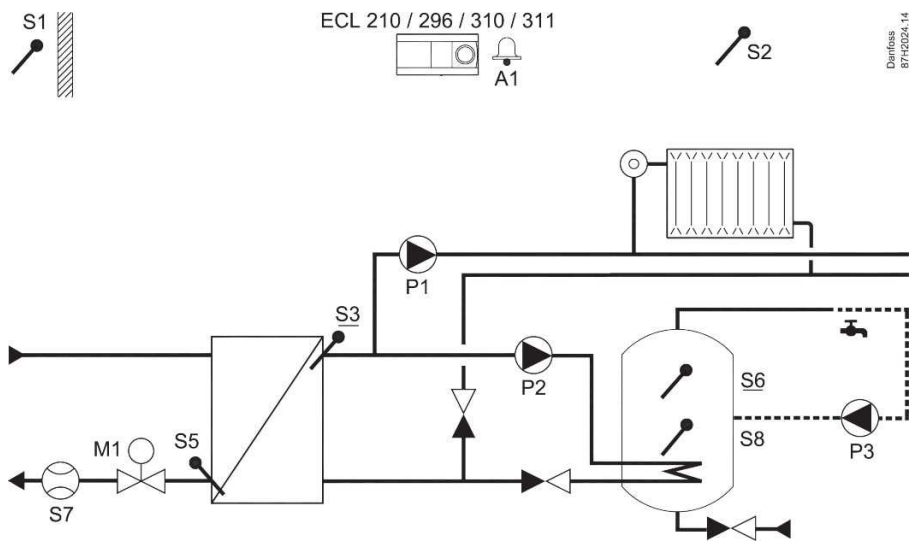
**A231.2:**

Indirectly connected heating system with 2-pump control and refill water function.

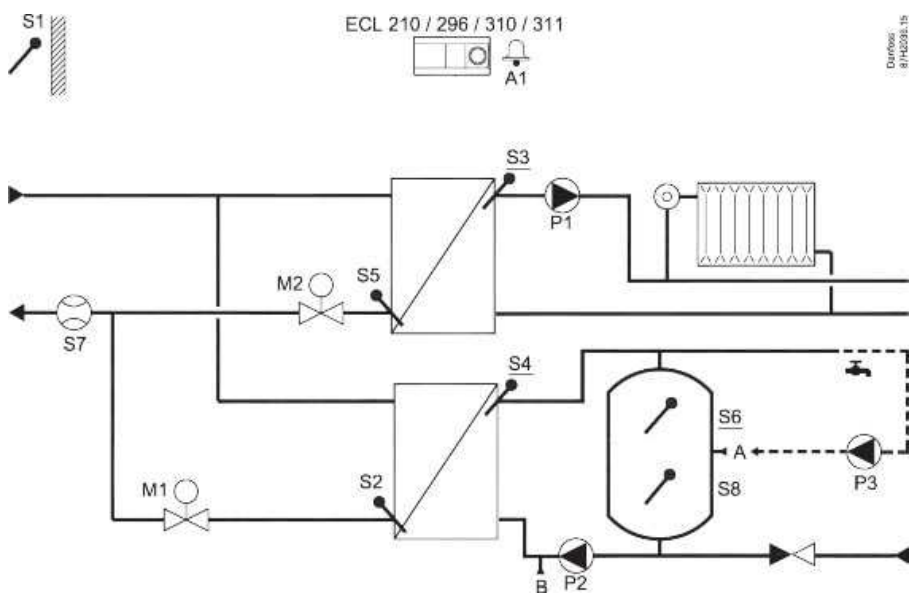


A237.1:

Typical heating and DHW system (district heating)

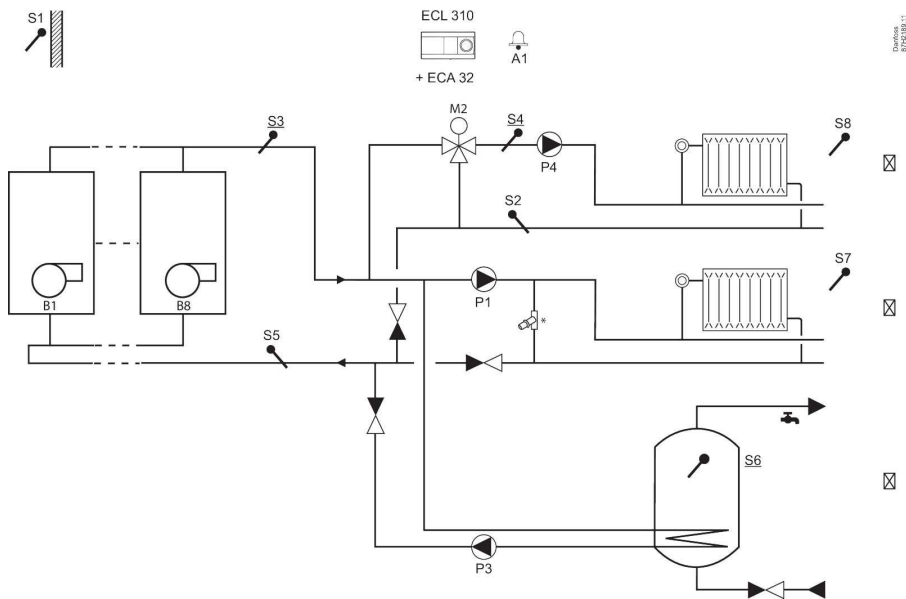
**A247.1:**

Typical heating and DHW storage tank system (district heating)



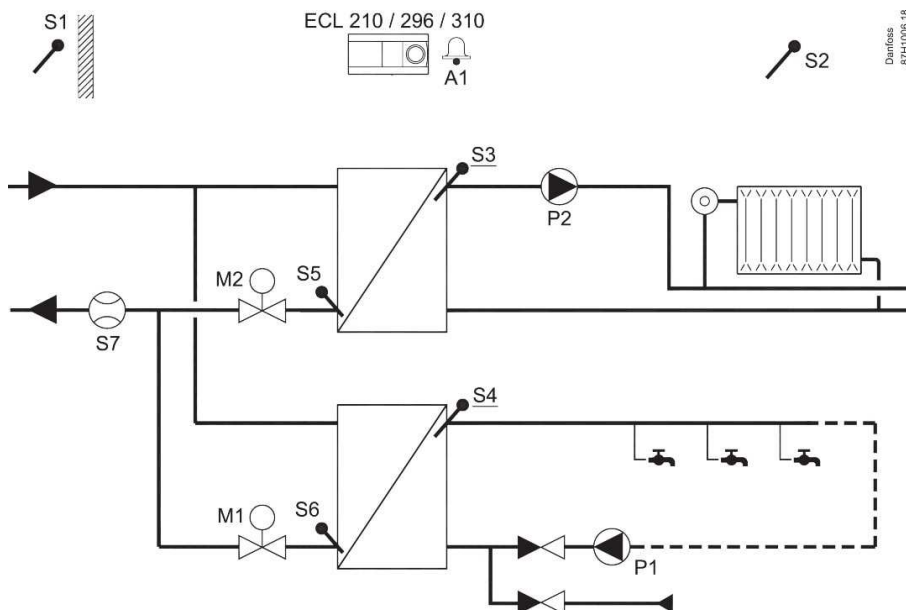
A260.1:

Typical heating system (district heating)



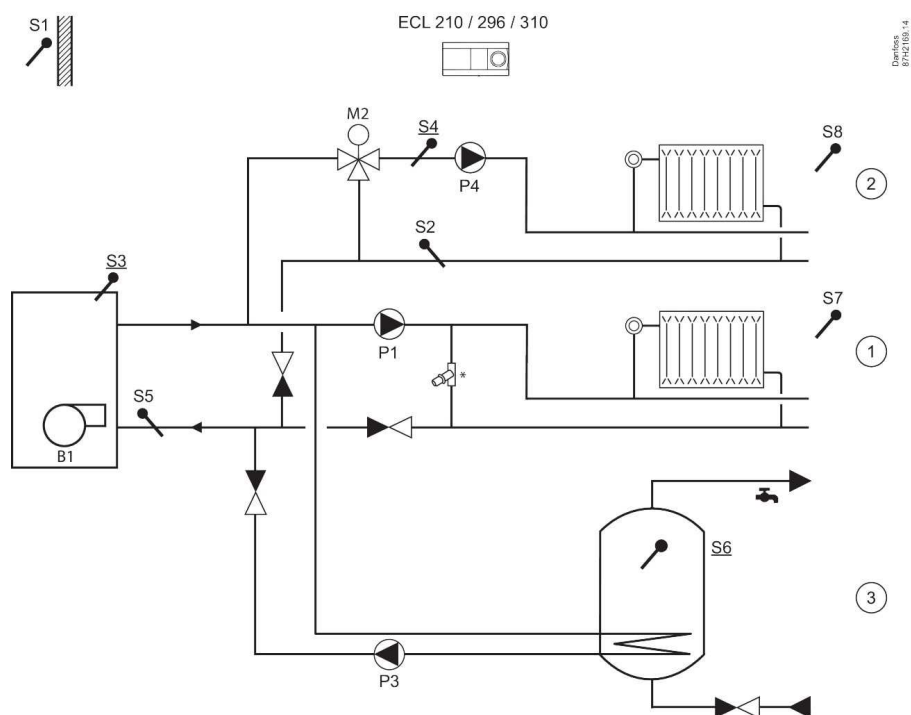
A266.1:

Typical heating and DHW system (district heating). Remote Control Unit ECA 30 replaces a room temperature sensor.



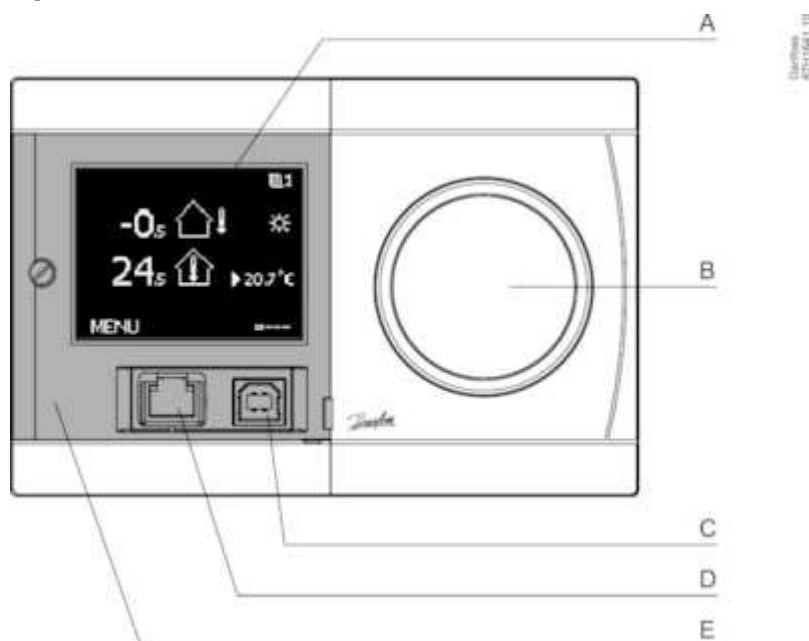
A275.3:

Boiler-based heating system



Functions

Operation



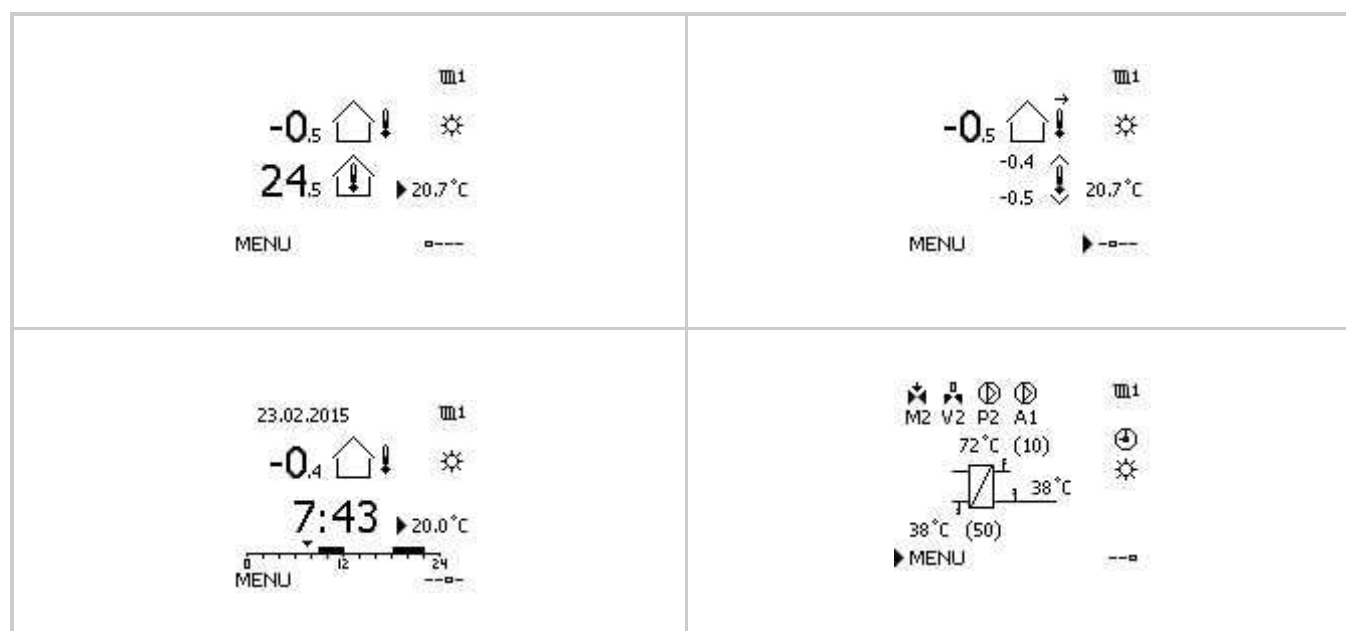
- A: Display
- B: Dial
- C: Slot for ECL Tool connection
- D: Slot for application key
- E: Front door, transparent

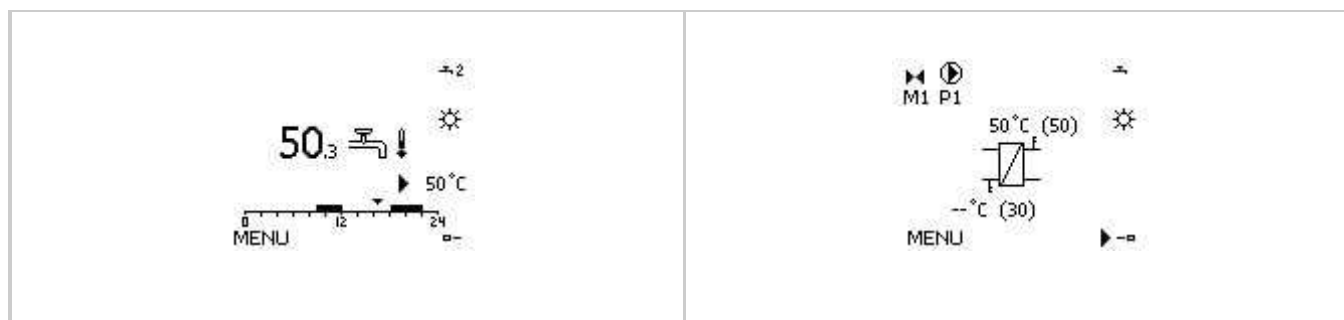
The graphical monochrome display (A) shows all temperature values as well as status information and is used for the setting of control parameters. The display has backlight. Different favorite displays can be selected. Navigation, browsing and selecting the current item in the menus is done by means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

A transparent front door covers the display and slots for application key and ECL Tool connection.

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 296 with dial and backlighted display.

Examples of favorite displays:





Settings

General functions:

- The ECL Comfort 296 has all the required functions of a modern electronic temperature controller for heating, cooling and DHW applications.
- The controller can be used as master or slave in systems with master / slave ECL Comfort 296 / 210 / 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 296 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 is 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.
- If applicable in the application key the ECL Comfort 296 can receive pulses from a heat or flow meter to limit the power or the flow. Alternatively, the data can come from heat or flow meter via the M-bus connection.
- In many applications analogue 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).
- Dedicated applications fulfil the demand for refill water function and / or 2-pump 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 set 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 296 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 is exercised to avoid blocking.
- The saving function gives two possibilities:
 - reduced flow temperature with set reduction or reduction in relation to outdoor temperature (the lower the outdoor temperature, the less the reduction),
 - heating off, still with active frost protection.

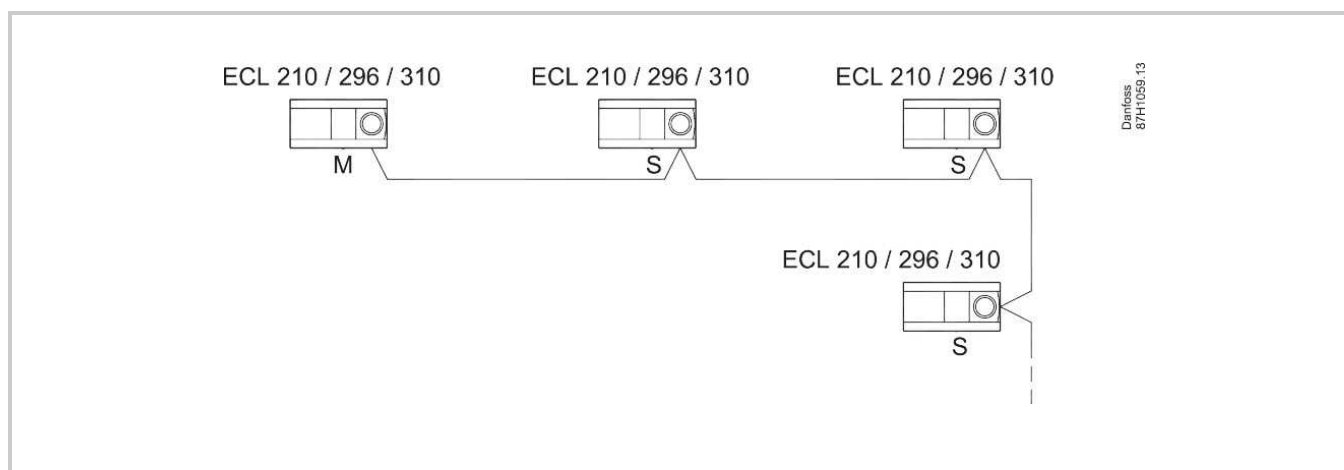
DHW functions:

- The Auto Tuning function with automatic setting of control parameters for constant DHW temperature is integrated in the applications 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 week schedule.
- The DHW circuit can have full or sliding priority.

Data communication

The ECL Comfort 296 has:

- **ECL 485** bus, non-galvanic isolated, for closed communication between master, slave and RCUs.
- **RS 485** bus, galvanic isolated, for Modbus communication to SCADA systems.
- **M-bus**, non-galvanic isolated, for M-bus communication with meters.
- **USB**, type B, for ECL Tool (software for PC).
- **Ethernet**, RJ 45, for TCP / IP communication to Internet (Leanheat® Monitor)



Master (M) / slave (S) connections

Languages

Most application keys contain up to 22 languages. See language list.

Product details

General data

ECL Comfort controller and RCU data

	ECL Comfort 296	ECA 30 / 31
Ambient temperature	0 - 45 °C	
Storage and transportation temperature	-20 - 70 °C	
Installation	Installation must be avoided if there is a risk for condensation (dew)	
Mounting	To be mounted on a vertical wall and turned horizontally, on DIN rail (35 mm) or in a panel cut-out (138 x 92 mm)	To be mounted on a vertical wall and turned horizontally, or in a panel cut-out (138 x 92 mm)
Connections	Terminals in base part	Terminals in base part
Number of inputs	8 in total: 6 Pt 1000 temperature sensors. 2*) Pt 1000 temperature sensors, 0 - 10 V, pulse and digital.	-
Temperature sensor type	Pt 1000 (1000 ohm at 0 °C), IEC 751B Range: -60 – 150 °C	Alternative to built-in room temperature sensor: Pt 1000 (1000 ohm at 0 °C), IEC 751B
Digital input	12 V pull-up possible 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 For limitation: Minimum 1 Hz (recommended) and regular pulses for having a stable control.	-
Weight	0.41 kg (ECL 296) 0.21 kg (base part)	0.14 kg
Display (ECL Comfort 296 and ECA 30 / 31)	Graphical monochrome with backlight 128 x 96 dots Display mode: Black background, white text	
Setting (ECL Comfort 296 and ECA 30 / 31)	Dial with intuitive push and turn function	
Data logging	Up to 10 days for 14 parameters	-
Min. backup time for time and date	72 hours	-
Backup of settings and data	Flash memory	Flash memory
Grade of enclosure	IP 40 when mounted according to instructions	IP 20 when mounted according to instructions
CE - marking in accordance with the standards	EMC (ElectroMagnetic Compatibility Directive) LVD (Low Voltage Directive) RoHS (Restriction of Hazardous Substances Directive)	
Temperature control	Complies with EN 60730	

*) Configured at application upload.

ECL application key

Storage type	Flash memory
Segmentation	Part 1: Application data, not changeable Part 2: Factory settings, not changeable Part 3: Updating SW for the ECL Comfort controller, not changeable Part 4: User settings, changeable
Applications	A2xx keys work in ECL Comfort 210, 296 and 310 A3xx keys work in ECL Comfort 310 only
Lock function	If not inserted in the ECL Comfort controller, all settings can be seen, but not changed
Menu languages	Menu languages are selectable among approx. 22 languages. See "Language list".

ECL 485 communication bus data

Purpose	Only for internal connections between ECL Comfort 210 / 296 / 310 and ECA 30 / 31. (Danfoss proprietary bus)
Connection	Terminals in base part Non-galvanic isolated
Cable type	Shielded cable, 2 x twisted pair, Min. cross section: 0,22 mm (AWG 24). Examples: LiYCY 2 x 2 x 0.25 mm ² (AWG 24) or Ethernet CAT5
Max. total cable length (bus cable + sensor cables)	200 m in total (inclusive sensor cables)
Max. number of ECL slaves connected	Units with unique address (1 - 9): 9 Units with address "0": 5
Max. number of Remote Control Units connected	2
Data sent from master	Date Time Outdoor temperature Desired room temperature DHW-priority signal
Data sent from addressed slave controller	Desired flow temperature from each circuit
Data sent from ECA 30 / 31	- Actual and desired room temperature - Function selector mode (ECA 31) Relative humidity

Modbus communication data

Purpose	For SCADA system
Connection	Terminals 34 and 35 in base part. Modbus reference (terminal 36, S. Gnd) must be connected. Galvanic isolated (500 V).
Protocol	Modbus RTU
Cable type	Shielded cable, 2 x twisted pair + Signal GND. Min. cross section: 0,22 mm ² (AWG 24). Example: LiYCY 2 x 2 x 0.25 mm ² (AWG 24)
Max. bus cable length	1200 m (dependent on cable type and installation).
Communication speed	Half duplex. 9,6 Kbit/s (default) / 19.2 Kbit/s / 38.4 Kbit/s
Serial mode	8 data bit, even parity and 1 stop bit.
Network	According to the standard Modbus Serial Line Implementation Guide V1.0.

M-bus communication data:

Purpose	Connection to heat meters, max. 5 heat meters
Connection	Terminals 37 and 38 in base part. Non-galvanic isolated
M-Bus master according to	DS / EN 1434-3: 1997
Cable type	2 x 0,8 mm ² Example: JY(St)Y 2 x 0.8 mm ² (not twisted pair)
Max. cable length	50 m
Baud rate	300 baud (adjustable)
Update time	60 s (adjustable)
Gateway function	Allows the Leanheat® Monitor to read energy meters directly
Supported heat meters	Infocal 6 and many other marks and types. Information about other heat meters on request
Transmitted heat meter data	Heat meter type dependent: • Primary flow temperature • Primary return temperature • Actual flow / accumulated flow • Actual heat / power • Accumulated heat energy
Recommendations:	Danfoss recommends 230 V a.c. supplied heat meters

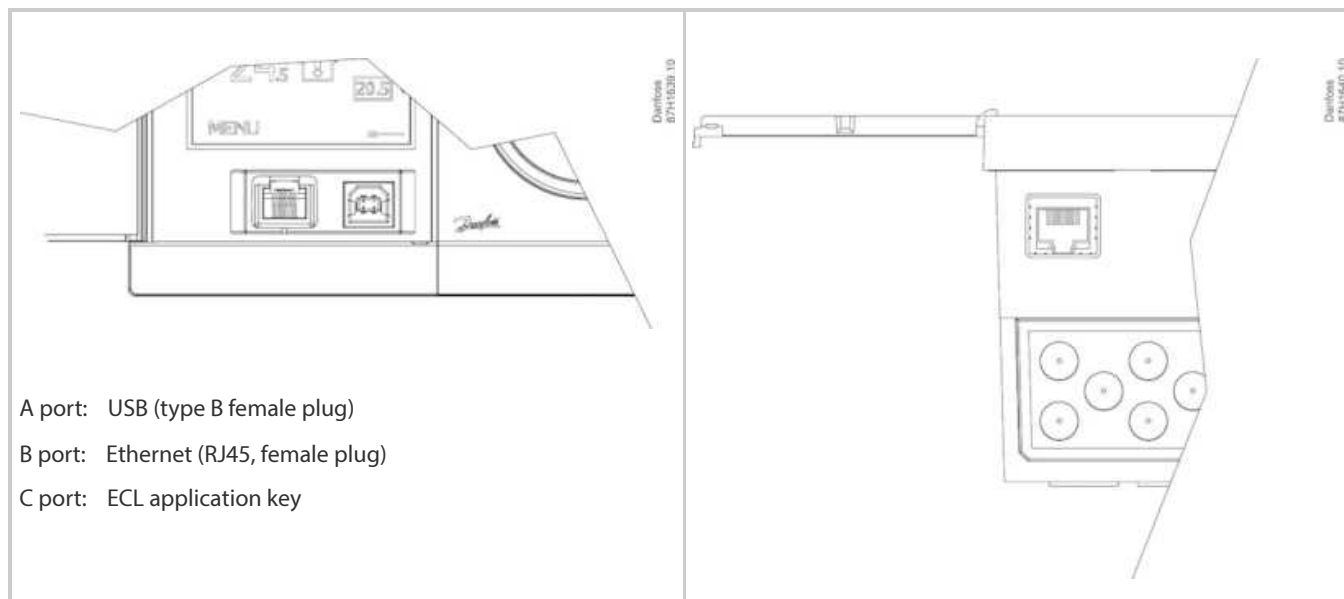
USB communication data

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)

Ethernet communication (Modbus / TCP) data

Purpose	For Internet (Leanheat® Monitor) and SCADA
Connection	RJ45 female connector
Protocol	Modbus / TCP
Cable type	Standard Ethernet cable (CAT 5)
Max. Bus cable length	According to Ethernet standard
Auto cross-over detection	Enabled
Default Ethernet address (IP address)	192.168.1.100
Port number	502 (Modbus / TCP port)
Number of connections	1
Security	Must be provided by Ethernet infrastructure

A-B-C port



Language list

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

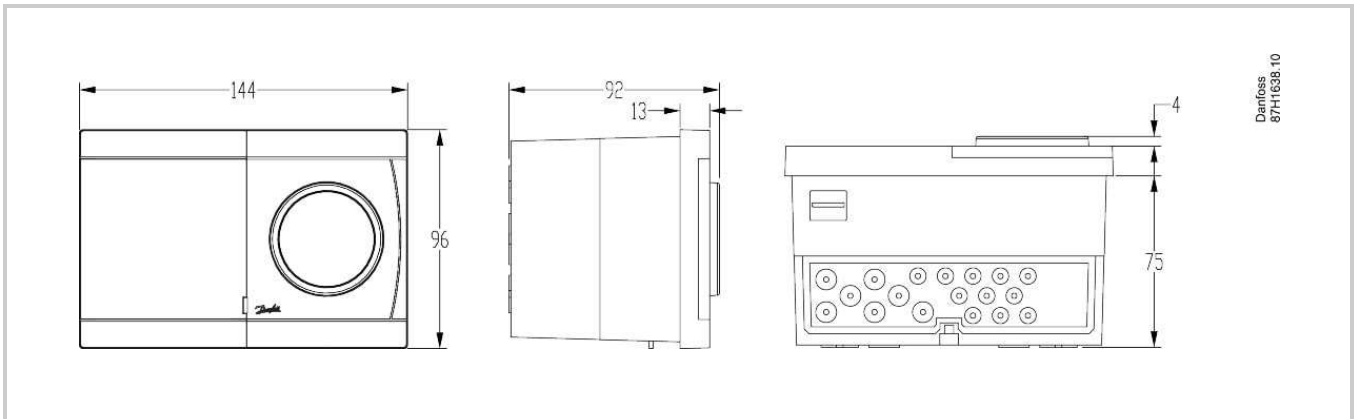
The selected language + English is uploaded at application upload.

Comparison with ECL Comfort 310 / 210

	ECL Comfort 296	ECL Comfort 310	ECL Comfort 210
M-bus communication	Yes	Yes	No
Modbus connection	Yes, galvanic isolated	Yes, galvanic isolated	Yes, non-galvanic isolated
Ethernet	Yes, RJ45 connection, Modbus / TCP. For SCADA solutions and Leanheat® Monitor	Yes, RJ45 connection, Modbus / TCP. For SCADA solutions and Leanheat® Monitor	No
Inputs	8	10	8
Relay outputs	4	6	4
Valve actuator outputs	2 x 3-point	3 x 3-point	2 x 3-point
Extension of inputs / outputs	No	Yes, ECA 32, placed in base part. • 6 inputs • 2 pulse inputs • 3 analogue outputs (0 - 10 V) • 4 relays	No
Application keys	A2xx	A2xx and A3xx	A2xx
Front dimensions (W x H, mm)	144 x 96	220 x 110	220 x 110
Supply voltage	230 V	230 V and 24 V	230 V

Dimensions

ECL Comfort 296

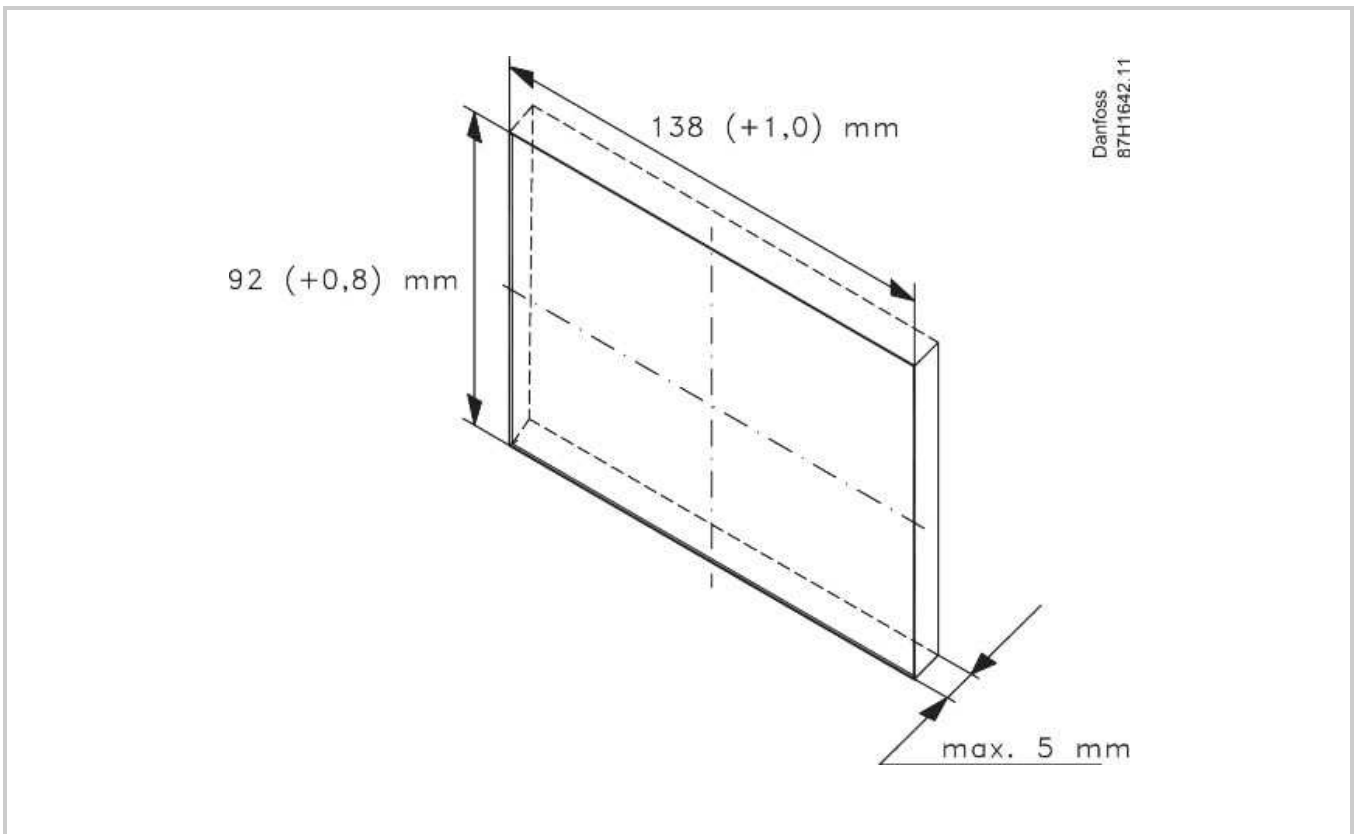


Dimensions including the base part. Depth of base part: 38 mm

Cut-out in panel for mounting,

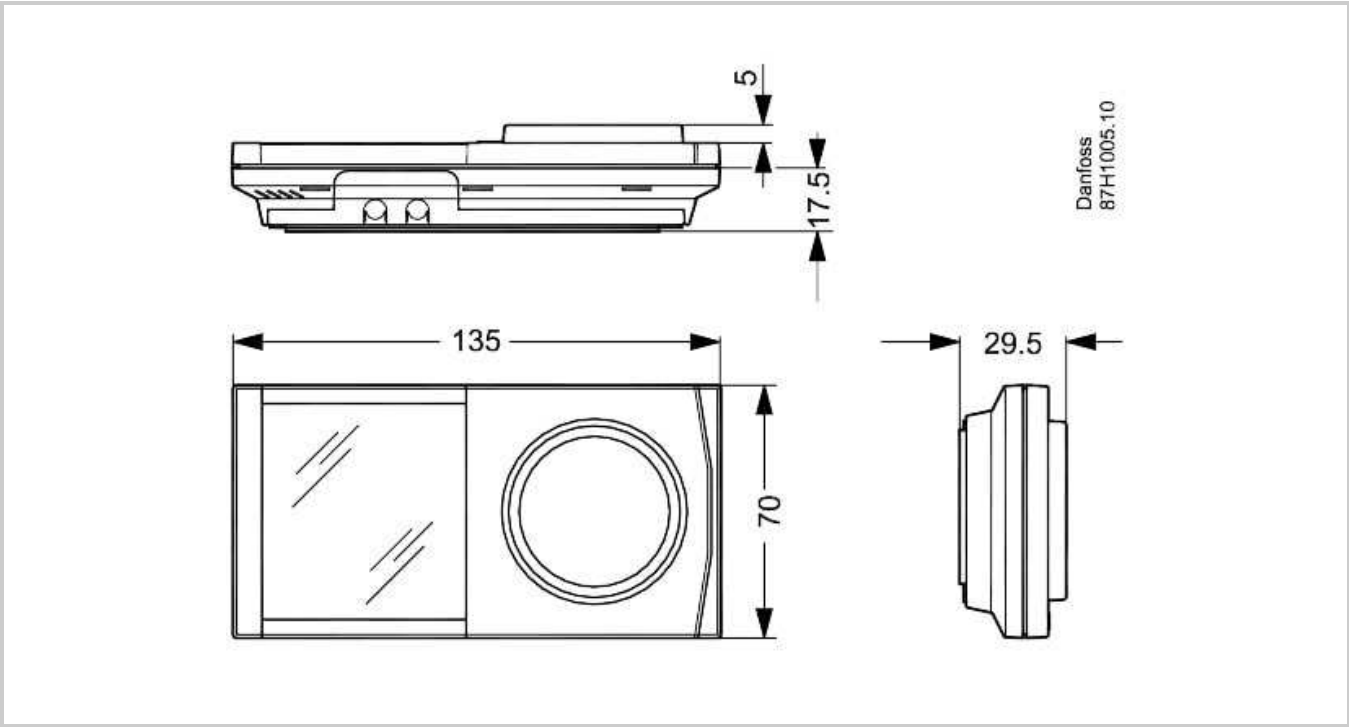
Panel kit for mounting, code no. **087H3242**

The panel plate thickness A must not exceed 5 mm.



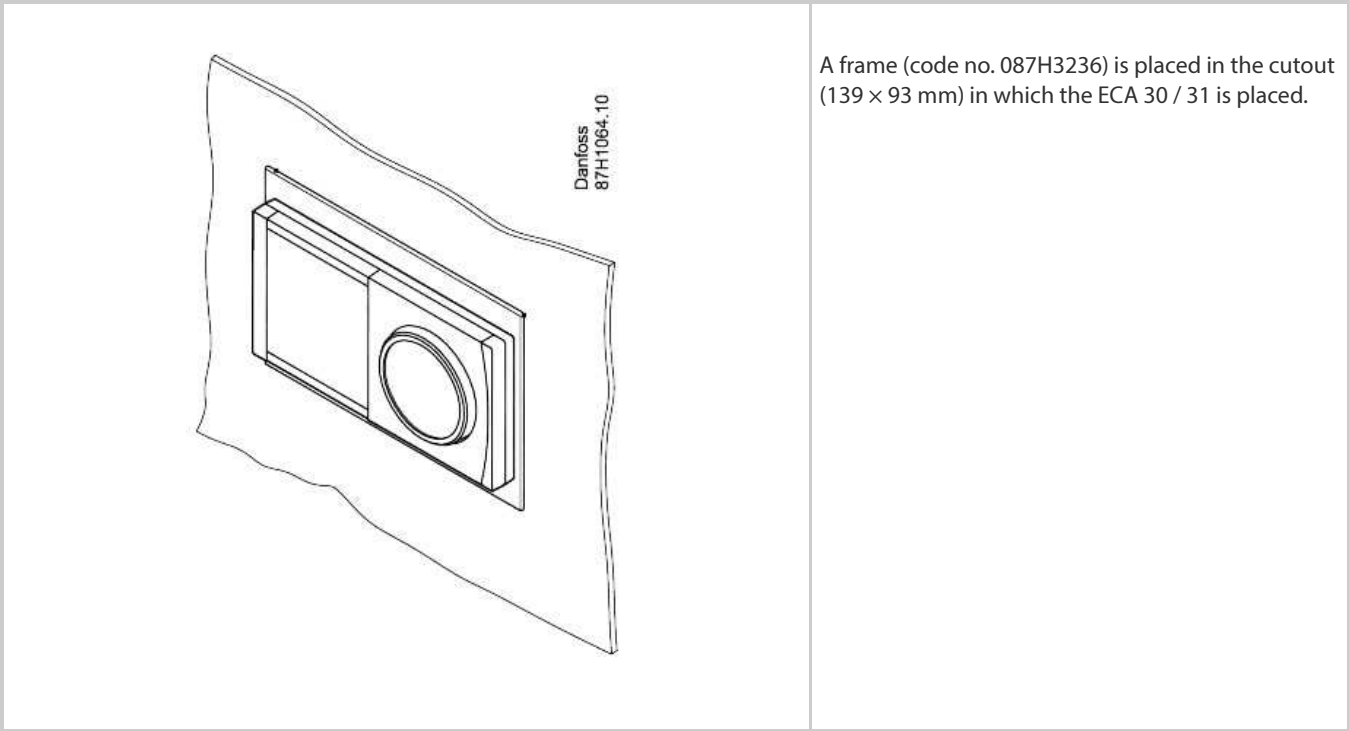


ECA 30 / 31



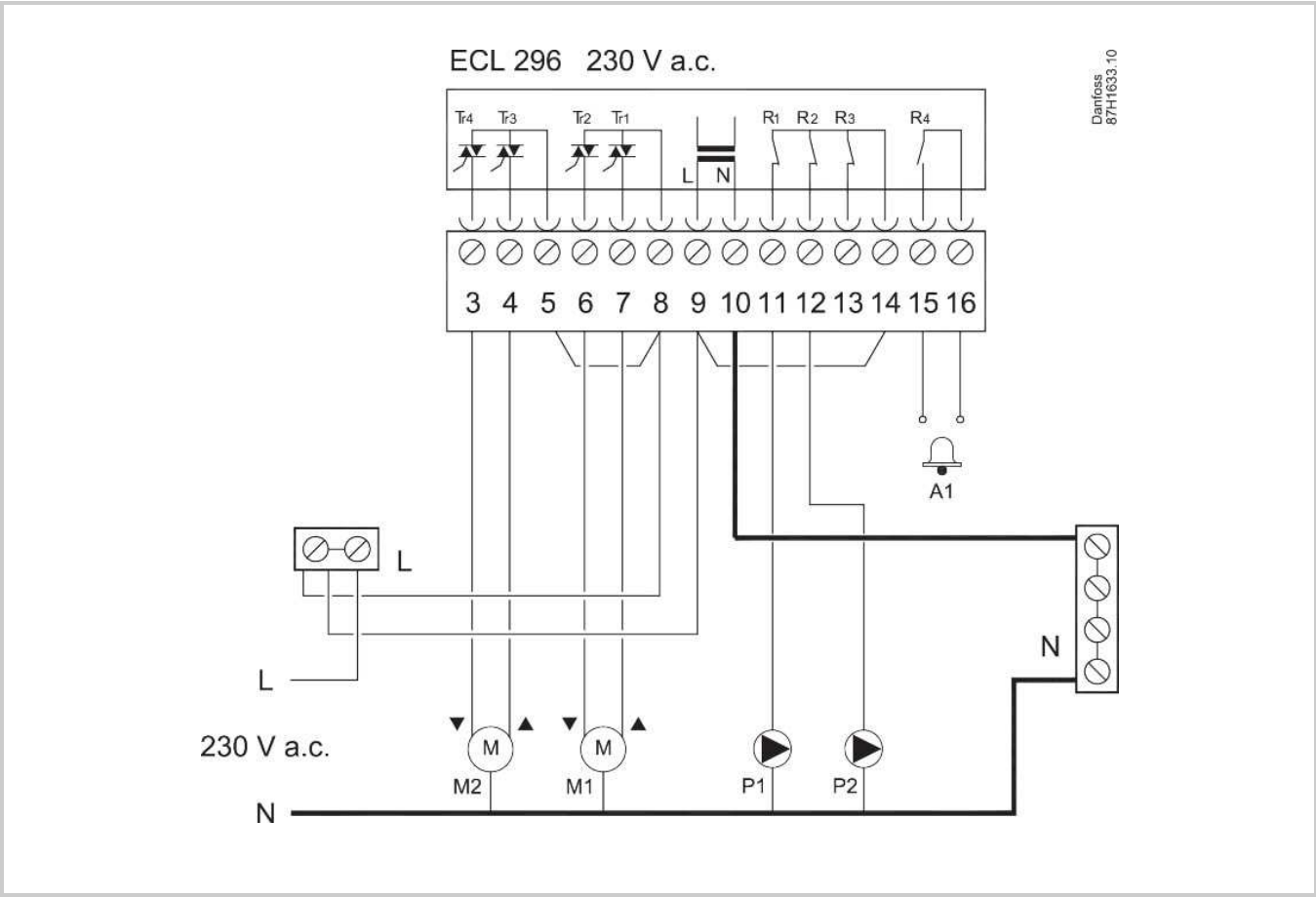
Weight	ECL Comfort 296	ECA 30 / 31	Base part
	0.41 kg	0.14 kg	0.21 kg

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



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

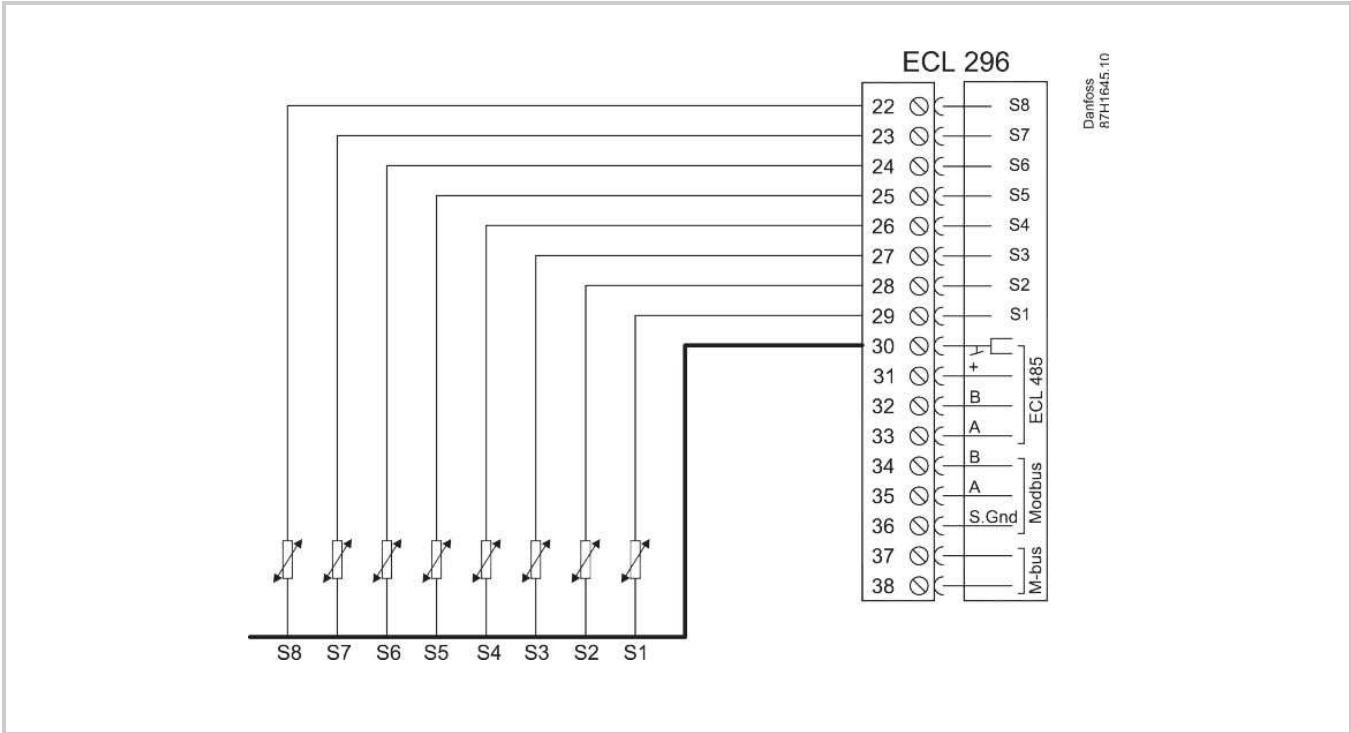
Installation
Wiring - 230 V a.c.



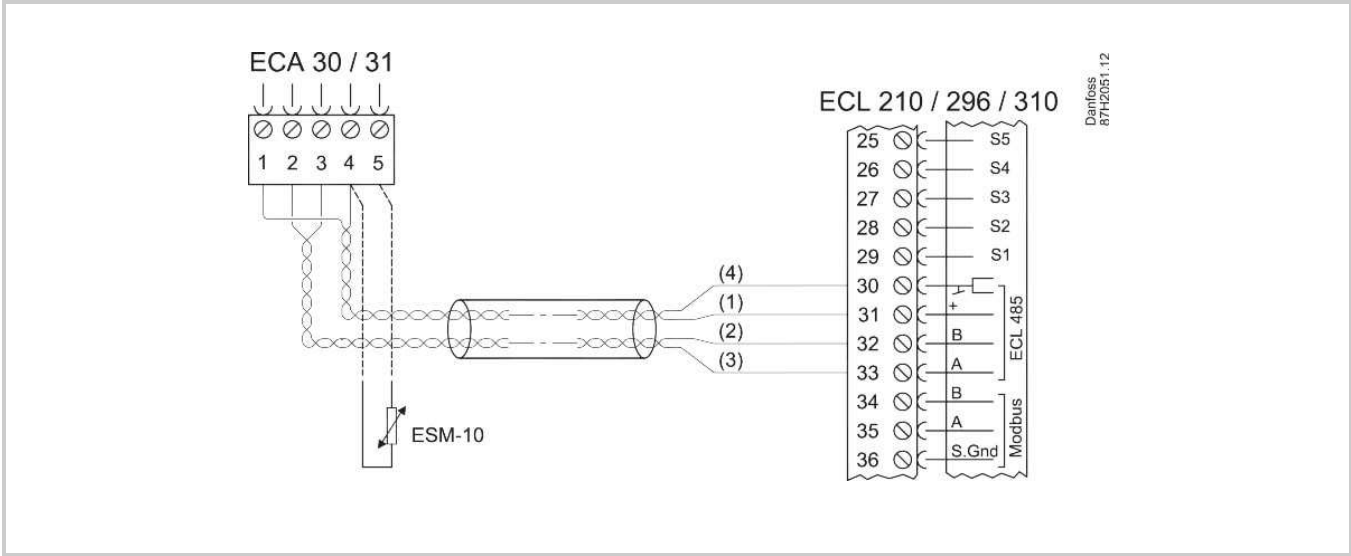
ECL Comfort 210 wiring example: Application A266.1

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)
Max. load on triac outputs for actuators	0.2 A - 230 V a.c.

Wiring - input



Wiring - ECA 30 / 31 Remote Control Unit

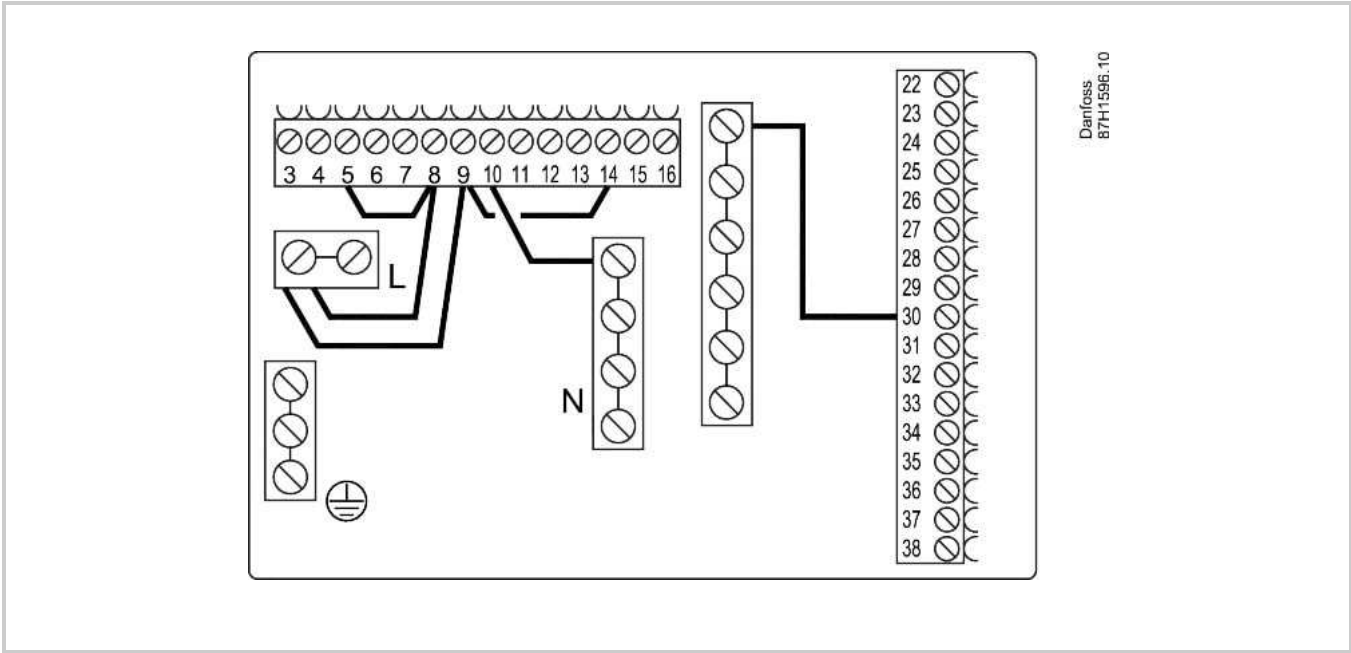


Wiring of ECL Comfort 296 and ECA 30 / 31, 230 V a.c.

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 296 base part with pre-wirings

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	UA Controllers 2024-07-25	Danfoss	LVD
Electrical Safety Certificate	EAC KZ 7100841.01.01.01245	EAC - Eurasian Customs Union	LVD
EU Declaration	Danfoss EU VJAOA502.01	Danfoss	LVD
Statement of Compliance	Danfoss SoC 240409EN0091101.02	Danfoss	UK PSTI

Tender text

Electronic controller for heating and domestic hot water applications

1a

Electronic weather compensator for flow temperature control in heating, domestic hot water and ventilation installations. Turn-push dial, backlighted graphic display and menu-based operation in local languages. The controller can operate multiple applications 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: M-bus (up to 5 meters), Modbus, Ethernet (e.g. internet connection to Leanheat® Monitor), 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
- Power consumption: max. 5 VA
- Ambient temperature: 0 – 45 °C
- Storage temperature: -20 – 70 °C

2

Product characteristics:

- Protection class: IP 40
- DIN rail adaptor integrated in base part
- Dimension (inclusive base part) L * W * H, 144 * 96 * 88 mm
- Ordering code no.: ECL Comfort 296, 230 V: 087H3000
- Ordering code no.: Base part for ECL Comfort 296: 087H3240
- 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.



The Danfoss Design center

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