

# ECL Comfort 110

## 230 V a.c. and 24 V a.c.

### Description and application



The ECL Comfort 110 is a universal 1-circuit controller for use in district heating substations and district heating systems as well as boiler-based systems.

The product is an electronic controller for

- weather compensated flow temperature control (heating)
- constant temperature control (domestic hot water e.g.)

and prepared for new applications by means of chip card and communication interface.

The controller is designed for easy installation: one cable, one connector.

The ECL Comfort 110 controller has a custom-designed display with backlight. For a quick overview, the display readouts are based on graphic symbols as well as text.

The controller has triac outputs for motorized control valve and relay outputs for pump control.

It is possible to connect up to 4 temperature sensors (Pt 1000 types) and it has 1 input for override. Room panel or remote control (ECA 60 / 61) can be connected.

The ECL Comfort 110 controller can be used as master or slave in controller systems.

It is prepared for mounting on a DIN rail, a wall or in a panel.

### Ordering

#### Controllers

Type	Designation	Code no.
ECL Comfort 110	Universal hardware - 230 V a.c.	087B1261
ECL Comfort 110	Universal hardware - 24 V a.c.	087B1251
ECL Comfort 110 with timer program	Universal hardware - 230 V a.c.	087B1262
ECL Comfort 110 with timer program	Universal hardware - 24 V a.c.	087B1252
Panel mounting kit	For ECL Comfort 110	087B1249
Instructions, appl. 116	User guide and quick guide (English)	087B8151
Instructions, appl. 130	User guide and quick guide (English)	087B8152

#### Pt 1000 temperature sensors

Type	Designation	Code No.
ESMT	Outdoor temperature sensor	084N1012
ESM-10	Room temperature sensor	087B1164
ESM-11	Surface sensor	087B1165
ESMB-12	Universal sensor	087B1184
ESMC	Surface sensor incl. 2 m cable	087N0011
ESMU-100	Immersion sensor, 100 mm, copper	087B1180
ESMU-250	Immersion sensor, 250 mm, copper	087B1181
ESMU-100	Immersion sensor, 100 mm, stainless steel	087B1182
ESMU-250	Immersion sensor, 250 mm, stainless steel	087B1183

Ordering, continued

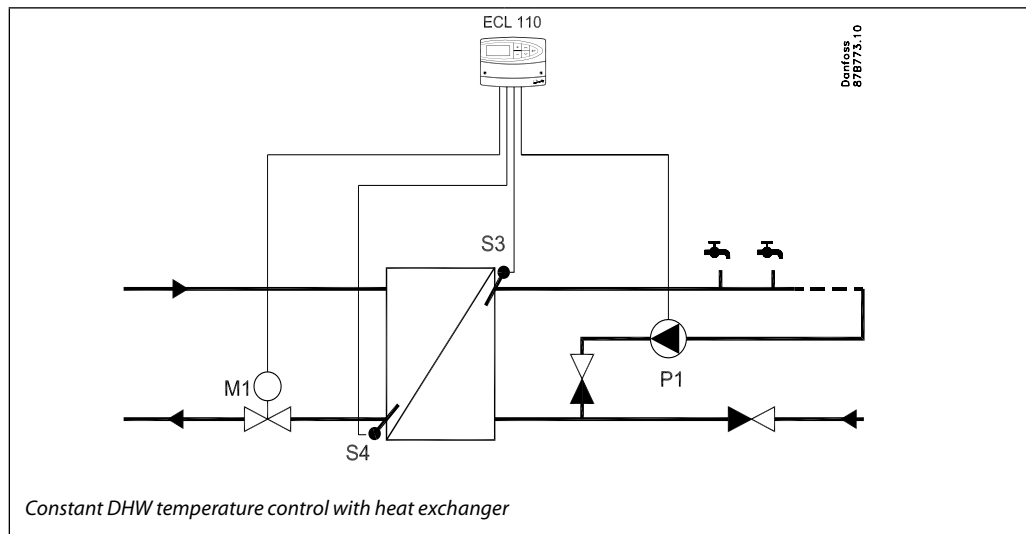
Accessories

Type	Designation	Code no.
ECA 60	Room panel with sensor	087B1140
ECA 61	Remote control with 1 zone clock and sensor	087B1141
ECA 110*	Timer program for ECL Comfort 110 (chip card)	087B1248

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The ECA 110 is a supplement to the ECL Comfort 110 versions without a timer program, e.g., the code nos. 087B1261 and 087B1251 (see page 1). With the ECA 110 it will be possible to set personal schedules in terms of start and stop times of the system and thereby optimize the energy supply.

Domestic hot water (DHW)  
(Application 116)

Application 116 example



Basic principles

Constant DHW temperature control with heat exchanger or storage tank

Typically, the flow temperature is adjusted according to the desired flow temperature.

- Adjustment of DHW temperature  
If the measured DHW temperature is lower than the desired temperature, the motorized control valve is opened gradually and vice versa.

- Return temperature limitation  
The return temperature to the district heating supply should not be too high. If so, the desired flow temperature can be adjusted (typically to a lower value) thus resulting in a gradual closing of the motorized control valve. In boiler-based heating supply the return temperature should not be too low (same adjustment procedure as above).
- Circulation pump control  
The circulation pump is ON when the desired DHW temperature is higher than a user-defined value (factory setting: 20 °C).

Key functions

Flow temperature control

- Return temperature limitation  
The controller automatically changes the desired flow temperature to obtain an acceptable return temperature when the return temperature falls below or gets higher than the set value. The return temperature influence can be limited by the min. / max. flow limitation.

Optimization

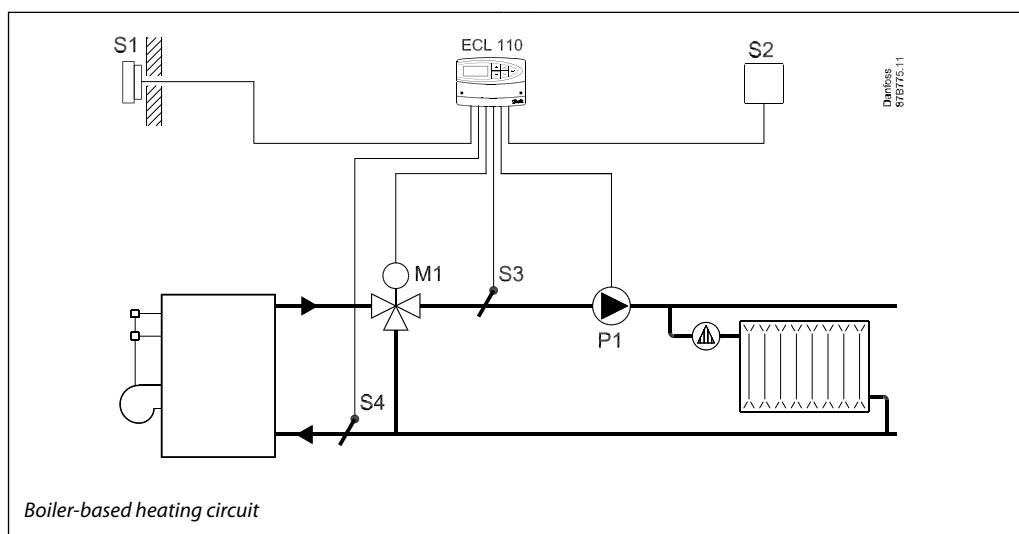
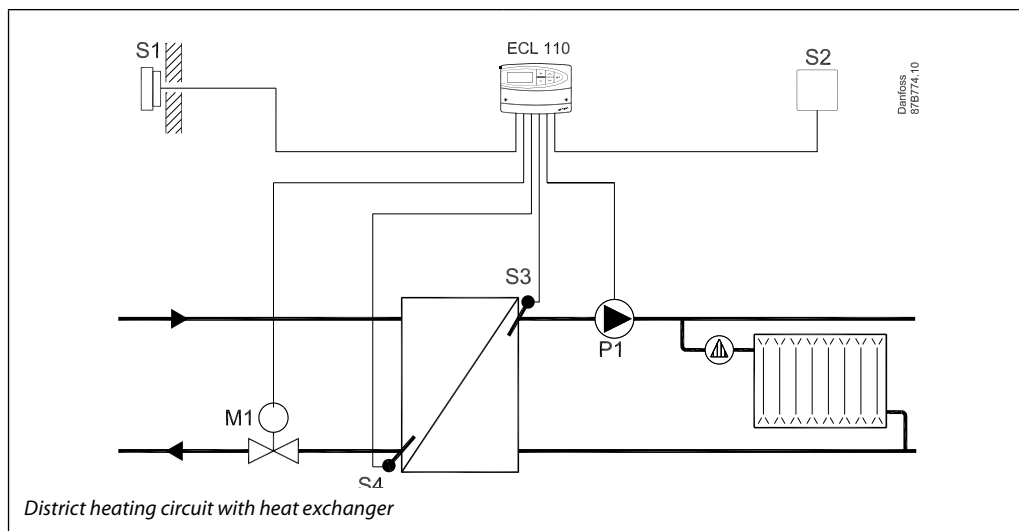
- Auto tuning  
A function for automatically setting the proportional band (Xp) and integration time constant (Tn).

Safety functions

- Frost protection  
The controller automatically switches the circulation pump ON when the flow temperature is lower than a user-defined value (factory setting: 10 °C).
- Motor protection  
The controller prevents unstable temperature control thus resulting in a longer life of the actuator.
- Pump exercise  
Exercise of the pump to avoid blocking in periods without heat demand.

Heating  
(Application 130)

Application 130 examples



## Basic principles

**Control of district heating circuits with or without heat exchanger and for boiler-based heating circuits**

Typically, the flow temperature is adjusted according to the desired flow temperature.

- Adjustment of flow temperature

The desired flow temperature is calculated in the ECL Comfort controller, based on the outdoor temperature. The lower the outdoor temperature, the higher the desired flow temperature.

The motorized control valve is opened gradually when the flow temperature is lower than the desired flow temperature and vice versa.

- Return temperature limitation

The return temperature to the district heating supply should not be too high. If so, the desired flow temperature can be adjusted (typically to a lower value) thus resulting in a gradual closing of the motorized control valve. In boiler-based heating supply the return temperature should not be too low (same adjustment procedure as above).

- Room temperature limitation

If the measured room temperature does not equal the desired room temperature, the desired flow temperature can be adjusted.

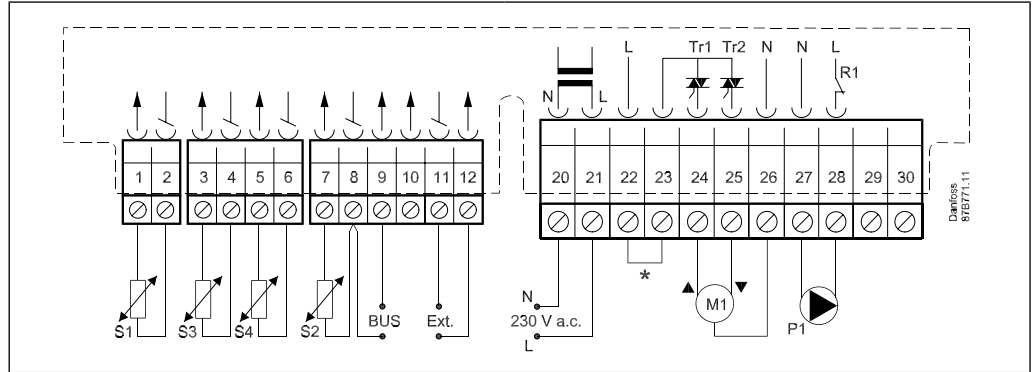
- Circulation pump control

The circulation pump is ON when the desired flow temperature is higher than a user-defined value (factory setting: 20 °C) or the outdoor temperature is lower than a user-defined value (factory setting: 2 °C).

General data

Ambient temperature	0 - 55 °C
Storage temperature	-40 - + 70 °C
Enclosure	DIN rail, wall or panel
Sensor type	Pt 1000 (1000 Ω @ 0 °C)
Grade of enclosure	IP 41 DIN 40050
- marking in accordance with the standards	EMC-Directive: 2004/108/EC Immunity: 61000-6-1 Emission: 61000-6-3 LVD-Directive: 2006/95/EC

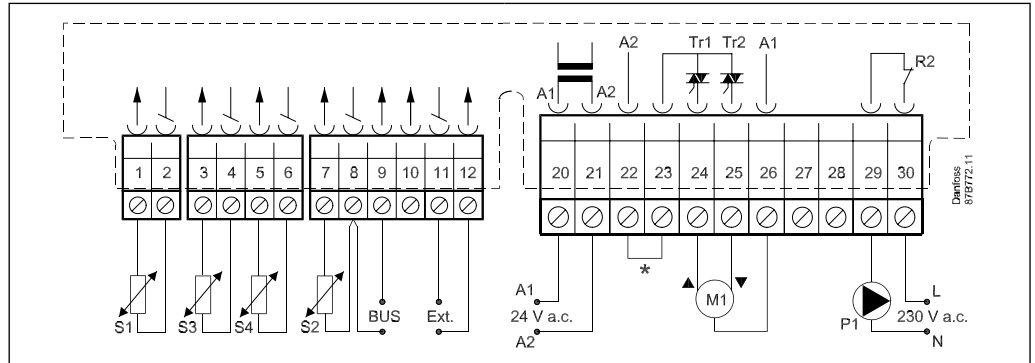
Wiring - 230 V a.c.



\* Connections for safety thermostat

Supply voltage	230 V a.c. - 50 Hz
Voltage range	207 to 244 V a.c. (IEC 60038)
Power consumption	3 VA
Load on relay 1 outputs	4 (2) A - 230 V a.c.
Load on triac outputs	15 VA @ 230 V a.c.

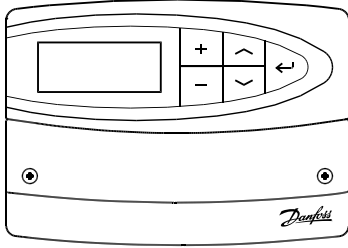
Wiring - 24 V a.c.










\* Connections for safety thermostat

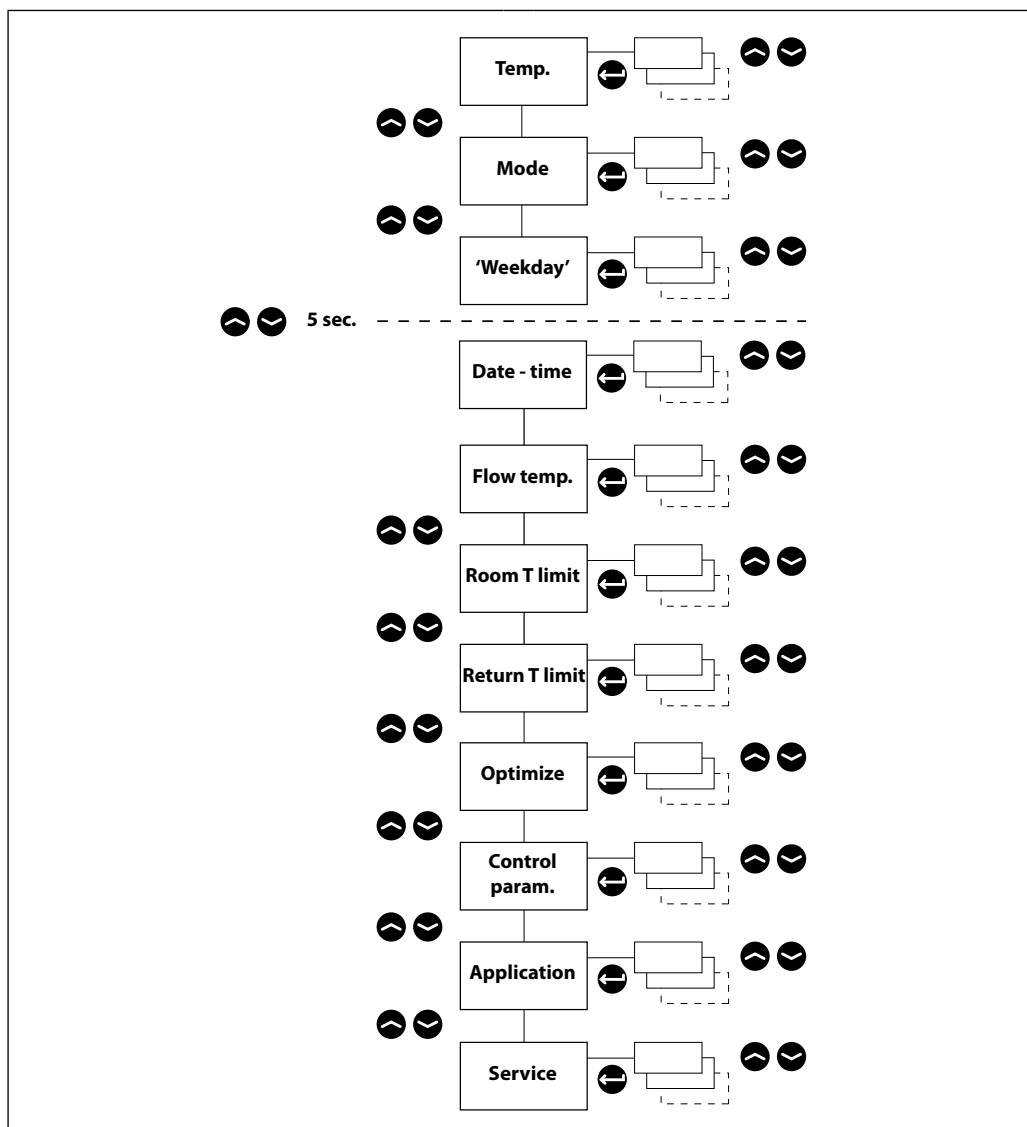
Supply voltage	24 V a.c. - 50 Hz
Voltage range	21.6 to 26.4 V a.c. (IEC 60038)
Power consumption	3 VA
Load on relay 2 outputs	4 (2) A - 230 V a.c.
Load on triac outputs	15 VA @ 24 V a.c.

Operation

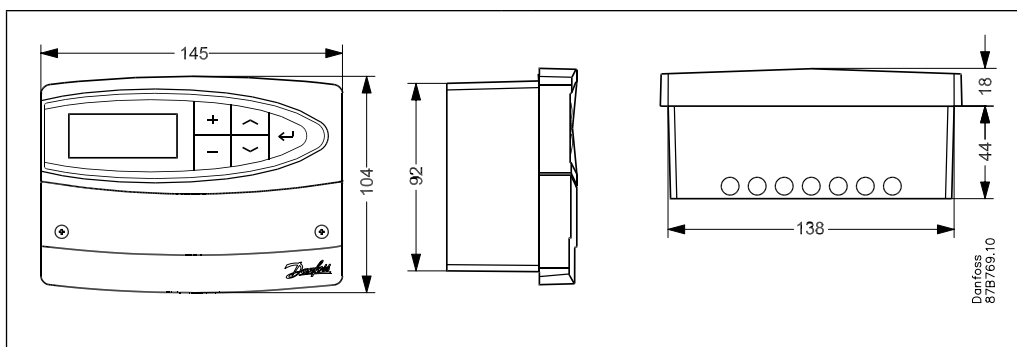


 Adjust temperatures and values.  
  
 Switch between menu lines.  
  
 Select / return.  
 2 sec.  
 Return to daily user menu.

Menu navigation



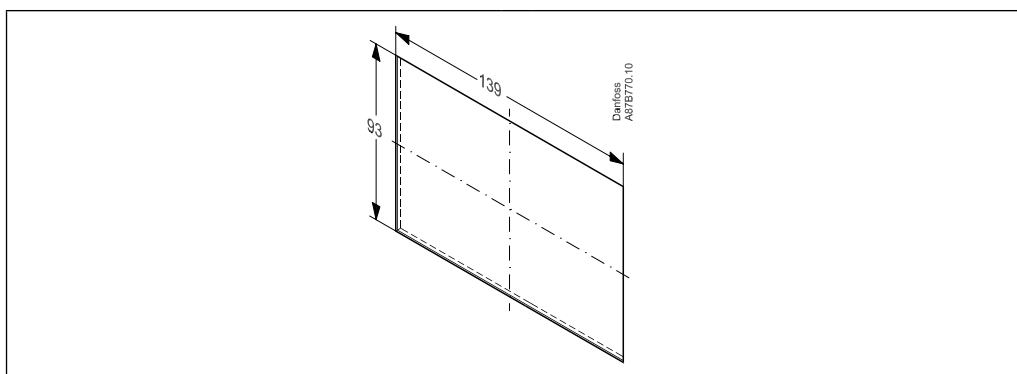
Dimensions



Cut-out for mounting

Mounting in a panel (panel mounting kit, code no.: 087B1249).

The panel thickness must not exceed 5 mm.



*Additional documentation for ECL Comfort 110 is available on <http://heating.danfoss.com>*

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