

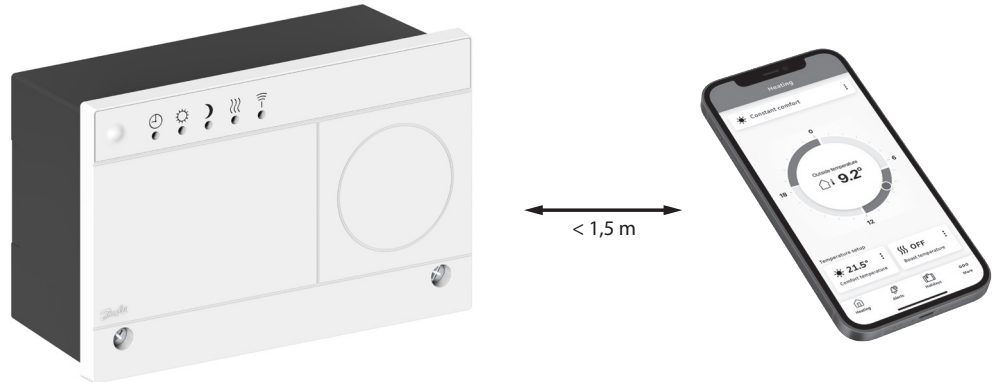
Data sheet

ECL Comfort 120 controller and app

Designed in Denmark

Description

ECL Comfort 120 controller



ECL Comfort 120

The ECL Comfort 120 is a universal 1-circuit controller for use in district heating substations, district heating-based installations and boiler installations.

The ECL Comfort 120 is operated by an installer app for mobile phone IOS or Android.

User interface on controller: 5 LED and 1 push button.

The product is an electronic controller for flow temperature control (heating) for different control principles:

- Weather compensated (outdoor sensor)
- Reference room (ON OFF switch)
- Reference room (room sensor)
- Supply temperature compensated (offset from supply temperature)

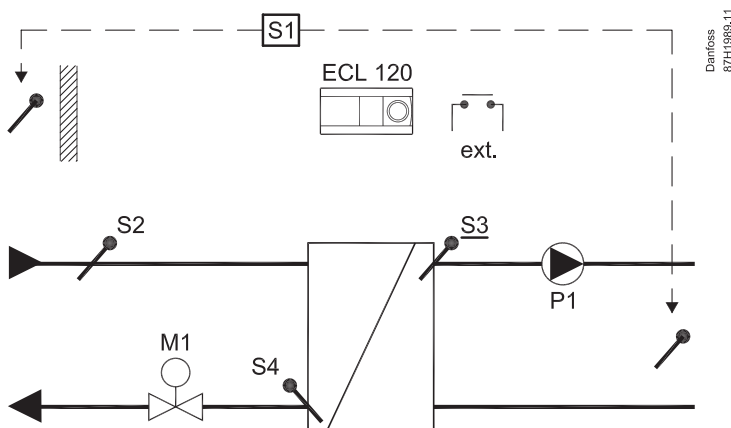
The controller has triac outputs for motorized control valve and relay outputs for pump control.

It is possible to connect 4 temperature sensors (Pt 1000 types) and it has 1 input (potential free) for override.

The ECL Comfort 120 controller can be used as master or slave in systems sharing outdoor signal between other ECL Comfort 120 controllers.

It is prepared for mounting on a DIN rail, a wall or in a panel. ECL Comfort 120 works with a limited range of Danfoss actuators. Please see the list on page 4.

**Heating application
weather compensation**



Basic weather compensation

Basic principles

Control of district heating circuits, directly or indirectly connected, based on the outdoor temperature.

The lower the outdoor temperature, the higher the desired flow temperature.

The heat curve (relationship between outdoor temperature and desired flow temperature) is set by means of a slope value.

Max./min. limitation of the desired flow temperature can be set.

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).

Circulation pump control


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

The heating cut-out function can switch OFF the heating and stop the circulation pump at high outdoor temperatures.

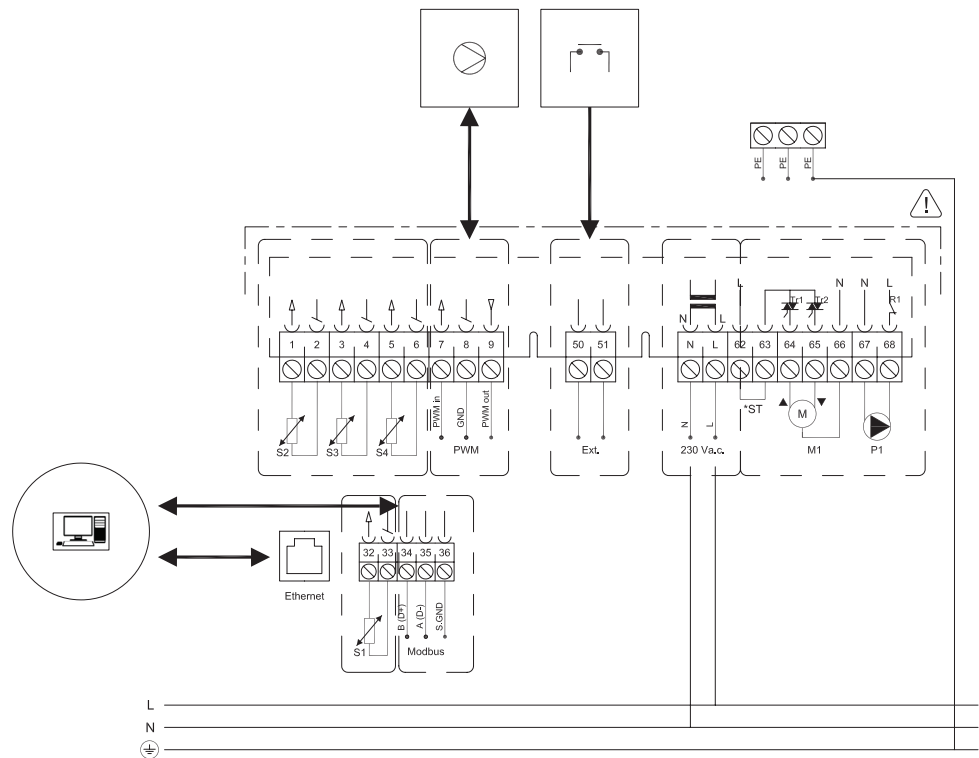
General data

| | |
|---------------------|-----------------------------|
| Code number | 100B1200 |
| Weight | 436 g |
| Enclosure size | W x H x D: 144 x 96 x 63 mm |
| Mounting | DIN rail, wall or panel |
| Ambient temperature | -5 to +55 °C |
| Storage temperature | -40 to +70 °C |
| Supply voltage | 230 V a.c. - 50 Hz |
| Voltage range | +/- 10% as per IEC 60038 |

General data (continued)

| | |
|---|---|
| Power consumption (controller without load) | 3 W |
| Power consumption with max. load | 710 W |
| Sensor type | Pt 1000-type (2-wire), i.e. 1000 ohms @ 0°C |
| Cable length temperature sensors | S1, S2: max. 30 m each S3, S4: max. 3 m each |
| Cable thickness | HV min.: Ø4.5 [mm], max: Ø7.2 [mm] LV min.: 1.45 x 3.10 [mm], max: Ø5.8 [mm] |
| Bluetooth connection | Bluetooth low energy 4.2. Coverage range: 1,5 m. Frequency range: 2402 MHz to 2480 MHz Maximum radiated output power: 3 dBm Mobile phone app operating system: IOS: Last 2 versions Android: Last 4 versions |
| Ethernet | Cable Ethernet max. 100 m. RJ 45 connector. Use 100 Mbps link speed via auto-negotiation |
| Modbus | RS 485 max. 1200 m. Galvanic separated 3 terminals: data A, data B, signal GND EN 60730-1 requirements |
| Local communication | Cable length: max. 100 meters Communication between max. 20 ECL Comfort 120 controllers using Modbus for local communication. |
| PWM output | 1 x PWM output control signal for circulation pump. PWM output frequency: 100-1000 Hz Cable length: max. 3 m. PWM input voltage: High: 4 - 12 [V], Low: < 1 [V] |
| PWM input | 1 x PWM input control signal from circulation pump. PWM input frequency: 30-100 Hz Cable length: max. 3 m Duty cycle: 0-100% |
| Min. back-up time for time and date | Min. 10 hours |
| Load on relay outputs (for circulation pump) | 3 (1,5) A - 230 V a.c. Max. cable length 10 m |
| Load on triac outputs (for valve actuator) | 15 VA @ 230 V a.c. Max. cable length 10 m |
| Input for potential free input | 1 x potential free sensing interface. Cable length: max. 30 m |
| Wire terminals | 2x on-board connector 3x3 terminal 1-2,5mm ² 1x on-board connector 2 terminal, 1-2,5mm ² 1x spring clamp 3-terminal - 0,2-4.0 mm ² 1x plug connector - screw type 5 - terminal 0,5-1,5mm ² Terminals, wiring complies with EN 60730-1 |
| Grade of enclosure | IP 41, ref.: IEC 60529 |
|  -marking in accordance with the standards | RED (Radio Equipment Directive) EMC (ElectroMagnetic Compatibility Directive) LVD (Low Voltage Directive) RoHS (Restriction of Hazardous Substances Directive) Automatic electrical controls standard |
| Relative humidity | Up to 95%; non-condensing |
| Overvoltage category | III |
| Pollution degree | 2 |

Electrical wiring



DocId: 5711084.10

Line coloring should be respected: PE= green/yellow, N= blue L= brown



Load devices should not exceed declared max. power draw.
Fuse should be designed according to max. power draw of controller.

Recommended actuator types

| Type (Danfoss) | Description |
|-------------------------|---|
| AMV 10 / 20 / 30 series | Gear-motor 3-point controlled for seated valves |
| AMV 100 series | Gear-motor 3-point controlled for seated valves |

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, 100 mm, copper | 087B1180 |
| ESMU-250 | Immersion, 250 mm, copper | 087B1181 |
| ESMU-100 | Immersion, 100 mm, stainless steel | 087B1182 |
| ESMU-250 | Immersion, 250 mm, stainless steel | 087B1183 |

Tender text**Electronic controller for heating****1a**

Electronic weather compensator for 1 circuit flow temperature control in heating installations. Operation via mobile app or 1 push button and 5 LED indications for basic indication and set-up. The controller is operated by an installer app for mobile phone via Bluetooth connection.

Applications can be uploaded to the controller via mobile app.

1b

- Heating control principles:
 - Weather compensated
 - Reference room (ON/OFF, sensor)
 - Supply temperature compensated
- Heat curve setting in 6 coordinates or as slope
- Flow temperature limitations
- Outdoor / Room temperature compensation
- Comfort / Saving periods according to week schedule and holidays
- Return temperature limitation or in relation to outdoor/room temperature (heating)
- Pump controlled in relation to heat demand and frost protection
- Alarm functions for all sensors
- Manual override of the individual output
- Communication:
 - Bluetooth low energy 4.2
 - Modbus RTU
 - Ethernet
 - ECL 485 (internal data bus)
- Connection for commissioning / service via Bluetooth
- 4 temperature sensor (Pt 1000) inputs
- Application related and configured inputs
- 1 relay output
- 1 pair of electronic output for noiseless operation of the motorized control valve
- 1 potential free input
- 1 PWM output (100-1000 Hz)
- 1 PWM input (30-100 Hz)
- 10h time and date back-up
- Sharing information when wired in system as Master / Slave controller

1c

Main data:

- Supply voltage, 230 V a.c., 50 Hz, +/- 10% as per IEC 60038
- Power consumption of controller: 3 W
- Power consumption with max. load: max. 710 W
- Ambient temperature: -5°C – 55 °C
- Storage temperature: -40 – 70 °C

2

Product characteristics:

- Protection class: IP 41
- DIN rail adaptor integrated
- Dimension W x H x D: 144 x 96 x 63 mm
- Ordering code no.: ECL Comfort 120: 100B1200



Additional documentation on ECL Comfort 120 is available on <http://danfoss.com/> or <http://store.danfoss.com/>

Danfoss A/S

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