ENGINEERING
TOMORROW

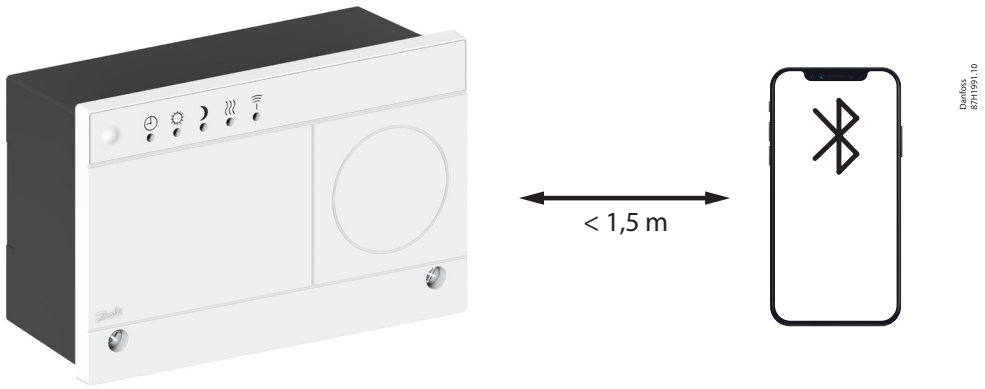
Data sheet

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)

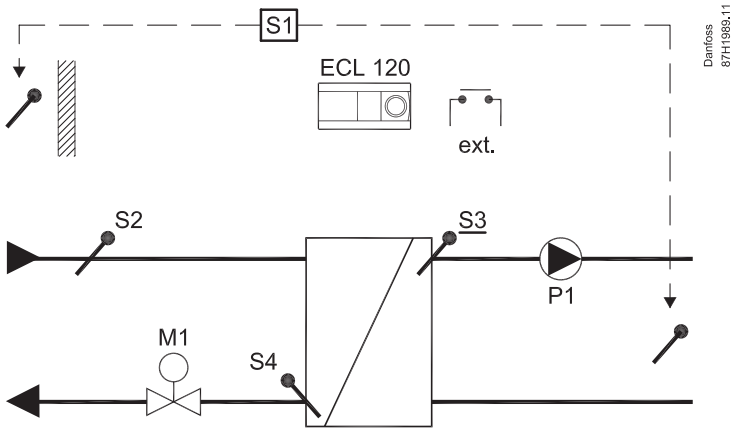
The controller has triac outputs for motorized control valve and relay outputs for pump control.

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.

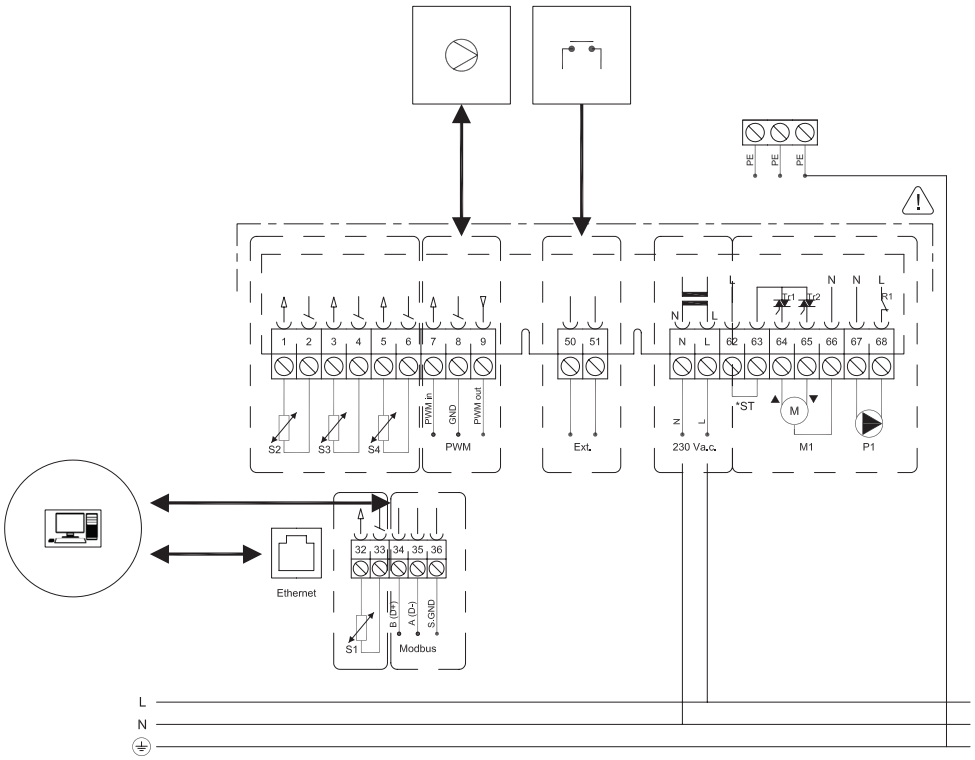
General data

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 comsumption 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 (14 & 15) Android: Last 4 versions (9, 10, 11, 12)
Ethernet	Cablet 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
CE-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



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/*

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