Data sheet

Electronic controllers

ECL Comfort 120

and Mobile Application

Description

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)

Features & benefits

- 1 control circuit
- 4 built-in heating applications
- ECL Go App
  - For iOS-14/Android-8 and higher Bluetooth range 1.5 meter Guided installation Commissioning report Automatic updates
- 5 LED + 1 push button
- Master/slave setup for systems with shared outdoor temperature signal
- DIN rail, wall or panel mounting
- 4 Pt 1000, 1 PWM, 1 pot. free
- 1 x 3-point control output optimized for actuators, 1x Relay, 1x PWM
- Modbus RS 485 for longer distances
- Ethernet RJ 45 for e.g. Connection with Leanheat® Monitor

Applications

- District heating substations
- District heating-based installations
- Mixing loops in boiler applications

Ordering

Product code numbers

Type	Description	Code number
ECL Comfort 120	ECL Comfort 120	100B1200

Accessories code numbers

084N1012

ESMT, Sensor type: Outdoor, Pt 1000

ESMT, Pt 1000 outdoor sensor

Related products

100B1200

087B1164

ESM-10, Sensor type: Room, Pt 1000

ESM-10, Pt 1000 room temperature sensor

Related products

100B1200

087B1184

ESMB-12, Pt 1000

ESMB-12, Pt 1000 Universal sensor

Related products

100B1200

087B1180

ESMU-100, Pt 1000, COPPER||COPPER

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

Related products

100B1200

087B1165

ESM-11, Pt 1000

ESM-11, Pt 1000 Surface sensor

Related products

100B1200

087B1181

ESMU-250, Pt 1000, COPPER||COPPER

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

Related products

100B1200

087B1183

ESMU-250, Pt 1000, Stainless steel

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

Related products

100B1200

087B1182

ESMU-100, Pt 1000, Stainless steel

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

Related products

100B1200

087N0011

ESMC, Pt 1000

Related products

100B1200

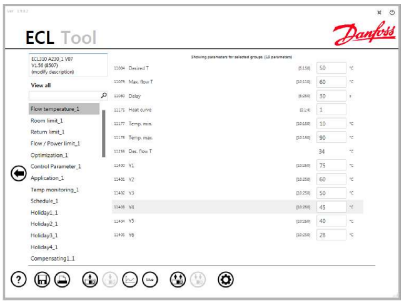
Load devices should not exceed declared max. power draw.
Fuse should be designed according to max. power draw of controller.

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

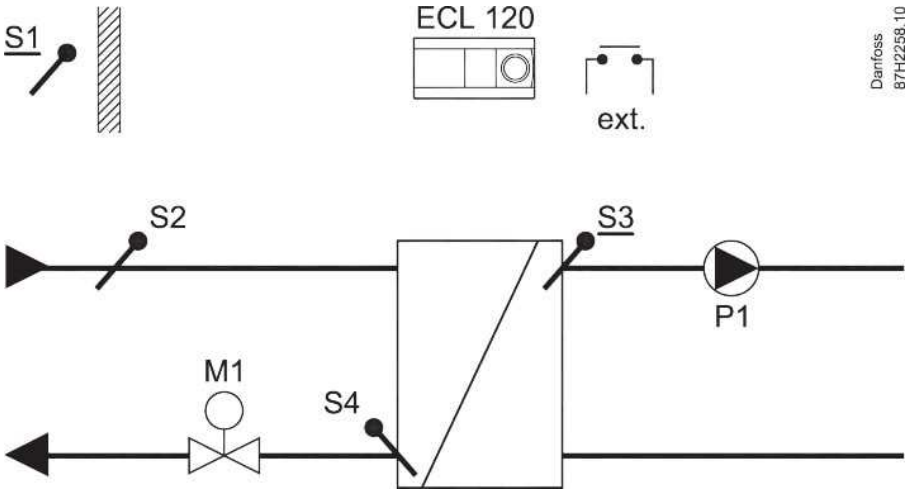
Overview

Product portfolio

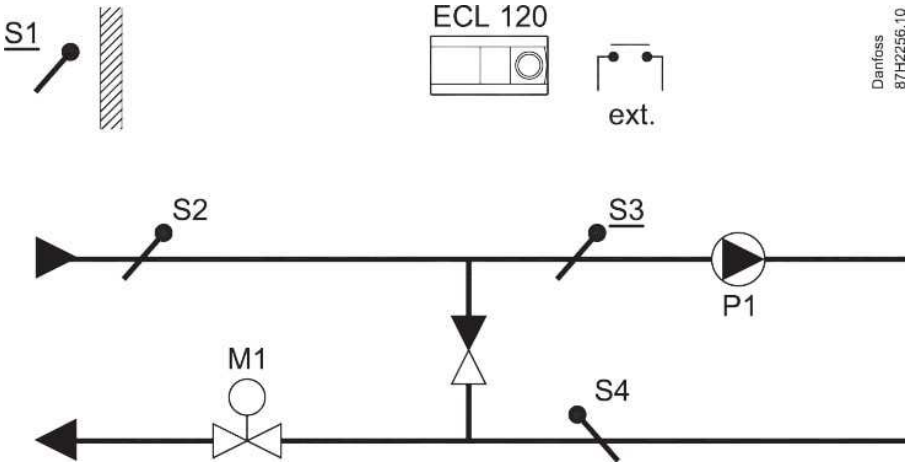
ECL Comfort 120 Controller	
	The ECL Comfort 120 is a universal 1-circuit controller. It has several different operation modes that are indicated through LEDs in the front panel. Operation of the controller ECL Comfort 120 is possible via the button on the controller. The controller has triac outputs 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 *Recommended actuator types* list in the *Installation* chapter.
ECL Go App	
	ECL Go is a guide to installation and commissioning of the ECL Comfort 120 controller. It helps installers save time and ensures the right set-up for efficient use and heating comfort. ECL Go provides step-by-step instructions for commissioning as recommended by the supplier, including complete documentation. Key features and benefits: • Flawless commissioning through a step-by-step guideline provided and tested by Danfoss. It can be downloaded via Google Play or App Store.
Service software	
	The ECL Tool software for ECL Comfort 310 offers possibilities for an alternative remote control in relation to Leanheat® Monitor 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 examples

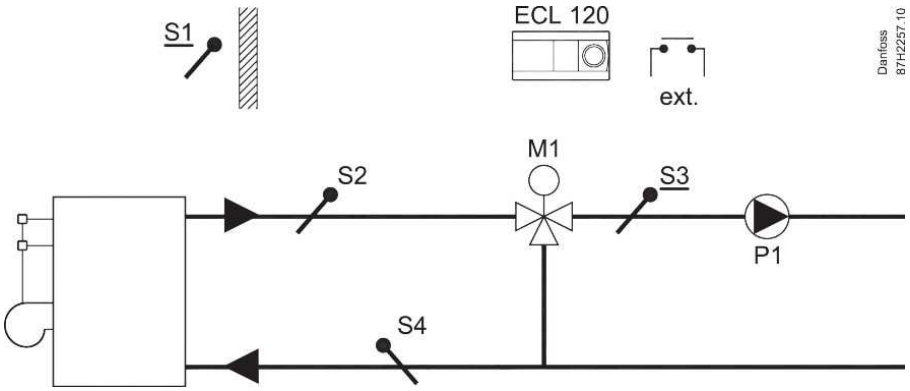
A130.1 ex. a



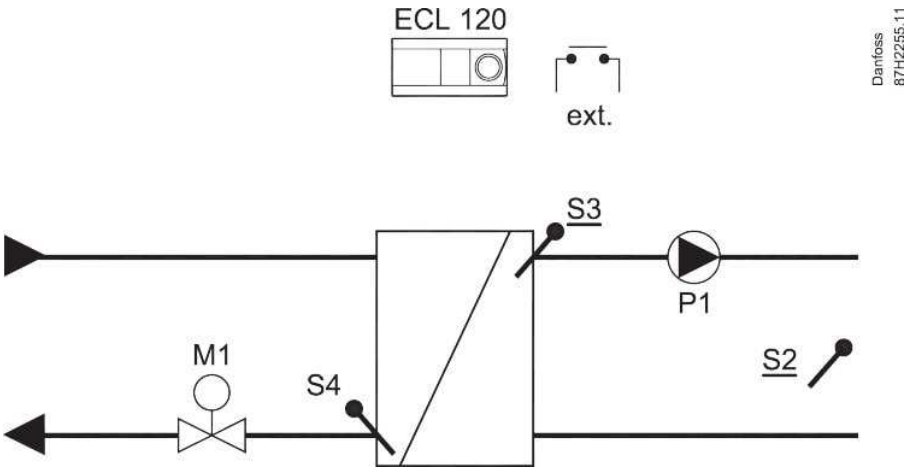
A130.1 ex. b



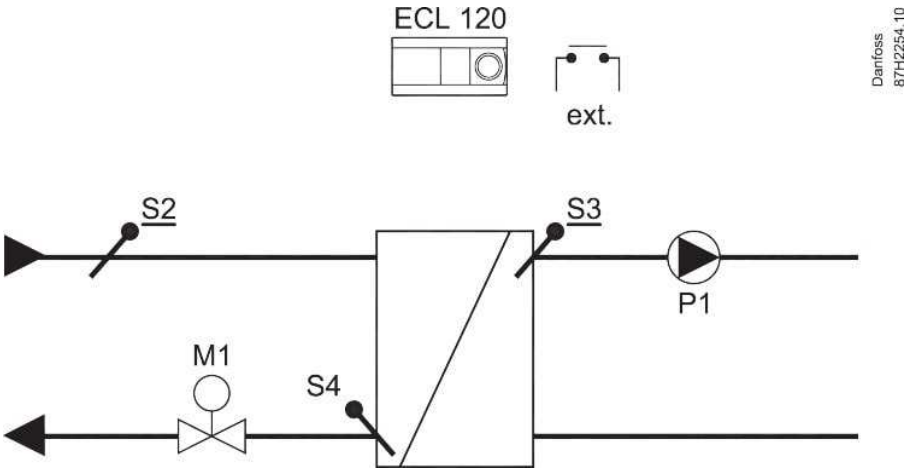
A130.1 ex. c



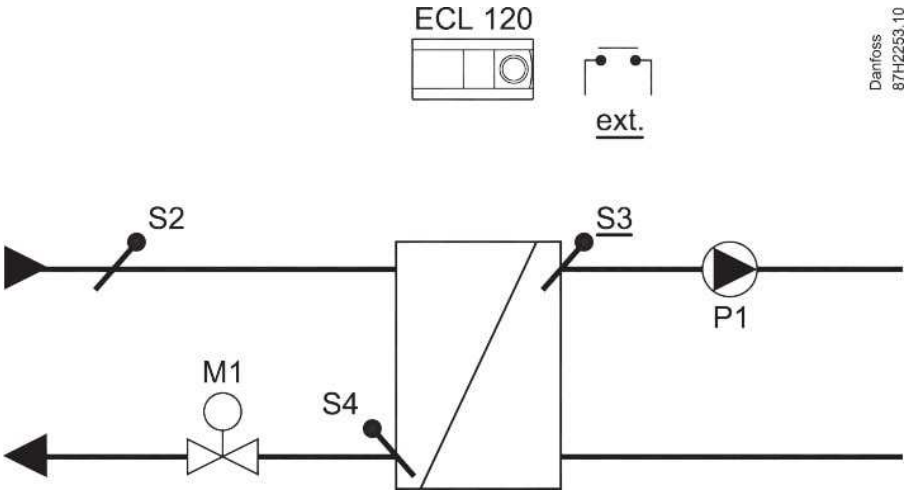
A130.2



A130.3



A130.4



Functions

Operation

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.

Product details

General data

Enclosure size	W x H x D: 144 x 96 x 63 mm
Weight	436 g
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
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
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	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 1-2,5mm2 1x on-board connector 2 terminal, 1-2,5mm2 1x spring clamp 3-terminal - 0,2-4.0 mm2 1x plug connector - screw type 5 - terminal 0,5-1,5mm2 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

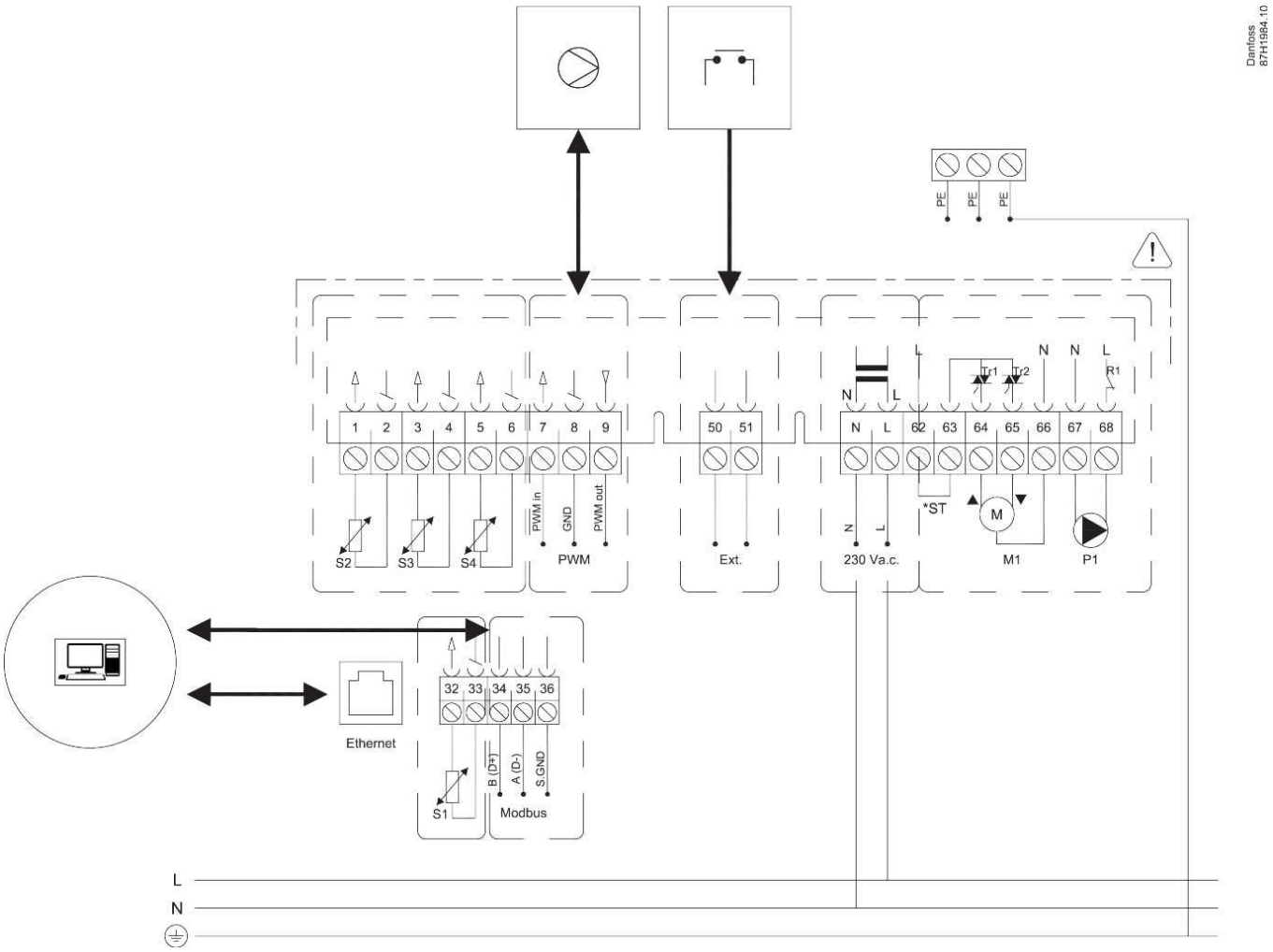
Dimensions

Enclosure size: W x H x D: 144 x 96 x 63 mm

Weight	ECL Comfort 120	
	Gross weight	0.485 kg
	Net weight	0.377 kg
	Volumne	1.99 Liter

Installation

Electrical wiring



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

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
Export Control Declaration	Electronic controllers	Danfoss	
UA Declaration	UA Controllers 2024-07-25	Danfoss	LVD
EU Declaration	Danfoss EU 100R5000.03	Danfoss	EU RoHS
Statement of Compliance	Danfoss SoC 240409EN0090101.02	Danfoss	UK PSTI

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

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

Discover the Design Center, our advanced digital platform that streamlines product selection. With integrated tools and enhanced type pages, it's simpler than ever to access product information and documentation, and to select the right products. Check the availability of Danfoss products at partner locations and enjoy seamless transitions from selection to purchase with our basket-to-basket functionality. Whether you're buying from our distributors or directly from the Product Store, the Design Center simplifies your experience. Learn more at: designcenter.danfoss.com.

The Danfoss product store

The Danfoss Product Store is a one-stop shop available 24/7 for our customers, no matter where you are in the world or what area of industry you work in. Browse our catalog, check product details and documentation, view your prices and product availability, and quickly finalize your purchase. Start browsing at: store.danfoss.com.

Danfoss Partner Portal/Product Data tool

Designed to support you with easy access to product data extracts, essential resources, tools, and information. The Partner Portal provides a centralized hub for product documentation, training materials, marketing assets, and technical support, ensuring you have everything you need to succeed and grow your business with Danfoss. The Partner Portal is available 24/7 at: partner.danfoss.com and is ready to support your business.

Find technical documentation

Find technical documentation you need to get your project up running. Get direct access to our official collection of data sheets, certificates and declarations, manuals and guides, 3D models and drawings, case stories, brochures, and much more. Start searching now at: documentation.danfoss.com.

Danfoss Learning

Danfoss Learning is a free online learning platform. It features courses and materials specifically designed to help engineers, installers, service technicians, and wholesalers better understand the products, applications industry topics, and trends that will help you do your job better. Find your local Danfoss website here: learning.danfoss.com.

Get local information and support

Local Danfoss websites are the main sources for help and information about our company and products. Find product availability, get the latest reginal news, or connect with a nearby expert - all in your own language. Find your local Danfoss website here: danfoss.com.

Danfoss A/S

Climate Solutions . danfoss.com . +45 7488 2222