P16

Hot water control

ECL Comfort
Installation and Maintenance

Table of Contents

Sections of the Installer's part of this guide.
The documentation for the ECL Comfort controller is composed of numbered sections. Only sections that are relevant to your ECL Comfort controller are included here.

Daily use, turn the guide over sections 01 - 07

VI.7B.E5.02

ECL COMFORT

ECL Comfort
User's Guide

P16

Table of Contents

Daily Use

Section

The documentation for the ECL Comfort controller is composed of numbered sections. Only sections that are relevant to your ECL Comfort controller are included here.

Installation and maintenance. Grey sections 10 and onwards. Turn the guide over.

Your personal week plan:

	Hot water	0	3	6	9	12	15	18	21	24
				5-8				18-22		
1	Monday									
2	Tuesday									
3	Wednesday									
4	Thursday									
5	Friday									
6	Saturday									
7	Sunday									

Factory settings are grey:

This guide is associated to ECL Card 087B4663

Installer:

By:

Date:

Controller mode

- *Manual operation (used only at maintenance and service)*
- *Automatic operation*
- *Constant normal temperature*
- *Constant reduced temperature*
- *Standby mode*

Arrow buttons. Move between the lines of the ECL Card.

Shifts between temperatures, changeover points etc.

Adjust temperatures and values etc.

Switches between user settings (yellow card side) and service settings (grey card side).

The ECL Card

For daily use and your personal adjustments the yellow side of the ECL Card must be facing you.

The display

Each line, A, B, C, 1, 2 etc. of the ECL Card has its own display. See section 1.

A Hot water temperature

B Heating system information

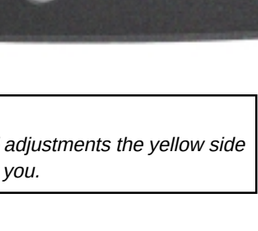
C Today's programme

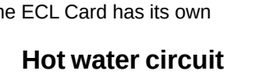
Day plans

1 2 3 4 5 6 7

Hot water circuit

Line indicator





Controller mode

- *Manual operation (used only at maintenance and service)*
- *Automatic operation*
- *Constant normal temperature*
- *Constant reduced temperature*
- *Standby mode*

Arrow buttons. Move between the lines of the ECL Card.

Shifts between temperatures, changeover points etc.

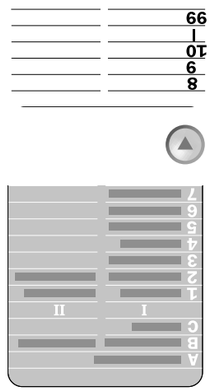
Adjust temperatures and values etc.

Switches between user settings (yellow card side) and service settings (grey card side).

For setting adjustments, turn the card so that the grey side faces you. For daily use and during start-up, the yellow side of the card must be facing you.

The ECL Card: Installer's guide

Extended service parameters, see section 31



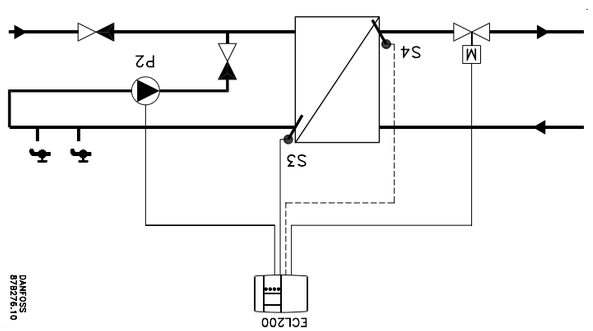
The ECL Card, grey side for installation and maintenance.

Lines A to C, and lines 1 to 7 for basic settings, see overview section 30.

Installation & maintenance

If the system you are about to install differs from the shown diagram of a standard heating system, feel free to sketch an outline for comparison. Adaptation of heating systems, see section 10.

The shown diagram is a fundamental and simplified example and does not contain all components that are necessary in heating systems.



List of components:

	ECL Comfort 200
S3	Hot water temperature sensor (ESM-)
S4	Return temperature sensor (ESM-)
P2	Circulation pump for hot water circuit
M1	Motorized valve

Before you start

Save energy - save money - improve your comfort temperature
The ECL Comfort controller is designed by Danfoss for temperature control of hot water systems.
The ECL Comfort controller ensures you of the following;

- The hot water temperature will be adjusted to your personal settings.

Sketch an outline of your hot water system
The ECL Comfort controller is designed for a wide range of hot water systems with different configurations and capacities.
If your hot water system differs from the diagrams shown in section 10, you may want to sketch an outline of the system about to be installed. This makes it easier to use the Installer's Guide, which guides you step-by-step from installation to the final adjustments before the end-user takes over.

Note!
The controller is pre-programmed with factory settings that are shown in the relevant sections of this guide.

However, you might come across some settings that are not listed in this instruction. These settings are used in connection with optional modules, and you can find a description of the settings and the corresponding parameters in the instruction for optional module in question.

Operating the ECL Controller and the ECL Card
The ECL Card has a yellow side for the daily use and a grey side for the installation and maintenance.

Select the side of the ECL Card you want to operate.
The light diode below the inserted ECL Card indicates the chosen side, ie. left light for daily use and right light for the installation and maintenance. *(See sections 15 and 16).*

Both sides of the card are divided into lines representing the different options of control and programming.

How to use this guide
This guide is divided into two parts:

- **Daily Use** (turn the guide over)
  Yellow sections 1-9

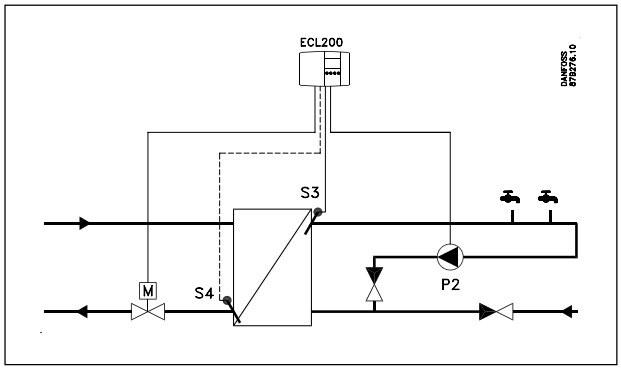
- **Installation and maintenance**:
  Grey sections 10 and onwards

VI.7B.E5.02

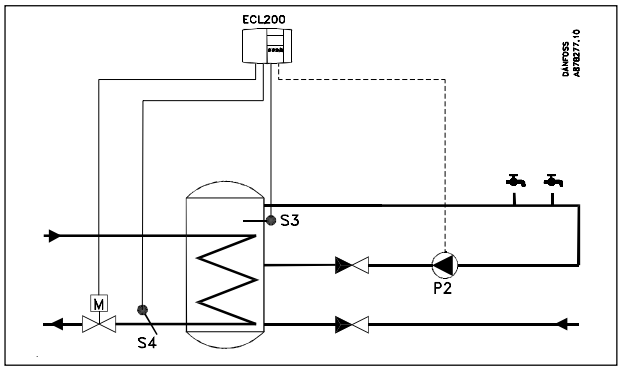
10a Identifying the system type

In this section you find the most frequently used systems. If your system is not quite as shown below, find the diagram which has the best resemblance to your system and make your own combinations.

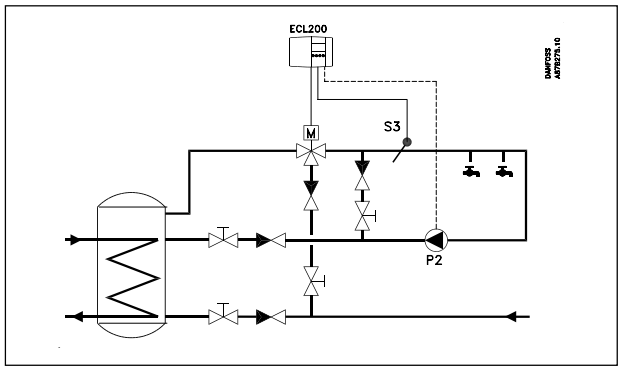
Hot water system type 1



Hot water system type 2



Hot water system type 3



Note!
System diagrams in this instruction are principal drawings and do not necessarily contain all the components for **hot water** systems.

11a Mounting the ECL Comfort controller

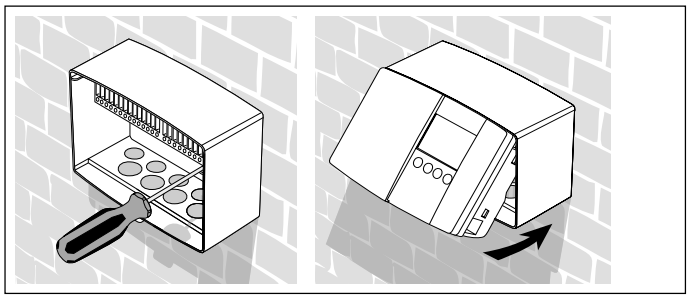
Installation

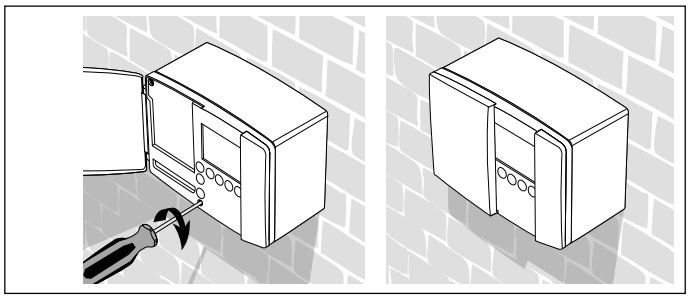
For easy access, you should mount the ECL Comfort controller near the heating unit. Select one of the three following methods:

- Mounting on a wall
- Mounting on a DIN rail
- Mounting in a panel

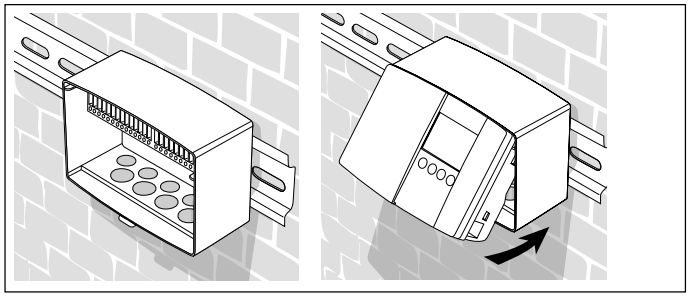
Screws and rawlplugs are not supplied.

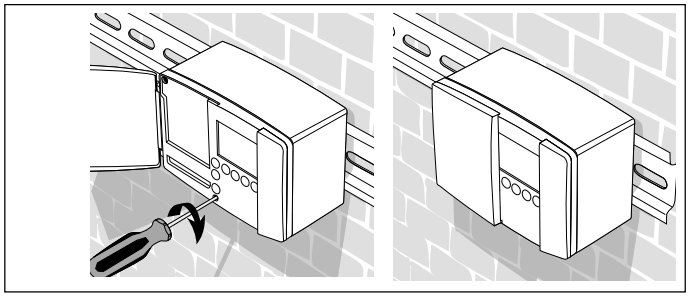
Mounting on a wall
Socket for mounting on wall: Order code No. 087B1149.
Mount the terminal box on a wall with a smooth surface. Establish the electrical connections and position the controller in the box. Secure the controller with the fixing screw.



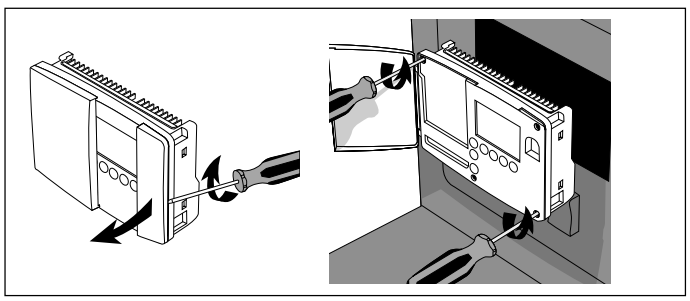


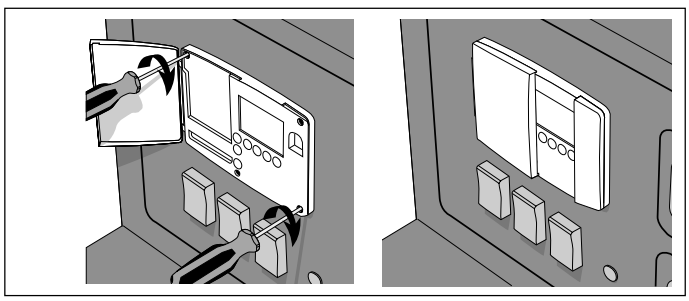
Mounting on a DIN rail
Mounting kit: Order code No. 087B1145.
A mounting kit is necessary to mount the box with the controller on a DIN rail.





Mounting in a panel
Connector set: Order code No. 087B1148.
The panel plate thickness must not exceed 3 mm.
Prepare a cut-out with the dimensions 92 x 138 mm. Pull off the right side of the lid by means of a screwdriver.
Insert the controller into the panel cut-out and fix it with the two locks which are placed diagonally in two corners of the controller.

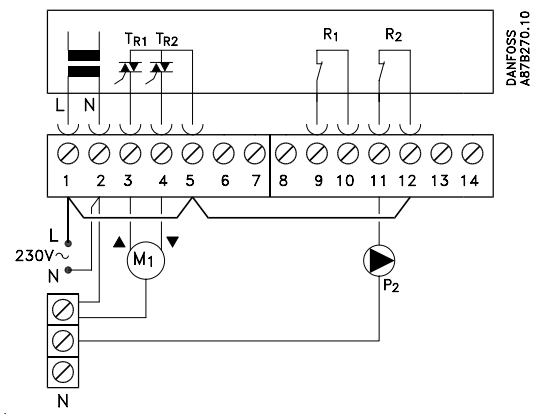




12a Electrical connections - 230 V a.c.

Installation

Connecting the 230 V a.c. units



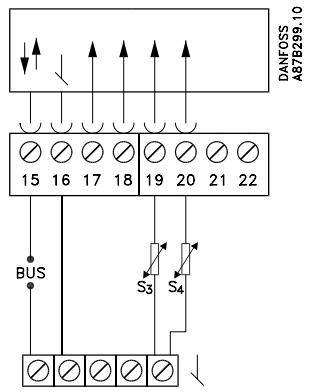
Terminal	Description	Max. load
1 L	Voltage supply 230 V a.c.	
2 N	Voltage supply 230 V a.c.	
3 M1	Gear motor - open	0.2 A 230 V a.c.
4 M1	Gear motor - close	0.2 A 230 V a.c.
5	Phase for motor exit	
11 P2	Circulation pump	4(2)A 230 V a.c.
12	Phase for pump relay R2	

Establish these jumpers:
Jumper from 1 to 5
Jumper from 5 to 12
Jumper from 2 to common N-terminal.

Cable cross section for voltage conductor: 0.75 - 1.5 mm^2
Cable length: Max. 50 m

Electrical connections
Max. 2 x 1.5 mm^2 cables can be inserted in each screw terminal.

Connecting the sensors



Terminal	Description	**Type** (recommended)
15 and 16	System device bus	
19 and 16	Hot water temperature sensor (S3)	ESMU
20 and 16	Return temperature sensor (S4)	ESMU/ ESM-11/ESMC

Establish the jumper from 16 to common terminal.

Cable cross section for sensor connections: Min. 0.4 mm^2
Total cable length: Max. 50 m (sensors and bus).

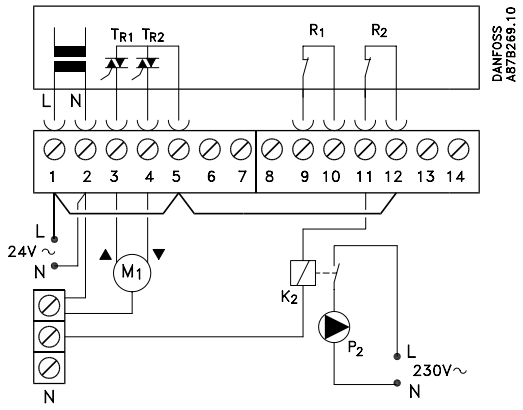
Cable type: Copper cable

NOTE! Cable lengths above 100 m may cause noise sensibility (EMC).

13a Electrical connections - 24 V a.c.

Installation

Connecting the 24 V a.c. and 230 V a.c. units



Terminal		Description	Max. load
1	L	Voltage supply 24 V a.c.	
2	N	Voltage supply 24 V a.c.	
3	M1	Gear motor - open	1 A 24 V a.c.
4	M1	Gear motor - close	1 A 24 V a.c.
5		24 V a.c. supply for motor exit	
11	K2*	Relay for circulation pump	4(2)A 24 V a.c.
12		24 V a.c. supply for relay K2	

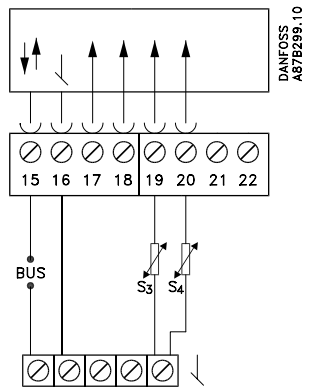
*** K2 auxiliary relay**
Coil: 24 V a.c.

Establish these jumpers:
Jumper from 1 to 5
Jumper from 5 to 12
Jumper from 2 to common N-terminal.

Cable cross section for voltage conductor: 0.75 ... 1.5 mm²
Cable length: Max. 50 m

Electrical connections
Max. 2 x 1.5 mm² cables can be inserted in each screw terminal.

Connecting the sensors



Terminal	Description	**Type** (recommended)
15 and 16	System device bus	
19 and 16	Hot water temperature sensor (S3)	ESMU
20 and 16	Return temperature sensor (S4)	ESMU/ ESM-11/ESMC

Establish the jumper from 16 to common terminal.

Cable cross section for sensor connections: Min. 0.4 mm²
Total cable length: Max. 50 m (sensors and bus).

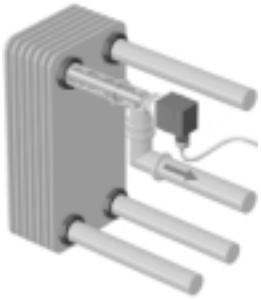
Cable type: Copper cable

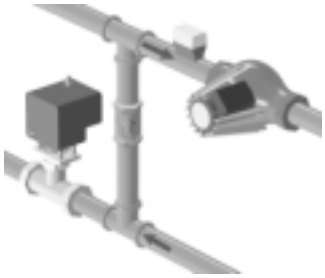
NOTE! Cable lengths above 100 m may cause noise sensibility (EMC).

14 Placing the temperature sensors

It is important that the sensors are mounted in the correct position in your hot water system.
Special attention should be paid to the following sensors:

Flow temperature sensor
(ESMU, ESM-11 or ESMC types)
Place the sensor max. 15 cm from the mixing point. In systems with heat exchanger, Danfoss recommends the ESMU-type to be inserted into the exchanger flow outlet.





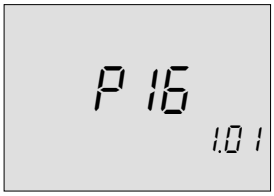
Make sure that the surface of the pipe is clean at the area where the sensor is mounted.
Do not move the sensor after it has been fastened in order to avoid damage to the sensor element.

Hot water temperature sensor
(ESMU or ESMB types)

Place the hot water sensor according to the manufacturer's specification.

Adapting the ECL Comfort controller 15

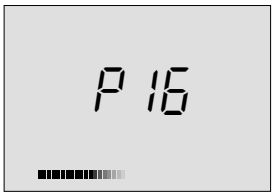
Open the lid and switch on the controller. The display shows the system type.



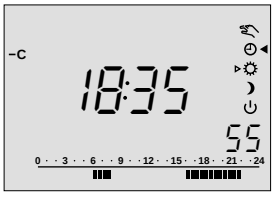
Select the hot water system type printed on your ECL Card.

Accept to set up the selection.

While the setup is in operation, the data transfer-display will appear.



After initialising, the display will return to the standard display line C of the yellow side of the ECL Card.



The controller is now ready to control the selected hot water system. You can make your own adjustments/settings in daily use and in the basic setup and change the extended service settings.

Insert the ECL Card with the grey side facing you.

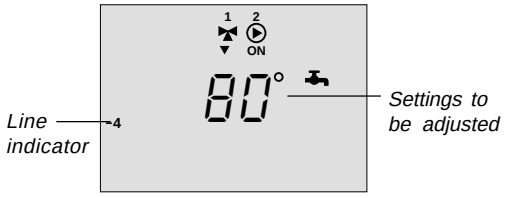
Select the grey side of the ECL Card for the basic set-up and the extended service parameters.

See section 16 for general principles of operation and section 17 for setting the time and date.

Adjusting the ECL Card settings

General principles
When the controller is connected and operating you can check and adjust all or some of the basic settings on the grey side of the ECL Card. Select the grey side of the ECL Card.

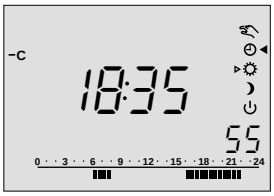
Use the arrow buttons to move from line to line of the ECL Card, for example line 4:



Use the minus/plus buttons to adjust the setting(s).

In some displays more than one setting or value can be adjusted. Use the shift button to switch between the options.

Changing from one side of the ECL Card to the other
When changing from the grey side of the ECL Card to the yellow side, you will always enter line **C** and the standard display.

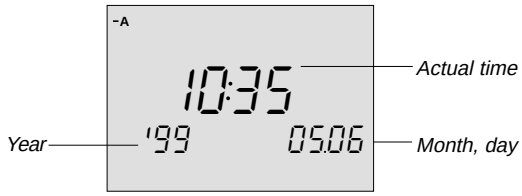


Changing from the yellow side to the grey side, you will always enter line **A - Time and date**. *See opposite page.*

If several controllers are installed in the hot water system you can write a title on the ECL Card with a permanent ink pen.

Setting the time and date - Line A

Go to line A.



Use the shift button to switch between minutes, hours, year, month and day

Set the correct time and date

In case of a power failure which lasts longer than 12 hours, the time and date have to be set again.
All other settings are stored as programmed.

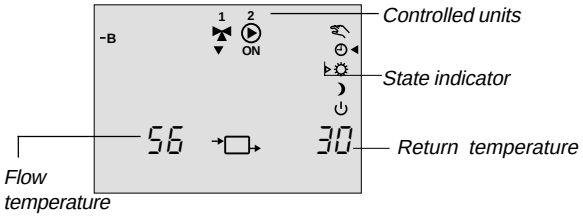
Use the yellow side of the card to enter the day plan settings.
See User's Guide, section 4.

Basic set-up

The grey side of the ECL Card.

Monitoring temperatures and system units - Line B

Go to line B.



Push the shift button to see:
- the calculated flow temperature
- the return temperature set point

The activity of the motorized valve is shown as arrows below the valve symbol. When the circulation pump is operating, is indicated as **ON** below the pump symbol.

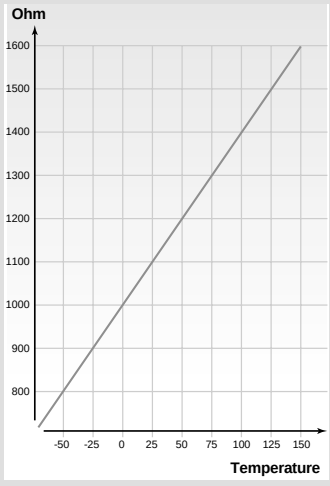
If a sensor is not mounted or is disconnected, the display will indicate it as "**- -**".

If the sensor is short -circuited, the display will indicate it as "**- - -** ".

If you are in doubt, remove the controller and check the ohmic value between the relevant terminals.

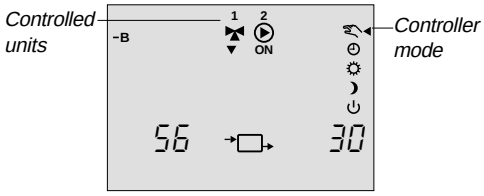
Relationship between temperature and ohmic value

-10°C	961 Ohm
0°C	1000 Ohm
10°C	1039 Ohm
20°C	1078 Ohm
30°C	1117 Ohm
40°C	1156 Ohm
50°C	1195 Ohm
60°C	1234 Ohm
70°C	1273 Ohm



Go to line B.

Shift to manual mode



Select the unit you want to control. The selected unit symbol flashes.

Valves close 1 ▼ or open 1 ▲ while the relevant button is pressed.

Pumps are switched off or on 2 ON when the relevant button is pressed.

Check the activation direction of the motorized valve either by looking at it or by feeling whether the temperature of the actual pipe changes as expected.

Shift away from manual mode

26a Setting the PI-regulation Line 4 - 7

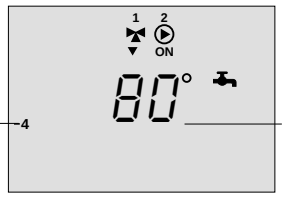
26b

Basic set-up

4 Proportional band

Setting range	*Factory setting*
1 ... 250 K	**80 K**

Go to line 4.



Line indicator

Setting to be adjusted

Set the proportional band
A higher value will result in a stable, but slow regulation of the flow temperature.

5 Integration time constant

Setting range	*Factory setting*
5 ... 999 sec.	**20 sec.**

Go to line 5.

Set a high integration time constant to obtain a slow but stable reaction to deviations.
A low integration time constant will make the controller react fast but with less stability.

6 Running time of the motorized valve

Setting range	*Factory setting*
5 ... 250 sec.	**15 sec.**

Go to line 6.

Set the running time of the motorized valve according to the example on opposite page. This is the time it takes the valve to move from closed to fully open position.

7 Neutral zone

Setting range	*Factory setting*
0 ... 9 K	**3 K**

Go to line 7.

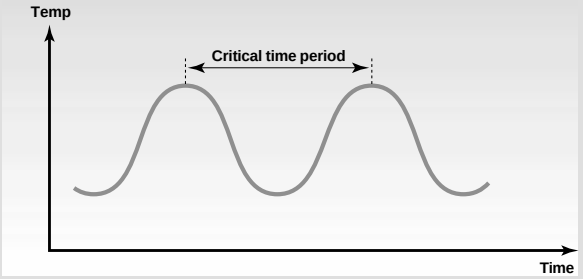
Set the neutral zone to a high value if you can accept a large variation in flow temperature. When the actual flow temperature lies within the neutral zone, the controller does not activate the motorized valve.

Note! The valve is symmetrical around the flow reference value.

The grey side of the ECL Card.

If you want to tune the PI-regulation precisely, you can use the following method:

- Set the integration time (line 5) to its max. value (999 sec.).
- Decrease the value for the proportional band (Line 4) until the system starts hunting with a constant amplitude (it might be necessary to force the system by setting an extreme value).
- Find the critical time period on the temperature recording or use a stop watch.



This time period will be characteristic for the system, and you can evaluate the settings from this critical period.

Integration time = 0.85 x critical time period
Proportional band = 2.2 x proportional band value in the critical time period.

If the regulation seems to be too slow, you can decrease the proportional band value by 10%.

Note! Make sure there is a consumption when you set the parameters.

How to calculate the running time of the motorized valve

Valve type	Valve stroke (mm)	Actuator type	Actuator speed (sec./mm)	Running time (sec.)
VS2 15	3.0	AMV 100	90	**270**
VS2 15...25, VM2 15...25, VB2 15...20	5.0	AMV(E) 10, 20	15	**75**
VS2 15...25, VM2 15...25, VB2 15...20	5.0	AMV(E) 30	3	**15**
VM2 32, VB2 25	7.0	AMV(E) 20	15	**105**
VM2 32, VB2 25	7.0	AMV(E) 30	3	**21**

The running time of the motorized valve is calculated using the following methods:

Seated Valves
Running time = Valve stroke (mm) x actuator speed (sec/mm)
Example: 5.0 mm x 15 sec/mm = 75 sec.

Rotating Valves
Running time = Turning degrees x actuator speed (sec/degr.)
Example: 90 degrees x 2 = 180 sec.

Check list

Is the ECL Comfort controller ready for use?

- ☐ Make sure that the power supply is connected to terminals 1 (Live) and 2 (Neutral).
  See section 12 or 13.
- ☐ Check that valves and pumps are connected to the correct terminals.
  See section 12 or 13.
- ☐ Check that all sensors are connected to the correct terminals.
- ☐ Mount the controller, and switch on the power.
- ☐ Insert the ECL Card with the yellow side facing you and press ⏻, if necessary.
- ☐ Select manual operation in the controller mode.
  See section 2 *in the User's Guide.*
- ☐ Check that the temperatures shown in display A and B match the actual sensors.
  See section 1 *in the User's Guide.*

Adapting the ECL Comfort controller to the hot water system

- ☐ Turn the ECL Card so that the grey side faces you.
- ☐ Select basic setup and extended service settings. See section 16.
- ☐ Set the time and date (Line A)
  See section 17.
- ☐ Check all settings referring to the grey side of the ECL Card.
  See section 26.
- ☐ If your hot water system differs from the diagram shown on the overleaf of the cover, you should check and perhaps alter the service parameters. Please pay special attention to line 35 and 36.

A Time and date See sections 16 & 17

B System information See sections 18 & 19

Setting range	*Factory setting*	*Your settings*

4

Proportional band

1 ... 250 K — 80 K

Set the PI-regulation, see section 26.

5

Integration time constant

5 ... 999 sec. — 20 sec.

Set the PI-regulation, see section 26.

6

Running time of the motorized valve

5 ... 250 sec. — 15 sec.

Set the PI-regulation, see section 26.

7

Neutral zone

0 ... 9 K — 3 K

Set the PI-regulation, see section 26.

Grey ECL Card lines 10-199

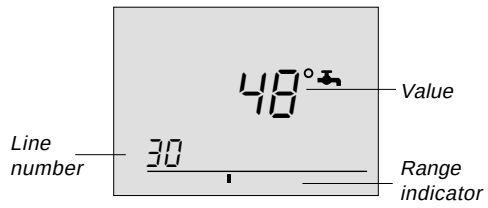
Line	*Setting range*	*Factory setting*	*Your setting*
30	Limitation of return temperature **10 ... 110 °C**	**50 °C**	
35	Return temperature influence - max. **+/- 0 ... 9.9**	**-2**	
36	Return temperature influence - min. **+/- 0 ... 9.9**	**0**	
37	Adaptive function of return limitation **OFF / 1 ... 50**	**25**	
141	Override input selection **OFF/1 ... 4**	**OFF**	
174	Motor protection **OFF/10...59 min.**	**OFF**	
196	Service pin LON **ON/OFF**	**OFF**	
197	LON reset **ON/OFF**	**ON**	
198	Summer time change **ON/OFF**	**ON**	
199	Slave address **0 ... 9**	**0**	

Control & overviews

32a Adjusting the service parameters

In addition to the settings in line 1 to 7 on the grey side of the ECL Card, there is an extended service menu from line 10 and onwards.

Push repeatedly to reach the lines numbered 10 and onwards.



Now you can move to any line of your choice.

Set the parameter value.

When you have entered all your personal settings, turn the ECL Card over so that the yellow side faces you.

Select daily use settings

Service parameter 30 32b

30 Return temperature limitation	
Setting range	*Factory setting*
10 ... 110 °C	**50 °C**
Set which return temperature you accept for the hot water circuit.	

Set the acceptable return temperature value.

When the limit of the return temperature is exceeded, the controller automatically changes the flow temperature reference to obtain a set reference to the required return temperature. The factors for the definite function of the return limiter are set in lines 35 and 36.

Extended service

32c Service parameter 35

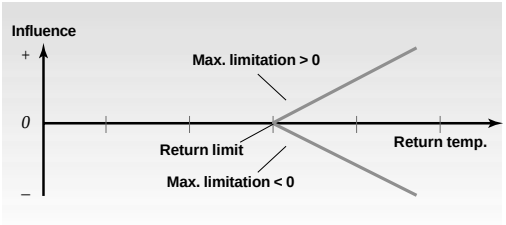
35 Return temperature influence - max. limitation	
Setting range	*Factory setting*
+/- 0 ... 9.9	**-2**
How much the flow temperature reference should be influenced.	

Set the influence of the max. return temperature limitation.

If the displayed value does not equal 0, the function prevents the return temperature from getting above the setting in line 30.

Influence higher than 0: The reference value for the flow temperature is increased when the return temperature gets above the setting in line 30.

Influence lower than 0: The reference value for the flow temperature is decreased when the return temperature gets above the setting in line 30.



Example
The return limit is set to 50 degrees
The influence is set to -2
The actual return temperature is 2 degrees too high
Result:
The flow temperature is changed by 2 x - 2 = -4 degrees

The setting in line 35 is normally smaller than 0 in district heating systems and 0 in boiler systems.
The setting in line 36 is normally 0 in district heating systems and less than 0 in boiler systems.
With a normal return limitation you have to set a 0 in either line 35 or 36.

Service parameters 36-37 32d

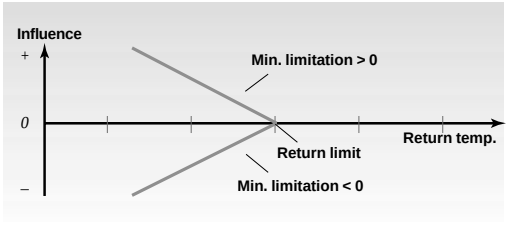
36 Return temperature influence - min. limitation	
Setting range	*Factory setting*
+/- 0 ... 9.9	**0**
How much the flow temperature reference should be influenced.	

Set the influence of the min. return temperature limitation.

If the displayed value does not equal 0, the function prevents the return temperature from getting below the setting in line 30.

Influence higher than 0: The reference for the flow temperature is increased, when the return temperature gets below the setting in line 30.

Influence lower than 0: The reference for the flow temperature is decreased, when the return temperature gets below the setting in line 30.



Example
The return limit is set to 50 degrees
The influence is set to 2
The actual return temperature is 2 degrees too low
Result:
The flow temperature is changed by 2 x 2 = 4 degrees

37 Adaptive function of return limitation	
Setting range	*Factory setting*
OFF / 1 ... 50	**25**
Controls how fast the return temperature adapts to the desired temperature.	

Adjust the adaptive function of the return limiter. The setting will eliminate the difference between the required and actual return temperature.

- **0FF:** The flow temperature reference will not be adjusted.
- **1:** The flow temperature reference will be adjusted quickly.
- **50:** The flow temperature reference will be adjusted slowly.

Extended service

Extended service

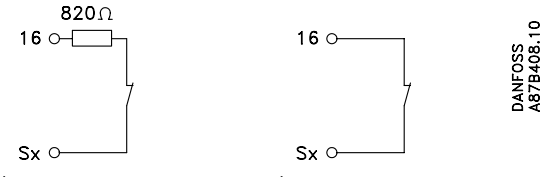
141 Override input selection		
Circuit	*Setting range*	*Factory setting*
I	**OFF/1 ... 4**	**OFF/OFF**

Choose a free sensor input for the override of circuit I.

OFF: The controller is not overridden.

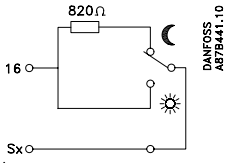
1 ... 4: Select a free sensor input S1... S4 for the override of the circuit in question.

Connection example without ECA 9010



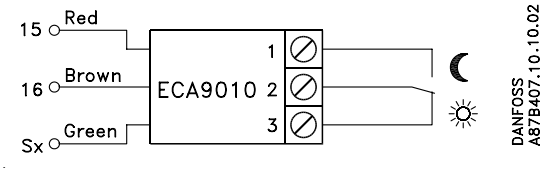
Closed switch:
Reduced temperature

Closed switch:
Comfort temperature



Changeover switch:
Reduced or comfort temperature

Connection example with ECA 9010



1 and 2 closed:
Reduced temperature

2 and 3 closed:
Comfort temperature

Note:
To avoid contact resistance, the use of the override module ECA 9010 is recommended.

For an active override, you have to choose the mode "automatic operation"!

174 Motor protection		
Circuit	*Setting range*	*Factory setting*
I	**OFF/10...59 min.**	**OFF**

Prevents the acutator from hunting when there is no tapping, i.e. when the load is due to the hot water circulation. This stabilization increases the lifetime of the involved components.

Set the motor protection function to be on or off:

OFF: Motor protection is turned off

10...59: Motor protection is turned on. When tapping motor protection is automatically disabled and will be reactivated when hunting is detected again.
The disabling period can be set to 10-59 minutes.
A high value should be used for installations with many consumers and vice versa.

32g Service parameters 196-199

196 Service pin - LON	
Setting range	*Factory setting*
ON/OFF	**OFF**

This setting is only used in connection with communication (see the documentation for the used communication unit).

197 LON reset	
Setting range	*Factory setting*
ON/OFF	**ON**

This setting is only used in connection with communication (see the documentation for the used communication unit).

198 Summer time change	
Setting range	*Factory setting*
ON/OFF	**ON**

Here you choose whether you want the change to summer-/ winter time to be automatic or manual.

Set the time-change function to be on or off:

⊕ **ON:** The controller's built-in clock automatically changes +/- one hour on the standardised days for daylight saving time changeover in Central Europe.

⊖ **OFF:** You change manually between summer and winter time by setting the clock one hour backward or forward.

199 Slave address	
Setting range	*Factory setting*
0 ... 9	**0**

Assign addresses to the slaves.

If the controller is a part of a large system with several controllers, it can be connected via the same bus as a slave. Information is sent via the bus.

⊖ ⊕ **0:** The controller is a single controller or it is a slave. A slave controller receives information about the system time via the bus.

1 ... 9: The controller is a slave with an address and can send information about the desired temperature reference to the master as well as receive information about the system time via the bus.

7a Definitions 7b

Actual flow temperature
Temperature measured in the flow at any time.

Comfort period
Period of the day for which comfort temperature has been selected.

Comfort temperature
Temperature maintained in the hot water circuit during comfort periods, e.g. normally during daytime.

Controller mode indicator
Black arrow to the right of the symbols indicating the present mode selected.

Day plan
Schedule for different periods with comfort and reduced temperatures. The day plan can be made individually for each day and may consist of up to 3 comfort periods per day.

Factory settings
Settings stored in the ECL Controller to simplify the first set-up of your controller.

Function selector
Facility making it possible to override the mode of the controller.

Pt 1000 Ohm sensor
All sensors used for the ECL Comfort controller are based on the Pt 1000 Ohm type. The resistance is 1000 Ohm at 0 degrees, and it changes with 3.9 Ohm/degree.

Reduced temperature
Temperature maintained in the hot water circuit during setback periods.

Return temperature
Temperature measured in the return pipe.

State indicator
White arrow to the left of the symbols in the controller mode. The white arrow indicates the present state (comfort or reduced temperature period) when the controller is in automatic mode (the clock symbol).

Time bar
Bars representing periods with comfort temperature. The bar is divided into half-hour sections.

Time line
Bar with numbers representing the hours in the lower part of the display.

Hot points 6

The time shown in the display is one hour off?
If the time shown is one hour off, the automatic summer time changeover may work incorrectly.
Set the summer time change in line 198 to off.
See Extended Service in the Installer's Guide.

The time shown in the display is not correct?
The internal clock may have been reset, if there has been a power break for more than 12 hours.
Set the time and date.
See section 17 in the Installer's Guide.

The temperature is unstable?
Check that the flow temperature sensor is mounted correctly and in the right place. Adjust the control parameters.
See section 26 in the Installer's Guide.

How to add an extra comfort period?
You can make an additional comfort period by pushing the shift and **+** buttons at the same time.
See section 4 of the User's Guide.

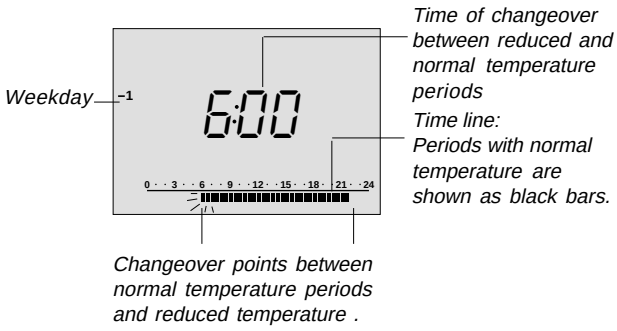
How to remove a comfort period?
You can remove a comfort period by pushing the shift and - buttons at the same time, and hold for two seconds.
See section 4 of the User's Guide.

4a Set personal day plan

Open the lid and make sure that the yellow side of the ECL Card faces you.

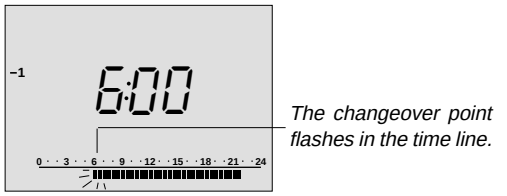
Monitor the current day plans

Select between lines 1 - 7 to see your individual day plans.



Change normal temperature period

Select the appropriate line/day.



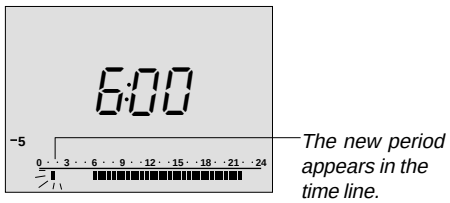
Adjust the first flashing changeover point if required. The end of the bar moves, extending or reducing the normal temperature period.

Shift to the next changeover point and adjust accordingly.

4b

Add an extra normal temperature period

Push the shift and **+** buttons at the same time.



Adjust the changeover time forward or backward.

Remove a normal temperature period

Push the shift and **-** buttons at the same time for 2 seconds.

2 seconds

Cancel changes in your personal settings

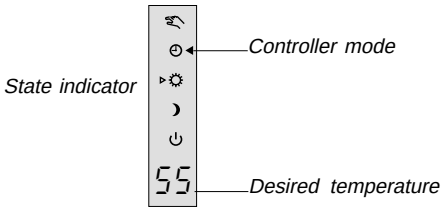
Push the **-** and **+** buttons at the same time for 2 seconds to restore the factory settings.

2 seconds

Adjust hot water temperature

Start with display A or C (actual temperature):

⊖ ⊕ Adjust the desired hot water temperature



Depending on the day plan, you want to adjust either the normal temperature or the reduced temperature.
The state indicator will always show you the mode of the controller during automatic operation.
To adjust the reduced temperature while the day plan is in comfort mode,

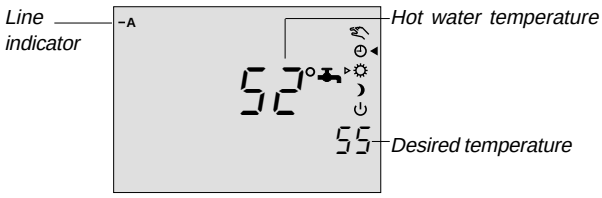
Push and keep pressed

⊖ ⊕ Adjust the reduced temperature

1 Choose your favourite display

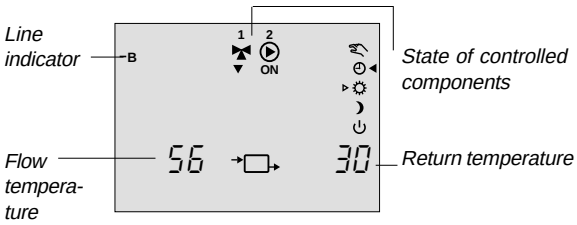
Select which display - A, B, or C - you want to look at during daily operation.

Hot water temperature - display A



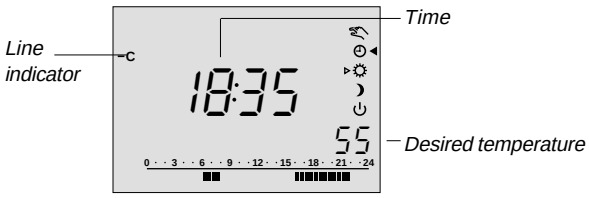
Choose this display to monitor the hot water temperature.

System information - display B



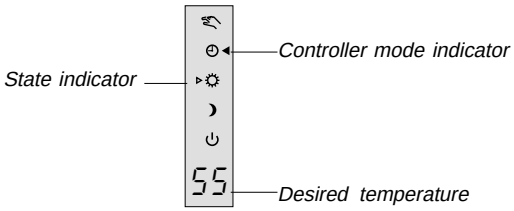
Choose this display if you want an overview of the permanent state of the technical operations of your system.

Today's schedule - display C - default



Choose this display if you prefer a permanent overview of the schedule for today's operations.

Select controller mode 2



Function selector. Push to change the mode of the controller.
The controller mode indicator shows which of the 5 controller modes you have selected.

The white state indicator shows the actual mode, i.e. comfort or reduced temperature during automatic operation.

What do the symbols mean?

Manual operation. Used only at maintenance and service.
Note! The system protection against frost is switched off when this mode is selected.

Automatic operation. This is the normal mode. The temperature is controlled according to your day plan with automatic changeover to/from comfort and reduced temperature periods.

Constant comfort temperature. The day plan is not in operation. Used for events where extended periods with comfort temperature are desired.

Constantly reduced temperature. The day plan is not in operation. Use this mode when you are away on holiday etc.

Standby. Hot water service is off. The system is protected against frost.

Save energy - save money -improve your comfort temperature

The ECL Comfort controller is designed by Danfoss for the automatic temperature control of hot water systems.
The advantages of the ECL Comfort controller system are based on the security of your hot-water control and the optimum use of energy resources.

Operating the ECL Comfort controller
When operating the controller it is advisable to keep the lid open in order to view the entire display.
During operation the ECL Card must be inserted with the yellow side facing you.
The ECL Card is divided into lines that represent the different control and programming options for the circuit. Each line is shown in the display of the controller which gives you an instant overview of the operation, settings etc.

Select daily use settings to adjust settings on the yellow side of the card.

How to use the ECL Guide
This guide provides you with an easy instruction for the ECL Comfort controller.
The Installer's Guide, the grey section (turn the guide over), section 10 to 32, contains the complete list of factory settings and the various detailed adjustments which altogether ensure an efficient and continual operation of your hot water system.
This guide contains no page numbers. Use the Table of Contents to find the number of the section you wish to read.