DSA 2 MAXI
User Guide

Danfoss District Energy
Our business is trust
Disposal instruction:
This product should be dismantled and its components sorted, if possible, in various groups before recycling or disposal.
Always follow the local disposal regulations.
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2.0 Basics

2.1 Safety notes

Read the instructions carefully before installation and start-up of the substation. Danfoss does not bear responsibility for whichever damages of device, which have not been mounted or stored in accordance with following instructions.

To avoid injury of persons and damages to the device, it is absolutely necessary to carefully read and observe these instructions.

Necessary assembly, start-up and maintenance work must be performed only by qualified and authorized personnel.

![Warning of hot surface]

The substation has got hot surfaces which can cause skin burns. Please be extremely cautious in close proximity of the substation.

![Warning of high pressure and temperature]

The maximum temperature and pressure always have to be checked on the product data label attached to the product. Be aware of the installation’s permissible system pressure and temperature. The risk of persons getting injured and equipment being damaged increases considerably if the recommended permissible operating parameters are exceeded.

The substation installation is equipped with safety valves which must always be mounted in accordance with local regulations.

2.2 For the user of the substation

Necessary assembly, start-up and maintenance work is to be done only by qualified personnel. Once the substation is installed and running there is usually no need to change settings or other functions. The district heating substation is very reliable and easy-to-use equipment.

If necessary, you can change settings in the controller. The most often used settings are found in this User Guide. In the Installation Guide and in the instruction for the controller you can find more detailed information and instructions how to use the controller.

By regularly observing functioning of the substation it is possible to notice failures and this way prevent bigger faults to build up. If facing failures in function please check the Troubleshooting section (chapter 6.0) in the Installation Guide to check possible ways to deal with the situation.

It is necessary to check and maintain the substation on regular basis in order to keep it in good operating condition. Please refer to Maintenance section in this User guide for service instructions.
2.3 General about district heating substations

The heating system of the property is connected to the district heating network with the substation. Hot district heating water runs through the heat exchangers in the substation. District heating water does not enter the internal network, just heat is transferred through the heat exchangers. The substation distributes heat into the heating and domestic hot water circuits.

All substation functions are controlled with an electronic controller. The outdoor temperature is measured and the controller adjusts flow temperature to keep the room and domestic hot water temperatures on the desired level. Property related settings can be changed with the controllers (e.g. heating curve), temperatures can be checked, settings can be changed, schedules can be created etc.

2.4 Overview of DSA 2 MAXI

1. All substation functions are controlled and the operational values are observed with the **electronic controller**.

2. **Dial**: navigation in the menus and changes in the operating values by following the controller display.

3. **Display**: all settings, temperature information and mode are found on the graphical display. Navigation in the menus and changes in the settings are done following the display.

4. **The cover panels** protect the components in the substation and add user safety. When installing or servicing the cover panels have to be removed. Instructions for the cover panel removal can be found in the Service section.
2.5 Controller

2.5.1 Description
The ECL Comfort electronic weather compensated temperature controllers are for use in district heating, central heating and cooling systems.

Energy savings are facilitated by weather compensation, adjustment of temperature according to schedule, optimization as well as limitation of return temperature flow and power. Functionalities such as data logging and alarm functions are implemented in the controller.

2.5.2 Using the controller
The graphical display shows all temperature values, status information and is used for the setting of control parameters. Navigation, browsing and selecting the current item in the menus is done by turning and pushing the dial.

2.5.3 Controller display and symbols

- \(1\) = Heating circuit
- \(\) = DHW circuit
- \(\) = Common controller settings
- \(\) = Scheduled mode
- \(\) = Comfort mode
- \(\) = Saving mode
- \(\) = Frost protection mode
- Desired room temperature
- Date
- Time
- Outdoor temperature
- Schedule
- Menus with values and settings
- Position indicator for navigation
- Display selection
### 2.5.4 Setting the room temperature

If the room temperature feels too warm or too cool, the fastest and easiest way to affect it, is to do changes on the desired room temperature.

1. Move the position indicator to the room temperature by turning the dial. Activate the temperature by pushing the dial in the middle.

2. When the rectangle appears around temperature value it is possible to raise or lower temperature by turning the dial either to right or left. When you reach the desired temperature, accept it by pushing the dial in the middle.

By doing changes on the heat curve you will get more possibilities in controlling the room temperature. The heat curve setting is described in the Installation Guide (chapter 5.9.4 Setting the heat curve).
### 2.5.5 Changing your favourite display

It might be necessary to change your favourite display when doing maintenance work.

1. Move the position indicator to display selection symbol by turning the dial. Activate the symbol by pushing the dial in the middle.

2. When the rectangle appears around the symbol it is possible to change the display by turning the dial to the right.

3. Accept the chosen display by pushing the dial in the middle.
3.0 Maintenance

Basic display with actual and desired temperatures, pressure, alarms and a possibility for manual use (Installation Guide chapter 5.9.6 Manual Control).

If the dial has not been activated, the controller will after 20 min. revert to the favourite display.

More controller settings for the DSA 2 MAXI substation can be found in the Installation Guide and in the instructions for the controller.

3.1 Service

It is necessary to check and maintain the substation on regular basis in order to keep it in good operating condition. It is important to notice possible leaks as early as possible. General overview of the equipment should take place at least twice a year (before and after the heating season). More accurate service should take place once a year by authorized personnel.

Always use authorized service personnel when the equipment needs service. Concerning maintenance and warranty issues please contact your local Danfoss Sales Company.

Removing the cover panels before service

The panels are removed by lifting them up.
1. First remove the white panels from the front and back.
2. After that lift the grey panels.

The panels are placed back in the opposite order when compared with taking them away.

At least following points should be observed before and after the heating season:

<table>
<thead>
<tr>
<th>✔</th>
<th>Check points, maintenance inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No leakages.</td>
</tr>
<tr>
<td></td>
<td>Pressure on the secondary has to be according to design.</td>
</tr>
<tr>
<td></td>
<td>Extraordinary noises.</td>
</tr>
</tbody>
</table>
3.0 Maintenance

In the problematic situations check the Troubleshooting section (chapter 6.0) in the Installation Guide. It includes some most common problems, explanations and instructions what to do.

At least following points have to be inspected once a year by authorized personnel:

<table>
<thead>
<tr>
<th>Check points, service inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean the strainer if necessary.</td>
</tr>
<tr>
<td>Check supply and return temperatures.</td>
</tr>
<tr>
<td>Check the parameters of the controller.</td>
</tr>
<tr>
<td>Check pressure drops in the heat exchangers.</td>
</tr>
<tr>
<td>Cooling of district heating water should comply with requirements given by the local DH Company.</td>
</tr>
<tr>
<td>Measure pre-pressure in the expansion vessel.</td>
</tr>
<tr>
<td>Check that the operating point of the pump stays within allowed area on the pump curve.</td>
</tr>
</tbody>
</table>

3.2 Alarm

As a sign of an alarm symbol appears on the display. The description of alarm settings can be found in the Installation Guide, chapter 5.9.9 Alarm. The cause for the alarm can be found in the Alarm overview menu.

1. ![Diagram 1]

2. ![Diagram 2]

3. ![Diagram 3]

4. ![Diagram 4]
3.2.1 Pressure alarm
The limits for the pressure alarm are controller settings (Installation guide, chapter 5.9.9 Alarm). If pressure rises over or goes below the alarm settings the alarm symbol appears on the display.

1. Example: Low pressure alarm, actual pressure on the display 0.7 bar while lower limit is 0.8 bar.

2. Example: High pressure alarm, actual pressure on the display 2.4 bar while higher limit is 2.3 bar.

3. The limits for the pressure alarm can be found in alarm settings (Installation Guide, chapter 5.9.9 Alarm).

3.2.2 Pump alarm
Pump alarm indicates that the pump is overloaded for some reason. Alarm does not disappear from the display until the function of the pump is back to normal.

1. Alarm display.
2. Pump alarm settings

<table>
<thead>
<tr>
<th>Example pumps</th>
<th>Normal Digital value</th>
<th>Alarm Digital value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilo</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Grundfos</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
3.0 Maintenance

3.2.3 Maximum flow temperature alarm
Temperature limiting function causes an alarm when flow temperature rises over the maximum limit and exceeds the reaction time. As a result the controller shuts down the pump. As a sign of an alarm symbol 📣 appears on the display.

In a radiator heating system max. limit is e.g. 90 °C and in a floor-heating system e.g. 50 °C.

1 Alarm display.
Flow temperature (example display, 95 °C) exceeds maximum temperature limit (example setting 90 °C).

2 Max. flow temperature limit settings can be found in the Installation Guide (chapter 5.9.9 Alarm).

Flow temperature limiting thermostatic function controls the pump shut down and the control valve closing functions. In case when flow temperature rises above the maximum limit and exceeds reaction time, the controller stops the pump and closes the control valve.

The pump restarts immediately after flow temperature drops below the set max. temperature limit. If temperature does not drop below the limit, the controller starts the pump after 26 minutes delay time. After that the pump shuts down again if temperature has not sunk.

![Alarm display](image1.png)

![Max. flow temperature limit settings](image2.png)
3.0 Maintenance

3.3 General warranty conditions

Danfoss Poland Sp. z o.o.

General Warranty Conditions

1) Scope of application and warranty provider
This warranty shall apply to Danfoss Poland Sp. z o.o. heating substations and heat exchangers that are supplied by Danfoss Poland Sp. z o.o., for district heating use.

2) Warranty period
This warranty shall be in force, as follows:
- Heating substation components 12 months from the initialization or 18 months from the delivery date, whichever period concludes earlier
- Pipework parts and connectors 12 months from the initialization or 18 months from the delivery date, whichever period concludes earlier
- Heat exchangers 12 months from the initialization or 18 months from the delivery date, whichever period concludes earlier
A change of ownership causing transfer of goods for continued use will not terminate this warranty. Product which has been repaired or replaced is not granted the new or extended warranty.

3) Scope of warranty
The guarantee covers the new component but not the costs for the assembly of the component. Danfoss Poland Sp. z o.o. shall not be responsible for faults in cases where, as can be proven, the good’s deteriorated quality or non-conforming applicability is obviously due to:
- Careless or faulty installation or repair work (such as insufficient pipe work supports, the wrong operating environment)
- Exceeding the maximum pressure level (pressure shocks)
- External stress (temperature, mechanical stress, etc.)
- Poor circulation water quality (does not fill the national requirements)

4) Reporting faults
The buyer shall report any faults to Danfoss Poland Sp. z o.o. within 14 days from the date on which they had, or should have, detected the fault in question.

5) Correcting faults
In cases where the fault in question is covered by the warranty defined in these conditions, Danfoss Poland Sp. z o.o. shall be obliged to correct the fault by delivering flawless goods within a reasonable period of time once a fault report has been received. The liability of Danfoss Poland Sp. z o.o. is limited and does not cover the indirect costs and damages.

6) Settling disputes
The Buyer shall be entitled to submit a warranty condition dispute to the Polish Arbitral Tribunal for settlement. All disputes will be handled in English.

Please refer to Danfoss General Sales Conditions in details about sales process