



Smart Electricity price control

CTC EcoLogic L/M, CTC EcoPart i600M, CTC EcoPart 400 Pro, CTC EcoZenith i255/i360/i555 Pro, CTC EcoVent i360F, CTC EcoHeat 400, CTC GS/GSi 600



1. Smart electricity price control via myUplink

By connecting the myUplink mobile app to the heat pump, spot prices from the regional electricity exchange can be continuously downloaded to the heat pump.

In the display, the three price categories "High", "Medium" and "Low" can be defined.

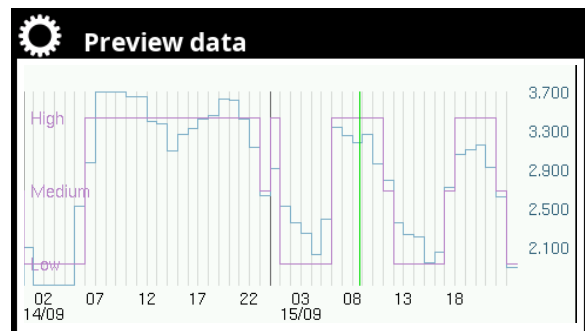
When the spot price is above the limit value defined as "High", the function "SmartGrid Blocking" is activated for the subsystems where the function has been set (menu "Settings").

When the price is below the limit value "Low", the function "SmartGrid Low price" is activated for the subsystems where the function has been set.

The "SmartGrid Overcapacity" function is not used for electricity price control.

NOTE!

To get correct electricity spot prices, the country where the plant is installed must first be selected.



Menu "Installer/Settings/Communication/El.prices/Preview".



1.1 Country setting

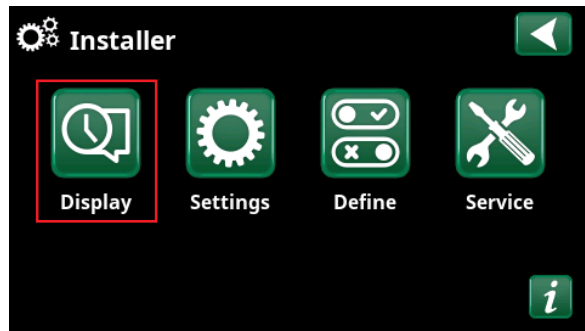
Click on the "Country" symbol in the "Installer/Display" menu to display selectable countries and regions. The country that is displayed (highlighted in green) depends on which language has been selected.

"English" is the default language setting, which means that "GB United Kingdom of Great Britain and Northern Ireland" is the default country setting.

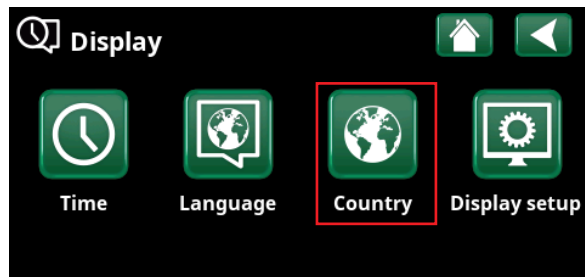
Select the country where the plant is installed to get correct spot prices.

Depending on which country is selected, product-specific factory settings may vary.

If "Country" is not selected, the message "Country not set" is displayed in the settings menu for Electricity price.



Menu "Installer".



Menu "Installer/Display".



Menu "Installer/Display/Country".

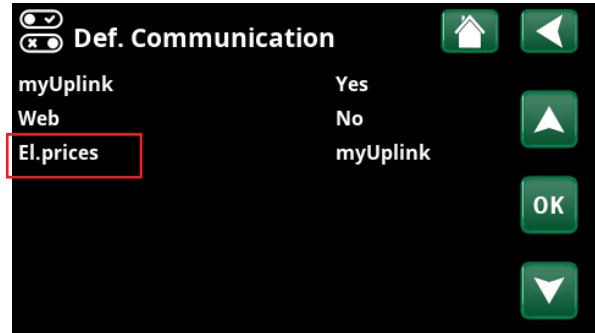


1.2 Def. Communication

First define "El.prices" in the menu "Installer/Define/Communication".

El.prices **myUplink/myUplink ext./BMS/No**

- Select "myUplink" to connect the heat pump to the myUplink mobile app for electricity price control.
- Select "myUplink ext." to connect via myUplink to an external price control app. This option is not available at the moment.
- Select "BMS" where control signals are transmitted via the BMS interface.



Menu "Installer/Define/Communication".



1.3 Settings Communication

Select "El.prices: myUplink" in the menu "Def. Communication".

Select "Price control": "On".

Regions **SE01/SE02/SE03/SE04**

Click on "Regions". If "Regions" are defined for the selected country, price regions are shown here. Otherwise, the text "No regions available" is displayed. In this example, Swedish price regions are displayed.

Dynamic **Yes/No**

"Yes" means that the electricity prices are calculated according to price algorithms that define the price categories ("High", "Medium" and "Low").

Click on "Preview" to display a graph with calculated electricity prices over the selected time interval ("Days in calculation").

The graph can also be displayed by clicking on the "El. prices icon" in the "Operation" main menu (see section "Operation").

Limit value high

Set the limit value above which the electricity price is defined as "High" (in the example the limit value is SEK 3.50). Can be used together with dynamic price calculation.

Prices defined as "High" activate the "SmartGrid Blocking" function.

Limit value low

Set the limit value below which the electricity price is defined as "Low" (in the example the limit value is SEK 1.50). Can be used together with dynamic price calculation.

Prices defined as "Low" activate the "SmartGrid Low price" function.

Default **High/Medium/Low**

Select price category if the prices cannot be retrieved.

Days in calculation **2...10**

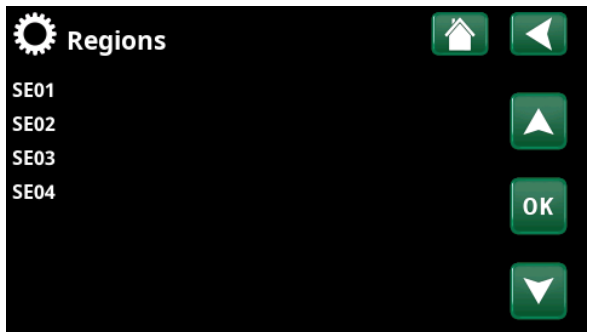
Select the number of days on which the dynamic calculation of the electricity price will be based. Since the dynamic calculation is based on the average price per day, more days in calculation result in a more stable and reliable value.

Preview

Click on "Preview" to graphically show electricity prices during the selected period.



Menu "Installer/Settings/Communication/El.prices" when selecting "Installer/Define/Communication/myUplink:Yes".



Menu "Installer/Settings/Communication/El.prices/Regions" when selecting "Installer/Define/Communication/myUplink:Yes".

Example, Electricity price calculation with and without limit value settings

You can select whether or not to use dynamic calculation of prices.

In the example below is shown what settings with dynamic calculation in combination with and without limit values mean for determining the electricity price categories "High", "Medium" and "Low":

Limit values entered

In this example, limit values are entered and dynamic calculation is selected.

See the graph on the right;

Limit value High: SEK 3.50 (Floor for this electricity price category)

Limit value Low: SEK 1.50 (means that the electricity price category "Low" price is defined with the limit value as a ceiling during the entire period).

Set. El.prices

Price control **On**

Regions **Regions**

Dynamic **Yes**

Limit value high **SEK + 0 0 0 3 .5 0 0 0**

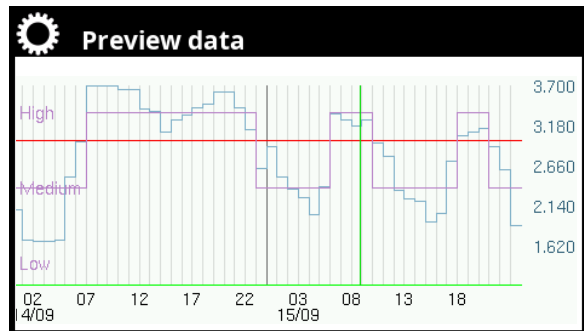
Limit value low **SEK + 0 0 0 1 .5 0 0 0**

Default **High**

Days in calculation **10**

Preview

Menu "Installer/Settings/Communication/El.prices".
Dynamisk calculation with limit values.



Menu "Installer/Settings/Communication/El.prices/Preview".
Graph: Dynamic calculation with limit values.

No limit values entered

In the example, no limit values are entered and dynamic calculation is selected. The electricity price categories are defined by the calculation algorithms.

Set. El.prices

Price control **On**

Regions **Regions**

Dynamic **Yes**

Limit value high **X 0 0 0 0 .0 0 0 0**

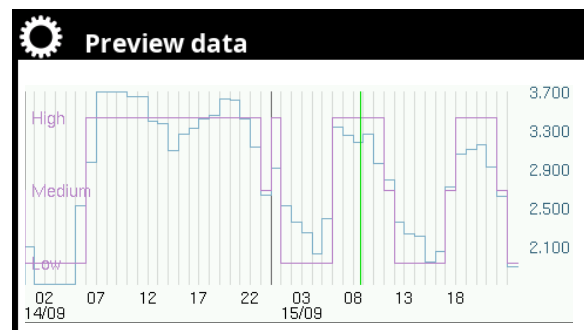
Limit value low **X 0 0 0 0 .0 0 0 0**

Default **High**

Days in calculation **10**

Preview

Menu "Installer/Settings/Communication/El.prices".
Dynamic calculation without limit values.



Menu "Installer/Settings/Communication/El.prices/Preview".
Graph: Dynamic calculation without set limit values.



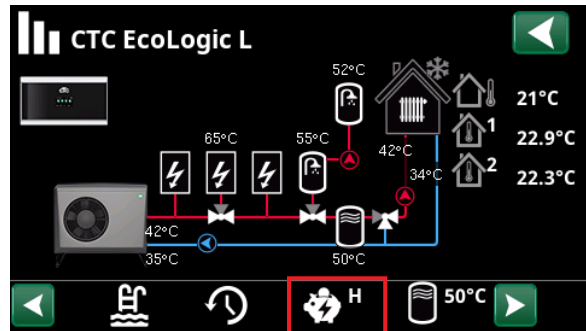
1.4 Operation

To see the "Electricity prices" Operation menu, click on the electricity prices icon in the icon bar in the "Operation" main menu.

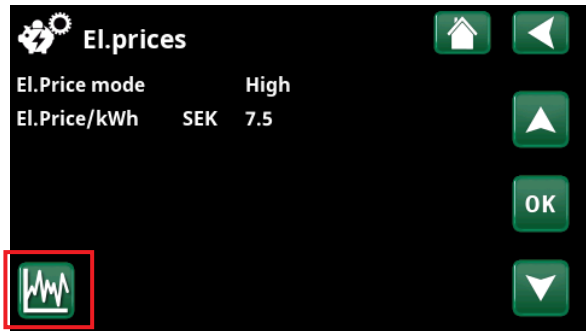
In the menu "El. prices", the current price category and electricity price/kWh (and currency) are displayed.

You can also see the graph with the calculated prices described above by clicking on the "Graph icon" at the bottom left of the menu screen.

The status of the SmartGrid functions for each subsystem is shown in "Operation" submenus.



Menu "Operation" (CTC EcoLogic L).



Menu "Operation/El.prices".

2. Enabling SmartGrid functions

The SmartGrid functions are useful for, for example, increasing the temperature in the room or in the hot water tank (DHW tank) when the electricity price is low ("SmartGrid Low price"), or alternatively for lowering the setpoint in the pool or blocking the additional heat when the electricity price is high ("SmartGrid Blocking"). This is achieved by both activating/defining current SmartGrid functions (as described in this chapter) as well as making SmartGrid settings for the respective subsystem (the heating circuit(s), the DHW tank, the pool, etc.) in the "Setting" menus described in chapter 3. "Settings - SmartGrid functions".

SmartGrid can be activated, in order of priority (normal mode):

- A. Via digital inputs on the relay card.
- B. Setting of weekly schedules where you specify when the different SmartGrid functions will be active.
- C. Smart electricity price control via app.

A. Digital in

For digital input signals, the following can be defined:

- Terminal blocks K22-K25
- A wireless accessory in the SmartControl series
- BMS digital input 0-7

First assign a digital input (Pin) to "SmartGrid A" ("SG A") and "SmartGrid B" ("SG B") in the menu "Installer/Define/Remote control".

In the example, "SmartGrid A" has been assigned input "K22" and "SmartGrid B" has been assigned input "K23".

To achieve the SmartGrid function "SG Low price", input "K23" ("SG B") must be activated (be closed) while input "K22" ("SG A") remains unchanged (open).

K22 (SG A)	K23 (SG B)	Function
Open	Open	Normal
Open	Closed	SmartGrid Low price
Closed	Closed	SmartGrid Overcapacity
Closed	Open	SmartGrid Blocking

B. SmartGrid schedule

In order for the "SmartGrid schedule" menu line to appear in the "Installer/Settings" menu, SmartGrid A must first be assigned a schedule (1-30) in the "Installer/Define/Remote control" menu.

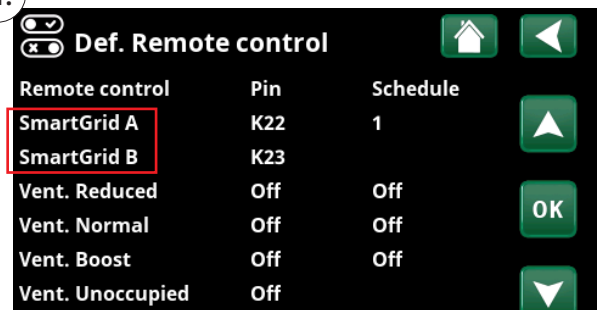
In the "SmartGrid schedule" menu can be selected when the respective SmartGrid function will be active.

In this example, the "SmartGrid Blocking" function has been set to be active on weekdays between 07:30 and 21:00.

For more information on setting schedules, see chapter "Weekly program" in the "Installation and maintenance manual".

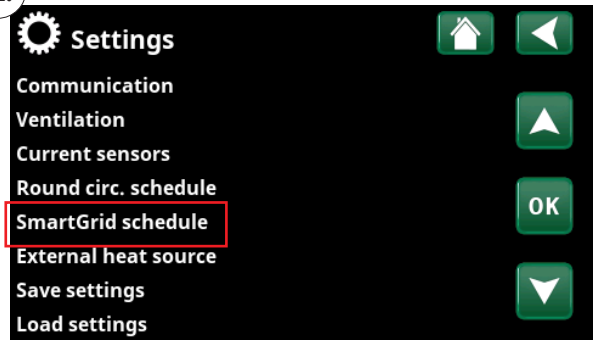
i In addition to being activated (defined), the SmartGrid functions must also be set in the respective subsystem's "Setting" menus, see chapter 3. "Settings - SmartGrid-functions".

1.

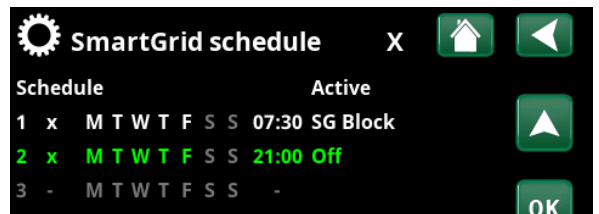


Menu "Installer/Define/Remote control".

2.



Menu "Installer/Settings".



Menu "Installer/Settings/SmartGrid schedule".

3. Settings - SmartGrid functions

In the "Setting" menus ("Installer/Settings/...") for the subsystems* Heating circuit(s), Heat pump(s), Additional heat, DHW tank, Pool, Cooling, Buffer tank, Upper and Lower tank, what will happen when the SmartGrid functions for the subsystem are active (see chapter 2."Enabling SmartGrid functions").

i *Definable subsystems depends on the system configuration/heat pump model.

Below are listed the SmartGrid settings/setting ranges used for Smart price control; "SmartGrid Blocking" and "SmartGrid Low price". The factory value is underlined.

Heating circuit

- SmartGrid Low price °C Off/1...5 °C
(room temperature -if room sensor is installed- or primary flow temperature)

Heating program

Comfort:

- SmartGrid Low price Off/On

Custom:

- SmartGrid Low price Off/On
- SmartGrid Block Off/On

Economy:

- SmartGrid Block Off/On

Heat pump

- SmartGrid Block HP Nej/Ja

Additional heat

- SmartGrid Block EL No/Yes

DHW tank/Lower tank/Upper tank

- SmartGrid Block °C Off/-1...-50 °C
- SmartGrid Low price °C Off/1...30 °C

Buffer tank

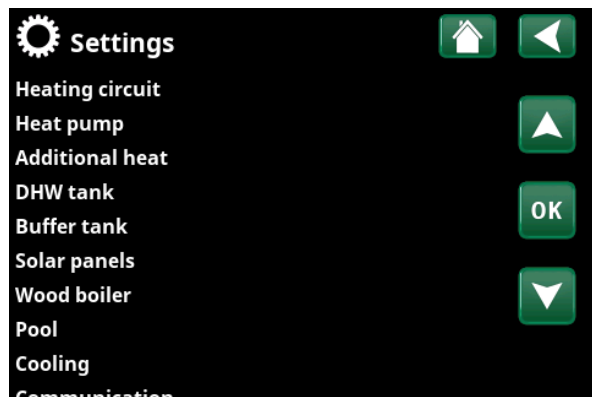
- SmartGrid Low price °C Off/1...30 °C

Pool

- SmartGrid Block °C Off/-1...-50 °C
- SmartGrid Low price °C Off/1...50 °C

Cooling

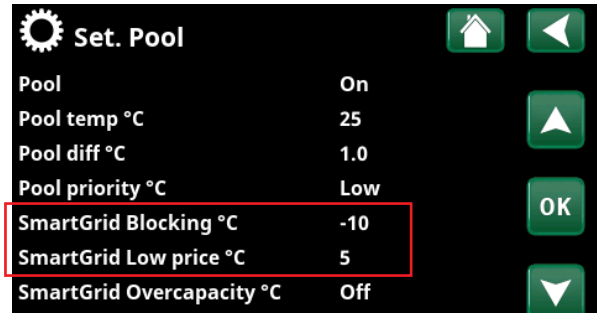
- SmartGrid Low price °C Off/1...5 °C
(room temperature)



Part of menu "Installer/Setting" (CTC EcoLogic L)

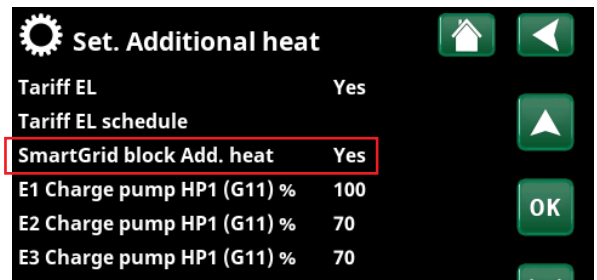
3.1 Exemple, settings - SmartGrid functions

In this example, the pool heating setpoint will be increased by 5 °C when the electricity price is low (when the function "SmartGrid Low price" is active) and the setpoint will be decreased by 10 °C when the electricity price is high (when the function "SmartGrid Blocking" is active).



Part of menu "Installer/Settings/Pool".

In the menu "Settings Additional heat", it is specified that the additional heat will be blocked when the electricity price is high (when the "SmartGrid Blocking" function is active).



Part of menu "Installer/Settings/Additional heat".

*Total Max. and min. temperatures are limited by the software.



3.2 "Settings" menus

"Settings" for subsystems are found in "Installer/Settings" submenus.

The "SmartGrid Overcapacity" function is not used in electricity price control, but is described in the menus below.

See also chapter 1. "Smart electricity price control via myUplink".

3.2.1 Set. Heating circuit

Select "Heating circuit" in the menu "Installer/Settings".

In the menu "Set. Heating circuit 1", select by how many degrees the heating circuit setpoint will be increased when the functions "SmartGrid Low price" and/or "SmartGrid Overcapacity" are active.

SmartGrid Low price °C Off/1...5

Setting to increase (°C) the room temperature (room sensor installed) or primary flow temperature at energy price "Low price".

SmartGrid Overcapacity °C Off/1...5

Setting to increase (°C) the room temperature (room sensor installed) or primary flow temperature at energy price "Overcapacity".

The function is not used for electricity price control.

Program

Select "Program" in the "Set.Heating circuit" menu to make settings for the "Economy", "Comfort" and "Custom" heating programs. The selected program is marked with "X".

The following SmartGrid functions can be set for the heating programs:

SmartGrid Blocking Off/On

Can be set for heating program "Economy" and "Custom".

"On" means that the heating program is activated when "SmartGrid Blocking" is active.

SmartGrid Low price* Off/On

Can be set for heating program "Comfort" and "Custom".

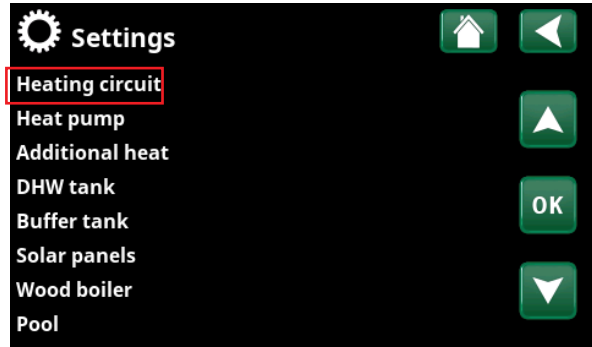
"On" means that the room temperature is increased according to the setting for "SmartGrid Low price °C" when "SmartGrid Low price" is active.

SmartGrid Overcapacity* Off/On

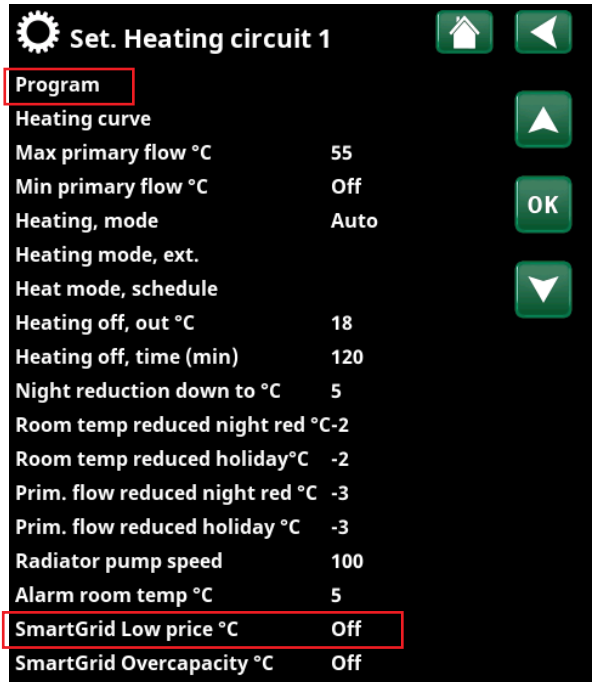
Can be set for heating program "Comfort" and "Custom".

"On" means that the room temperature is increased according to the setting for "SmartGrid Overcapacity °C" when "SmartGrid Overcapacity" is active.

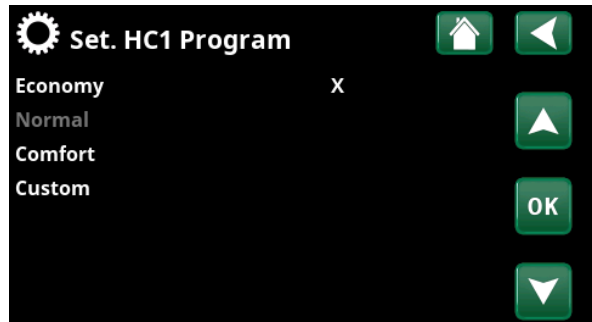
The function is not used for electricity price control.



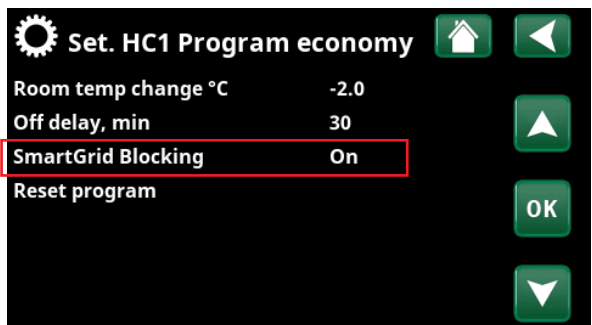
Part of menu "Installer/Settings" (CTC EcoLogic L).



Part of menu "Installer/Settings/Heating circuit/Heating circuit 1".



Menu "Installer/Settings/Heating circuit/Heating circuit 1/Program".



Menu "Installer/Settings/Heating circuit/Heating circuit 1/Program/economy".

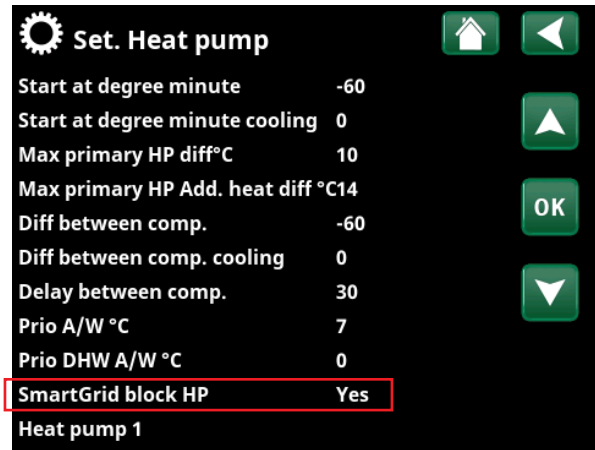
*Total Max. and min. temperatures are limited by the software.

3.2.2 Set. Heat pump

SmartGrid block HP Yes/No

"Yes" means that the heat pump is blocked when "SmartGrid Blocking" is active.

The Tariff function can also be used to block the heat pump (via remote control or scheduled). See the "Installation and maintenance manual" for more information.



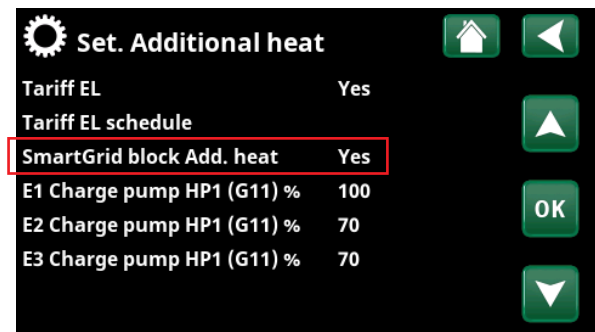
Menu "Installer/Settings/Heat pump".

3.2.3 Set. Additional heat

SmartGrid block Add. heat Yes/No

"Yes" means that the additional heat is blocked when "SmartGrid Blocking" is active.

The Tariff function can also be used to block the additional heat (via remote control and weekly schedule). See the "Installation and maintenance manual" for more information.



Part of menu "Installer/Settings/Additional heat".

3.2.4 Set. DHW tank

SmartGrid Blocking °C* Off/-1...-50

The setpoint for DHW tank heating is decreased by the value set in this menu when "SmartGrid Blocking" is active.

SmartGrid Low price °C* Off/1...30

The setpoint for DHW tank heating is increased by the value set in this menu when "SmartGrid Low price" is active.

SmartGrid Overcapacity °C* Off/1...30

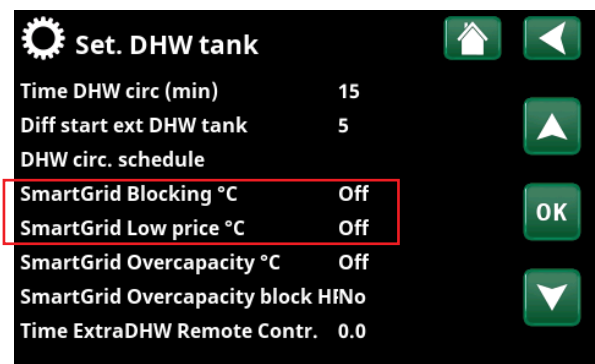
The setpoint for DHW tank heating is increased by the value set in this menu when "SmartGrid Overcapacity" is active.

The function is not used for electricity price control.

SmartGrid Overcapacity block HP Yes/No

"Yes" means that DHW tank heating with the heat pump is blocked when "SmartGrid Overcapacity" is active.

The function is not used for electricity price control.



Part of menu "Installer/Settings/DHW tank".

*Total Max. and min. temperatures are limited by the software.

3.2.5 Set. Buffer tank

This menu only applies to systems with a buffer tank ("CTC EcoLogic System Type" 4-6) if a buffer tank has been defined.

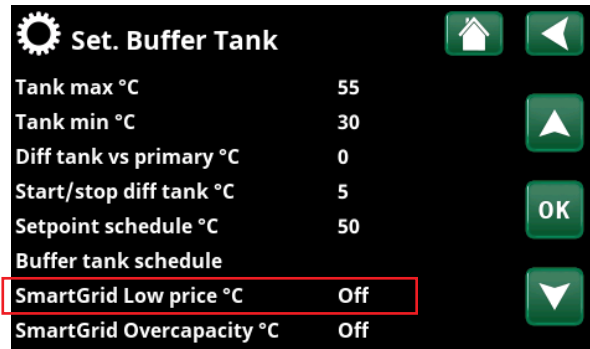
SmartGrid Low price °C* Off/1...30

The setpoint for buffer tank heating is increased by the value set in this menu when "SmartGrid Low price" is active.

SmartGrid Overcapacity °C* Off/1...30

The setpoint for buffer tank heating is increased by the value set in this menu when "SmartGrid Overcapacity" is active.

The function is not used for electricity price control.



Menu "Installer/Settings/Buffer tank".

3.2.6 Set. Pool

SmartGrid Blocking °C* Off/-1...-50

The setpoint for pool heating is decreased by the value set in this menu when "SmartGrid Blocking" is active.

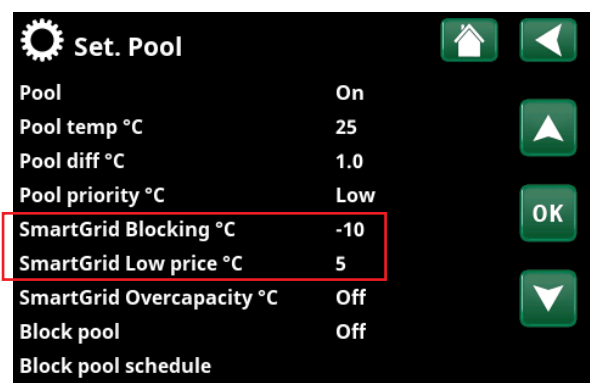
SmartGrid Low price °C* Off/1...50

The setpoint for pool heating is increased by the value set in this menu when "SmartGrid Low price" is active.

SmartGrid Overcapacity °C* Off/1...50

The setpoint for pool heating is increased by the value set in this menu when "SmartGrid Overcapacity" is active.

The function is not used for electricity price control.



Menu "Installer/Settings/Pool".

3.2.7 Set. Cooling

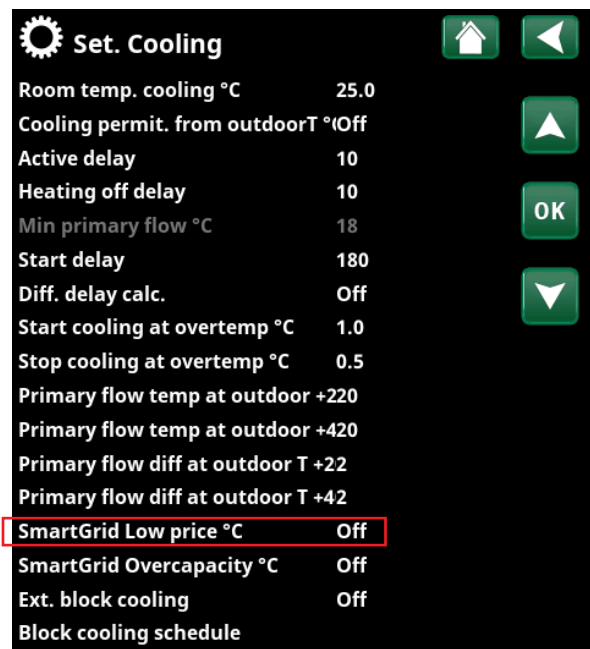
SmartGrid Low price °C* Off/1...5

The setpoint for cooling is increased by the value set in this menu when "SmartGrid Low price" is active.

SmartGrid Overcapacity °C* Off/1...5

The setpoint for cooling is increased by the value set in this menu when "SmartGrid Overcapacity" is active.

The function is not used for electricity price control.



Menu "Installer/Settings/Cooling".

*Total Max. and min. temperatures are limited by the software.