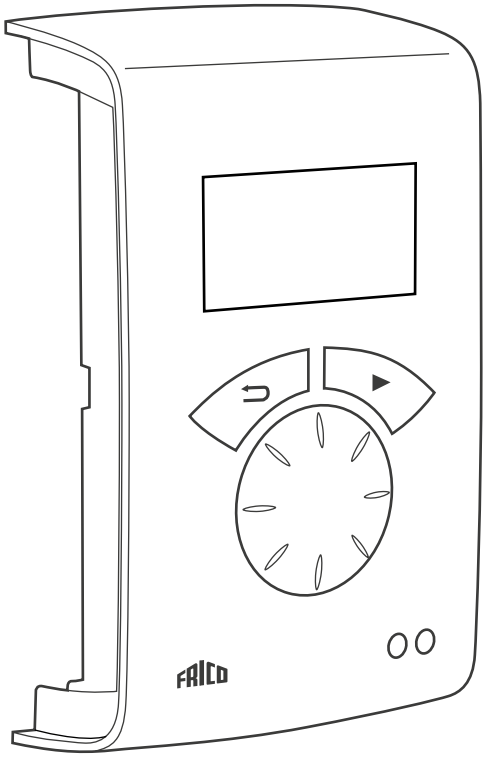
Original instructions

SIRe Advanced Air Curtains
Functions

SIReAA



GB

For the following, please see Quick Guide:

- *Wiring diagrams*
- *Installation instructions*
- *Constituent parts and accessories*
- *Alarm and error codes*
- *Connecting external control - including BMS functions*

Operating modes

Door that is opened and closed

The control function notes whether the door is open or closed as standard, this mode is default set and is called Fixed flexible (the setting is under Installer menu > Settings fan > Door mode).

Open door

Indicates OP on the installer status screen. Fan control runs at high speed mode and is controlled to outdoor temperature. During dropping outdoor temperatures during the winter and increasing outdoor temperatures during summer the fan speed increases. High speed limit is set under Main Menu > Fan control > High speed limit.
The control curves to the outdoor temperature are set under Installer menu > Settings fan > Fan speed increase where temperatures for min- and max speed are set for summer and winter modes.
Normally it is requested that heat is engaged when the door is opened. The set point value (Room temp. day) is then increased with the fixed set point value difference that can be changed under Installer menu> Settings heating > Open door setp. diff., factory setting 3.0 K. The set point is set under Main Menu > Temperature settings > Room temp. day.
If week program is used the night time set point value is set under Main menu > Temp. settings > Room temperature night. The room temperature is regulated using the integrated room temperature sensor or the external room temperature sensor, SIReRTX (option).

Closed door

Indicated CL on the installer status screen. When heating demand the fan speed runs at low speed which is set under Main menu > Fan speed > Speed closed door. Heating is regulated to Room temp. Day which is set under Main Menu > Temperature settings > Room temp. day.
If week program is used the night time set point value is regulated against the Room temperature is set under Main menu > Temp. settings > Room temperature night. The room temperature is regulated using the integrated room temperature sensor or the external room temperature sensor, SIReRTX (option).

When the door is closed - over run

When the door has been closed, high speed mode remains during the fixed time that is set under Installer menu > Settings fan > Door over run > High speed over run and at low speed during a fixed time under Installer menu > Settings fan> Door over run > Low speed over run, on the condition that it is sufficiently warm in the premises, otherwise the fans run until the desired temperature has been reached.
When the door is closed, the set point value shifts from room temperature + fixed set point value difference for open door to Room temp. day/night.

Over run is factory set so that the over run times are controlled according to how often the door is opened (Auto mode under Installer menu > Settings fan > Door over run > Over run mode).

Doors that are always or often left open for longer periods

If a door is always, or often, left open it is possible to use a function called CURRENT STAGE instead. The fan and heating steps increase/decrease 6 or 9 steps (depending on the type of unit) and are only controlled by the room temperature. Actual Current stage is shown in the status screen.

The function current stage is activated in two ways:

Doors that are always open

For a door that is always open, door mode Fixed open > can be selected under Settings fan > Door mode.

Doors that are often open

For a door that is often open Auto can be selected under Installer menu > Settings fan > Door mode. In Auto mode, the control automatically switches between Fixed flexible and Fixed open modes depending on how

often the door has been open (when the door has been open for longer than 300 seconds the function changes from Fixed Flexible to Fixed Open).

Function description of current stage

The task of the Current stage function is to balance the room climate when a door is always open by using the right combination of fan and heating step.

In open mode, the room temperature is read every 60 seconds (during the first 6 cycles, and then every 5 minutes and at each reading any Current stage adjustments are made, i.e. fan control and supplied output adjusted.

Winter

When the outdoor temperature is less than the current setting on Installer menu> Settings fan > Outdoor temp. limit.

- If the room temperature is more than 3 degrees below the current settings, the current stage increases by 2 steps.
- If the room temperature is between 1 and 3 degrees below the current settings, the current stage increases by 1 step.
- If the room temperature is more than 2 degrees above the current setting, the current stage decreases by 1 step.

Summer

When the outdoor temperature is greater than the current setting on Installer menu > Settings fan > Outdoor temperature limiting. The heating is blocked.

- If the room temperature is more than 2 degrees below the current settings, the current stage increases by 1 step.
- If the room temperature is between 1 and 2 degrees below the current settings, the current stage decreases by 1 step.
- If the room temperature is more than 2 degrees greater than the Current settings, current stage increases by 1 step.
- If the room temperature is between 1 and 2 degrees above current settings, the current stage decreases by 1 step.

If fan control has been max. limited under Main Menu > Fan control> High speed limit, all current stages will be used but the fan will be limited to the current setting.

See the table on the next page.

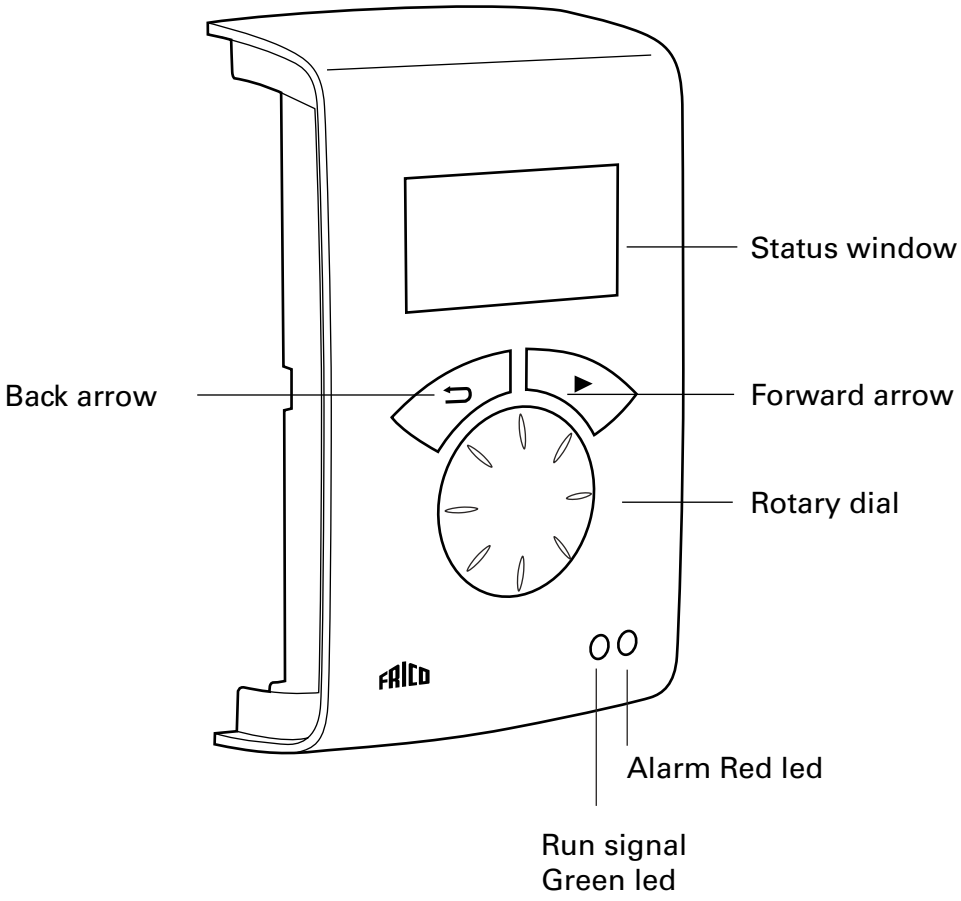
Table - Current stage for units with 5 fan controls

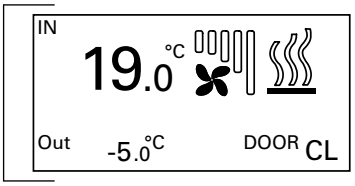
Current stage	Fan	Stepless fan 5 speeds (output)	Stepless heat (outlet temp.)	Heating
0	0	0	0	0
1	1	30% (3V)	0	0
2	2	47% (4.7V)	0	0
3	2	47% (4.7V)	30 °C	1
4	3	64% (6.4V)	30 °C	1
5	3	64% (6.4V)	35 °C	2
6	4	81% (8.1V)	35 °C	2
7	5	100% (10V)	35 °C	2
8	5	100% (10V)	40 °C	3

Table - Current stage for units with 3 fan controls

Current stage	Fan	Stepless fan 3 speeds (output)	Stepless heat (outlet temp.)	Heating
0	0	0	0	0
1	1	30% (3V)	0	0
2	2	60% (6V)	0	0
3	2	60% (6V)	30 °C	1
4	3	100% (10V)	35 °C	1
5	3	100% (10V)	40 °C	2

Overview





Fan speed step

Heating step

Week program
Day

Week program
Night

OFF Week program
Out of operation

Explanations

Status window
The display shows prevailing room temperature, outdoor temperature, fan and heating step, door status and day or night mode when week program is used.

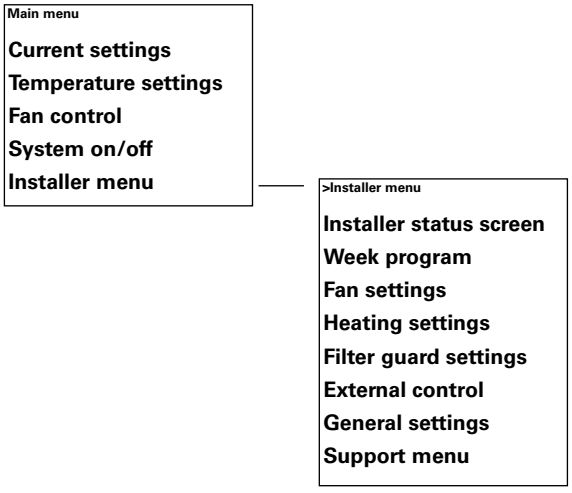
Forward arrow
Confirm selection and proceed.

Rotary dial
Scroll between alternatives

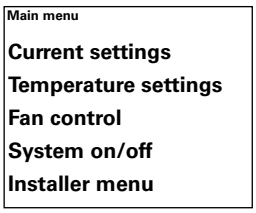
Back arrow
Go back.
After three minutes the control unit goes back to displaying the status window.

Status window

Press forward arrow to enter the main menu.

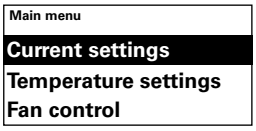


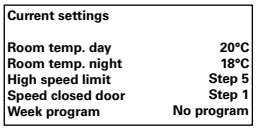
Main menu



Current settings

Displays set room temperature, high speed limit, speed closed door and week program status.

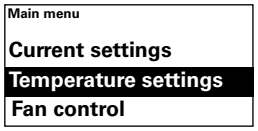


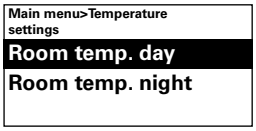


Temperature settings

Set the desired room temperatures to apply for day respectively night mode, when the door is closed (room temperature night is used for week program/night reduction).

At open door these set point values automatically increase with a set point differential that can be set under Installer menu > Heat settings > Open door setp. diff. (Factory setting 3.0 K).





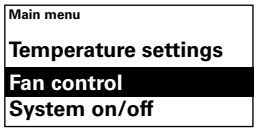
Factory setting

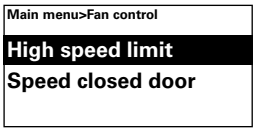
Room temp. day: 20°C (5 – 35°C)

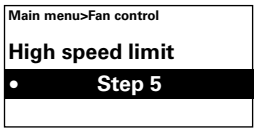
Room temp. night: 18°C (0 – 20°C)

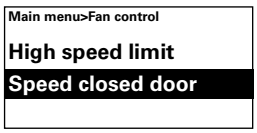
Fan control

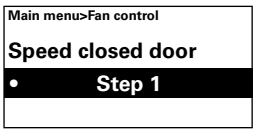
Possibility of setting high speed mode at an open door and what speed should apply with a closed door (3 or 5 steps depending on the unit).











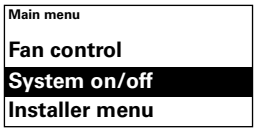
Factory setting

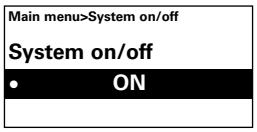
High speed limit: 3 resp. 5 (1-3, resp. 1-5)
Speed closed door: 1 (Off-3, resp. Off-4)

System on/off

Switch the whole unit off manually. In Off the display goes out; as soon as a button is pushed the display lights and shows System on/off. To activate the unit again select On.

The unit's safety functions are still active when the system is switched off, which means that the fan can continue to run for a moment after mode Off has been selected.



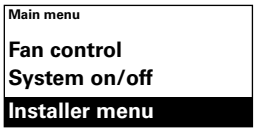


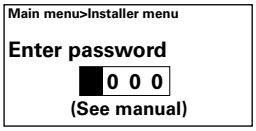
Installer menu

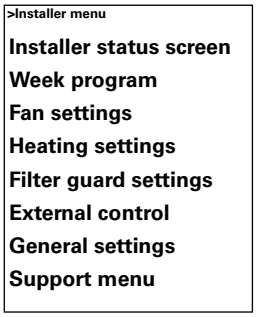
The installer menu is at the bottom of the main menu, this is password protected. See Installer menu in this manual.

Installer menu

To enter the Installer menu, code 1932 is entered. Select the digits using the rotary dial and confirm using the forward arrow.

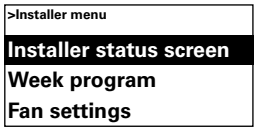


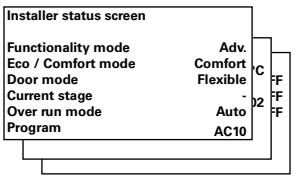




Installer status screen

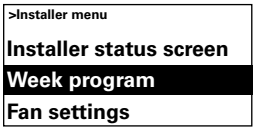
Check the settings. The installer status screen consists of three pages with settings, scroll using the rotary dial.





Week program

Make settings for week program.



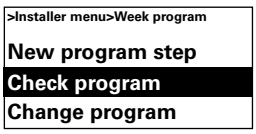
A basic program is pre-entered in SIRe.

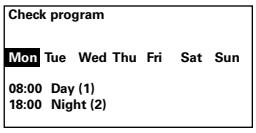
Mon-Fri Day from 08:00, Night from 18:00

Sat Day from 10:00, Night from 16:00

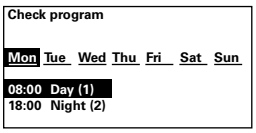
Sun Day from 11:00:00, Night from 14:00

To check which program is set for a particular day, select Check program and then switch between the days using the rotary dial.

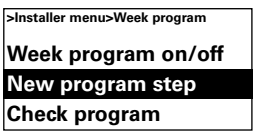


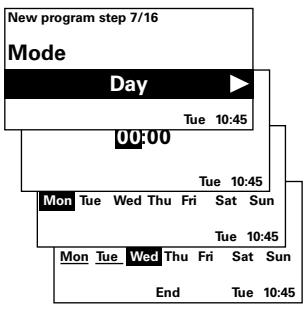


To check which days a certain program is active, select a week day by pressing the forward arrow, the program is marked and those days that the program is used will be underlined, switch between the programs for a particular day using the rotary wheel.

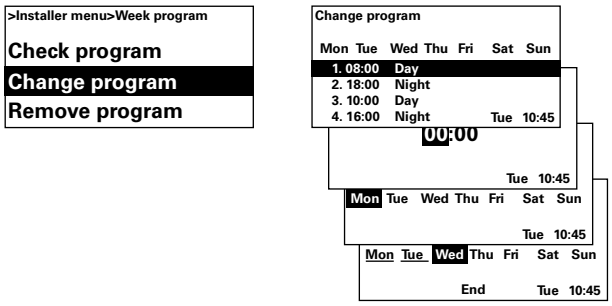


To add program step, select New program step. Confirm your selection with the forward arrow. Select Day, Night or Off (if the unit should not be in operation), set the time for switch on and then for which days the program applies, then go to End to finish.

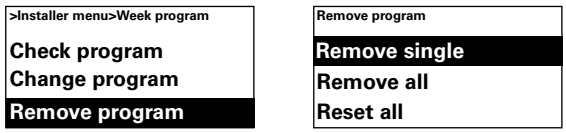




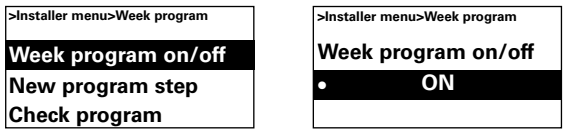
A new program step does not replace a set time for Day for example, but you can instead select to change a program step.
To change a program step, select Change program.



The program steps that should not apply are removed in Remove program. One or all program steps can be removed in the menu. To return to the factory set basic program, select Reset all.

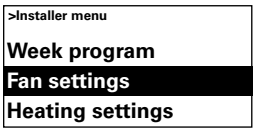


Week program is activated by selecting On, under Week program on/off. In On-mode, a sun, moon or Off in the Status window appears to indicate day, night respectively Off-function.



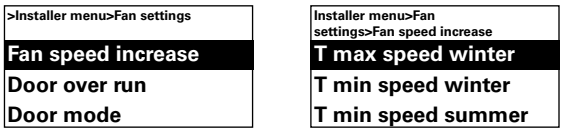
Fan settings

Make settings for fan mode (see also Operating modes section).



Fan speed increase

Settings for outdoor temperatures for max respectively min speed during summer respectively winter modes.



Factory setting

T max speed winter: -10°C (-30 – 15°C)

T min speed winter: 15°C (-10 – 22°C)

T min speed summer: 22°C (15 – 37°C)

T max speed summer: 37°C (22 – 50°C)

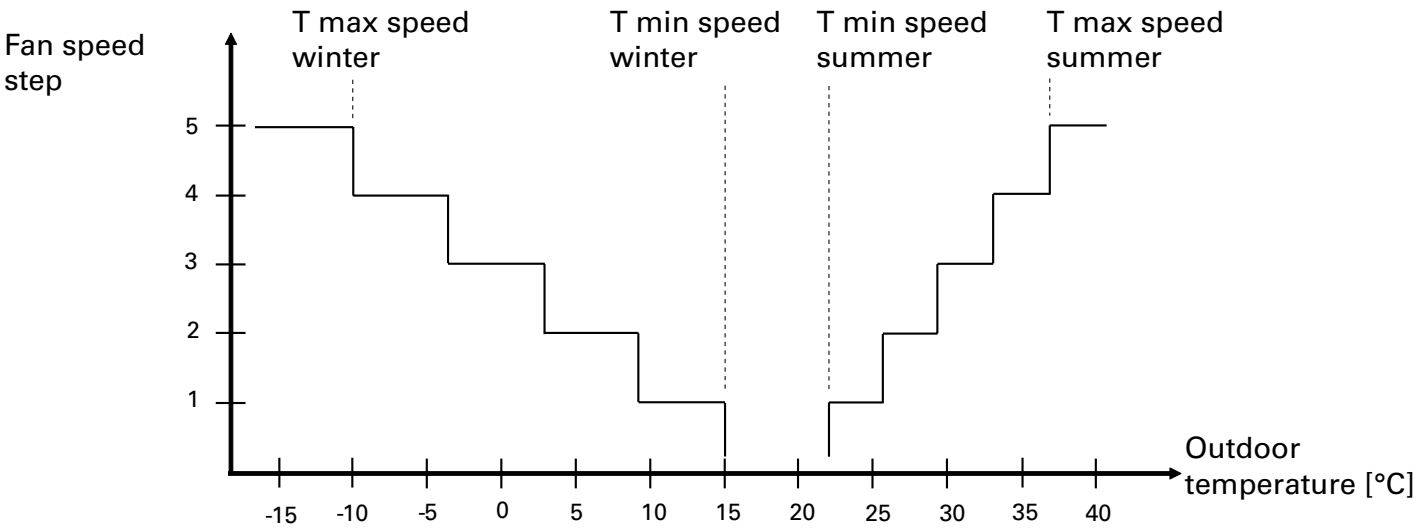


Diagram: Fan speed increase 5 step

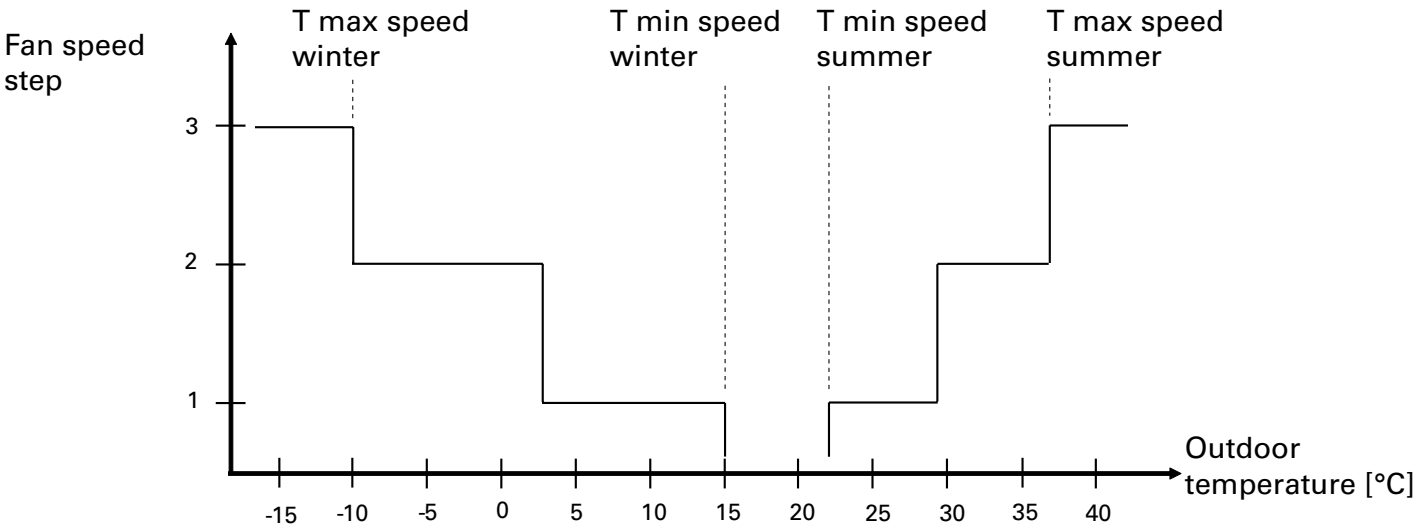
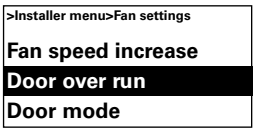
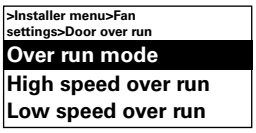


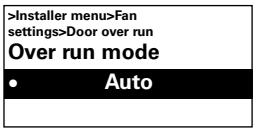
Diagram: Fan speed increase 3 step

Door over run

Settings for overrun.



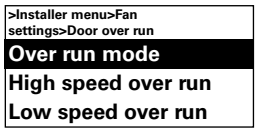


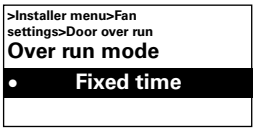


In over run mode Auto, SIRe controls the over run time depending on how frequently the door is opened between openings, according to fixed preset values, according to the table.

Time between opening [s]	High speed over run [s]	Low speed over run [s]
t < 60	30	90
60 < t < 300	10	300
t > 300	0	180

Over run mode Fixed time is selected is one wants fixed over run times, the times can be changed during High speed over run and Low speed over run.





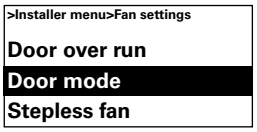
Factory setting

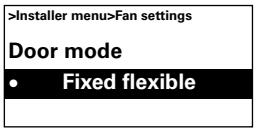
Over run mode: Auto (Set time)
High speed over run: 30 s (0 – 180 s)
Low speed over run: 120 s (0 – 300 s)

Door mode

There are three different door modes to choose from; Auto, Fixed flexible and Fixed open.

In Fixed flexible mode, the control function notes whether the door is open or closed.





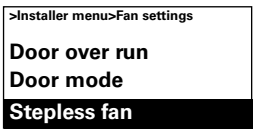
In Fixed open mode the door is considered always open and is only controlled according to Current stage. In Auto mode, the control automatically switches between Fixed flexible and Fixed open modes depending on how often the door has been open.

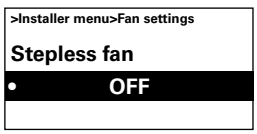
Factory setting

Door mode: Fixed flexible (Fixed open/Auto)

Stepless fan control

Settings for stepless fan control.
Fans are controlled in 3 or 5 steps as standard. If stepless fan control is selected, the fans can be controlled steplessly via an external frequency converter for example.



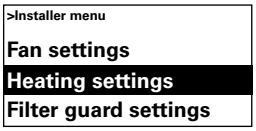


Factory setting

Stepless fan control: Off (On)

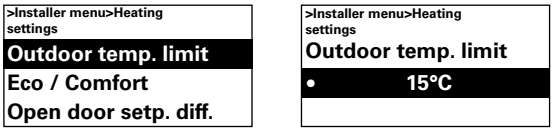
Heating settings

Make settings for heating.



Outdoor temp. limit

Blocking heating summer time.



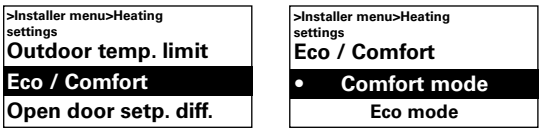
Factory setting
Outdoor temp. limit: 15 °C (5 – 30 °C)

Eco / Comfort

Select between Eco and Comfort mode depending on whether energy savings or optimal comfort is more important.

Comfort mode gives faster comfort and a slightly higher output. Comfort mode prioritszes the temperature comfort, the control system only accepts a smaller deviation from the set room temperature.

In ECO-mode several functions and parameter values are changed, as shown in the display, which gives lower energy consumption. For units with internal temperature sensor the outlet temperature is restricted to 32°C which further reduces the energy consumption.

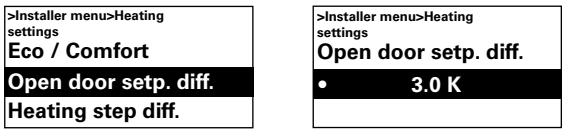


Unit with electrical heating
Max heating step is limited.

Unit with water heating
To use the Eco functions it is necessary for the valve actuator to be controlled by 0-10V.

Open door setp. diff.

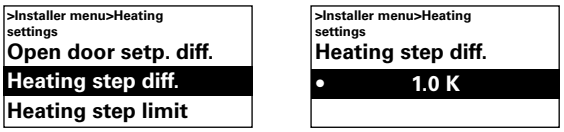
Set by how much the set point value (Room temp. day/night) is to increase when the door is open.



Factory setting
Set point value difference open door: 3.0K (0K – -10K)

Heating step diff.

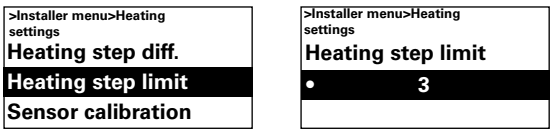
Unit with electrical heating
The temperature difference between connection of the electrical heating step.



Factory setting
Heating step diff: 1.0K (0K – 10K)

Heating step limit

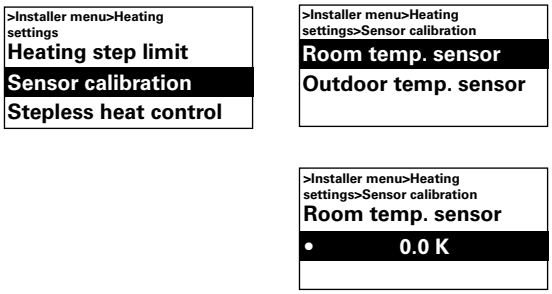
Unit with electrical heating
Possibility of limiting the heating.



Factory setting
Heating step limit: 2/3 (1-2/3)

Sensor calibration

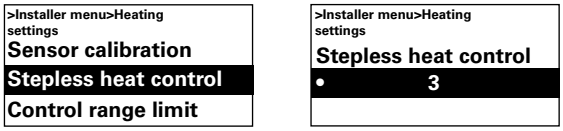
If the sensor displays the wrong values these can be calibrated. Some display errors may occur, but this is primarily due to the location (cold/hot surfaces etc). The value + or – adds to or subtracts from the measured value (for example +2K gives an increase of the displayed value of 2 degrees).



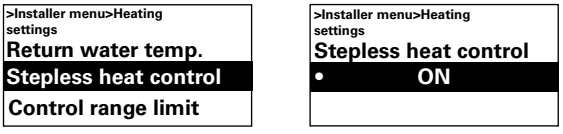
Factory setting
Room temperature sensor: 0.0K (-10K – 10K)
Outdoor temperature sensor: 0.0K (-10K – 10K)

Stepless heat control

Unit with electrical heating
For stepless control of electrical heating, for example via external triac.



Unit with water heating
To use Advanced fully, stepless heat control must be used.

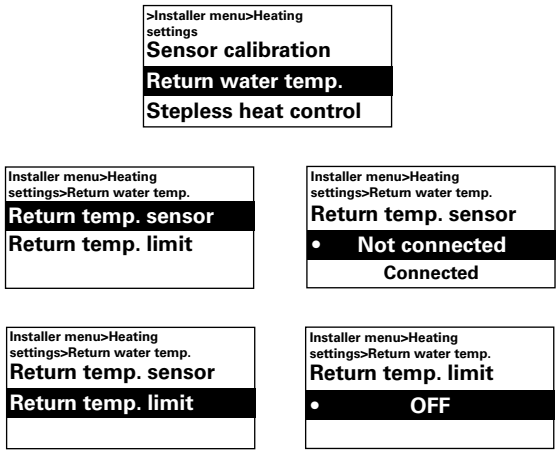


Stepless heat control: ON (Off - not selectable)

Return water temp.

Unit with water heating
If there is a demand for the temperature of the return water not to exceed a certain value, this function is activated under Return water temp. A return water temperature sensor (proximity sensor SIReWTA, option) must then be installed on the return water pipe.

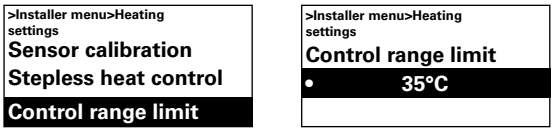
Install Return temp. Sensor to Connected and select max return temperature (15-90 °C) using the turn wheel. During operation, this function limits the valve's degree of opening, which reduces the flow and the return temperature.



Factory setting
Return temp. sensor: Not connected (Connected)
Return temp. limit: Off (15 – 90°C)

Control range limit

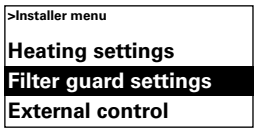
The maximum room temperature that a user can select is limited to between 5 – 35°C.



Factory setting
Control range limit temperature: 35°C (5 – 35°C)

Filter guard settings

Unit with water heating
Filter alarm is displayed when the set Filter time has been exceeded or when an external filter guard is installed and triggered. Filter timer can be used as a Service interval timer for electrical heated units when filter is not allowed.



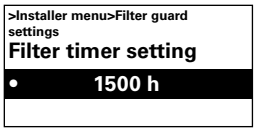
Filter timer on/off

Filter alarm is activated by selecting On, under Filter timer on/off.

Factory setting
Filter timer on/off: Off (On)

Filter timer setting

Under Filter timer setting, set the desired run time to between 50 and 9950 hours.



Filter timer setting: 1500 h (50 - 9950 h)

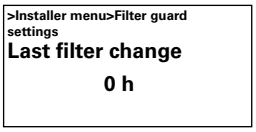
External filter guard

Unit with water heating
If an external filter guard, e.g. a pressure switch, is used, it is activated under External filter guard, select On.

Factory setting
External filter guard: Off (On)

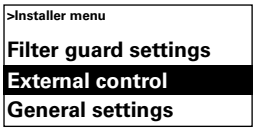
Last filter change

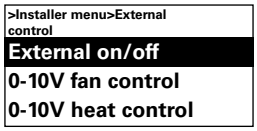
To check the number of run time hours since the last filter replacement, select Last filter change. The time is reset when the filter alarm is reset. If the time is to be reset before the alarm has gone, switch the filter timer on and off.

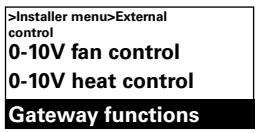


External control (BMS)

BMS functions can be activated under External control. Activate External on/off, 0-10V fan control or 0-10V Heating control by selecting On under the relevant one. See diagram and Connecting external control (Quick Guide). See separate manual "SIRe1.2 Modbus" for Gateway functions.







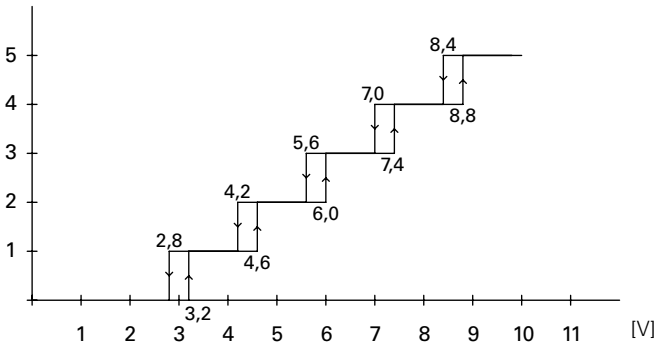


Diagram: Fan step at incoming 0-10V DC voltage level, 5 step.

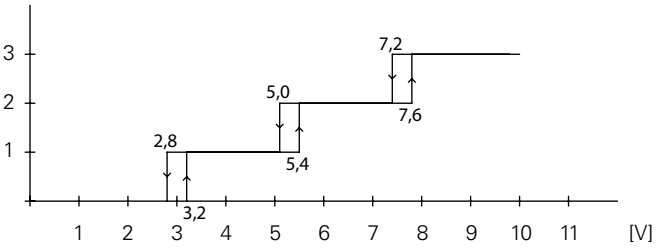


Diagram: Fan step for incoming 0-10V DC voltage level, 3-step.

Unit with electrical heating

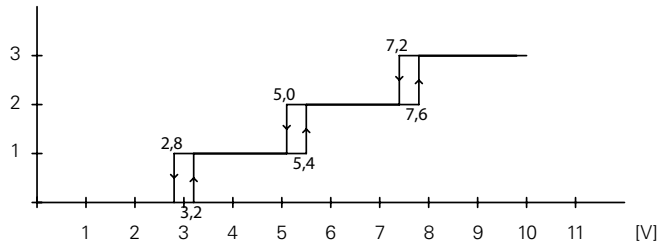


Diagram: Heating step for incoming 0-10V DC voltage level, 3-step.

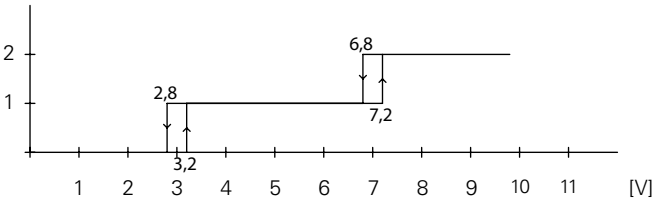


Diagram: Heating step for incoming 0-10V DC voltage level, 2-step.

Unit with water heating

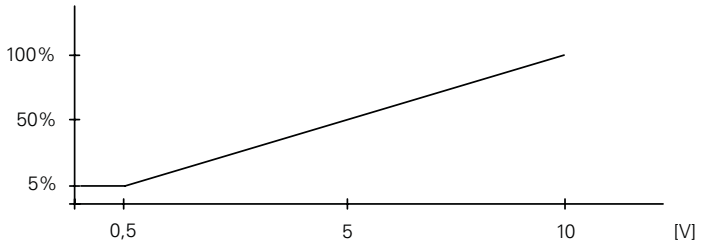
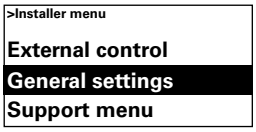


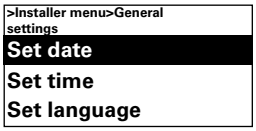
Diagram: Stepless hea for incoming 0-10V DC voltage level

General settings

Possibility of making general settings that are also in the Start-up wizard and execute user reset.

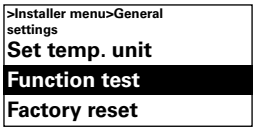


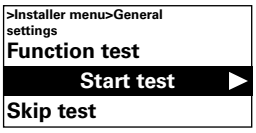
Change the date, time, language and temperature unit.

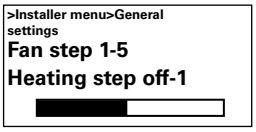


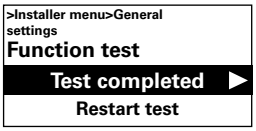
Function test

To test the fan and heating steps, run the function test.



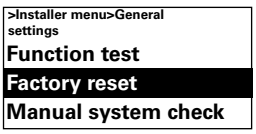






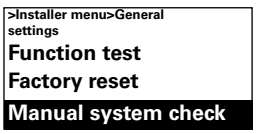
Factory reset

Resets values to factory settings.



Manual system check

Run Manual system check, if required or after physical alteration of system, to identify connected units and sensors.



Support menu

The support menu is password protected and is used for support in contact with Frico or authorised installer.

Alarm and error codes

SIRe has different alarms and error codes for safe and problem free operation.
If alarms or error codes have been indicated these must be reset in order to return to normal operation, for example activating the heating again. Fan mode is active even when, for example, the over heating alarm has been indicated.

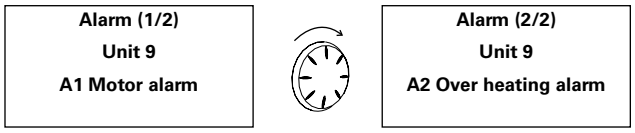
Displaying alarm and error codes

In event of alarm or error the alarm/error code is shown in the status window. In event of alarm/error code the unit it applies to is displayed.
See Table - Alarms and Table - Error codes (Quick Guide).

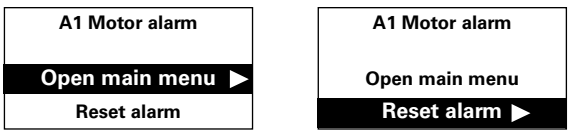
Reset alarm

Note! Before resetting, check that the fault is rectified and there is nothing to prevent the unit from being recommissioned.

If several alarms occur, scroll down to view next alarm, however the alarms must be reset in the same order.



When the fault is rectified, the alarm is reset by pressing the forward arrow and selecting Reset alarm and then confirm. At the first start up alarm and error codes can occur, these can usually be reset without action.



Power failure

Note that in case of power failure the time settings need to be checked, if the time is not set correctly week program will be affected.

Overheat protection

Only applies to units with internal sensor.
The overheat protection is primarily intended to prevent the unit from overheating and protect the unit and its surroundings from damages, should an overheating occur. It will do this by reducing the power output to keep the internal temperature within its limits, see table.

If the internal temperature rises above its alarm limit, an A2 Overheat alarm is triggered and the fan will start running in order to evacuate the heat. If the internal temperature continues to rise despite this, for example because of a faulty contactor or an incorrect water valve, the fan speed will increase until full speed is reached and will continue running until the internal temperature is reduced and the alarm is reset.

The alarm remains in the display until it is reset. For electrically heated units the heat will remain off until then. For water heated units the actuator/valve will reengage when internal temperature has fallen to safe levels, even if the alarm is not yet reset.

For correct function, water heated units must be equipped with actuator/valve controlled by SIRe. Electrically heated units are also equipped with a mechanical over heat protection.

Frost protection function

Unit with water heating
Only applies to units with internal sensor. The frost protection function is intended to prevent the water coil from freezing.

When the fan is in operation the valve actuator opens the valve at an internal temperature below +15 °C regardless of whether there is a heating requirement. If the internal unit temperature continues to drop, e.g. at low ambient temperatures, insufficient flow line temperatures, low flow or fault valve function, the frost protection alarm A3 will be triggered when the internal unit temperature drops +5 °C. The fan then also stops and when the mixing cabinet is used the dampers is also closed.

With return temp. sensor SIReWTA connected an advanced alarm function occurs. At return temperatures less than +15 °C the actuator will open regardless of the heat demand. Alarm is triggered at return temperature +7 °C and the fan also stops.

When the fan is not running there is a heat retention function that opens the valve when the water's return temperature falls below +25 °C regardless of heat demand.

Note! In event of repeated alarms, overheating alarms and frost protection alarms, carry out a thorough check and if the fault cause cannot be found contact authorised installer or Frico.

Overheat protection - temperature limits

Air curtains	Decrease heat	Heat off	Alarm Start ramp-up	Full speed
Unit with water heating and PA2500E	37°C	40°C	50°C	54°C
Unit with electrical heating except PA2500E	47°C	52°C	57°C	61°C

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