GOLD

Air handling unit

Function manual user

GOLD RX/PX/CX/SD version G

Applicable to Program Version 3.01 and newer versions

Swegon

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The document was originally written in Swedish.

Swegon reserves the right to alter specifications.

1. IQNavigator hand-held terminal

1.1 General

The hand-held terminal consists of a 7" capacitive touch screen with a 3 metre long cable that is connected to the control board of the air handling unit using a quick-fit connector.

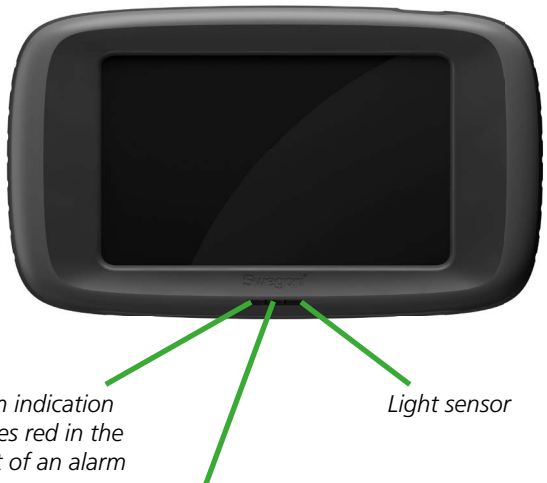
The hand-held terminal is switched on/off with an on/off button located on the top side of the hand-held terminal. If the hand-held terminal is not used for 45 minutes, it switches over to sleep mode.

See the illustrations below for details of the connections, buttons and LED.

IQNavigator can be used outdoors, but it must be stored in a weatherproof place.

Data:

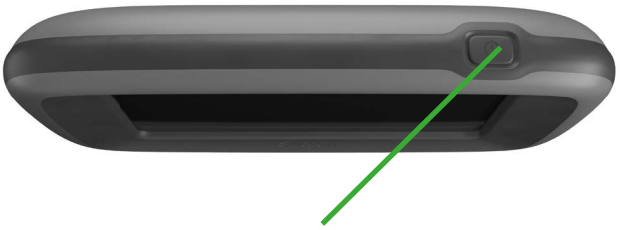
Operating temperature:	-20°C–+50°C
Height from which it can be dropped without damage:	1 metre



Alarm indication
Flashes red in the event of an alarm

Light sensor

Operation indication
Steady green glow while unit is in operation



On/off button:

When the touchscreen is in sleep mode or switched off:
By briefly pressing the On/Off button, the touchscreen switches on or starts up

When the touchscreen is on:
Briefly press the On/Off button to put the touchscreen into sleep mode
Long press displays the question, "Do you want to power off IQnavigator?" press OK to switch the touchscreen off



Micro SD card

USB-C connection

RJ12 contact for future function

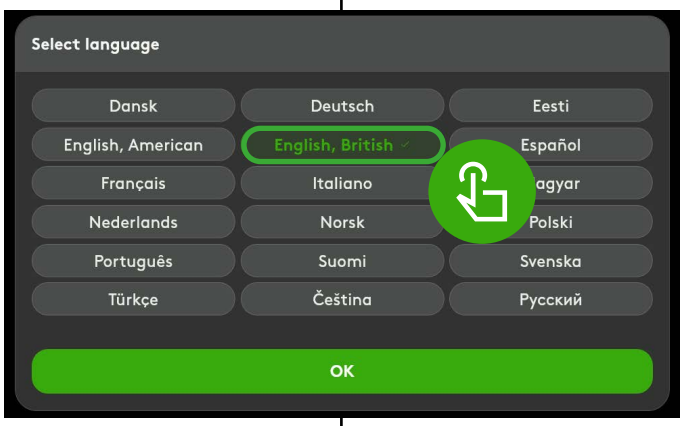
RJ45 connection for power and communication cable for IQNavigator (PoE)

2. Start and log in

2.1 Hand-held terminal



Start-up display



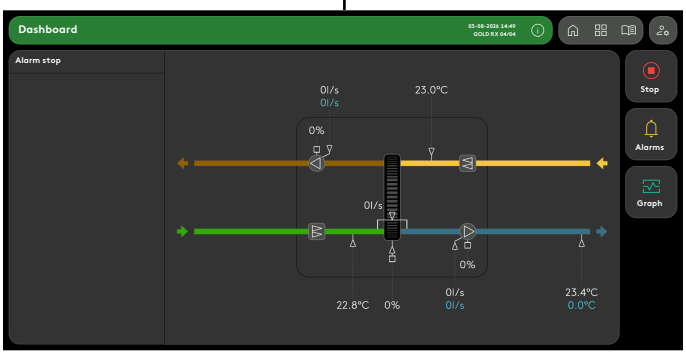
Select required language (displayed when starting for first time). Language can be changed at any time, see section 3.1.



Select the required authorisation level.
Local.
Password not required. See these instructions.

Installation.
Password =1111. See Function Manual, Installation.

Service.
Password and special training are required to gain access to this view group.



Dashboard landing view.

***NOTE!** The view's appearance depends on the type of air handling unit and functions selected.*

For further navigation, see sections 3.1 and 4.

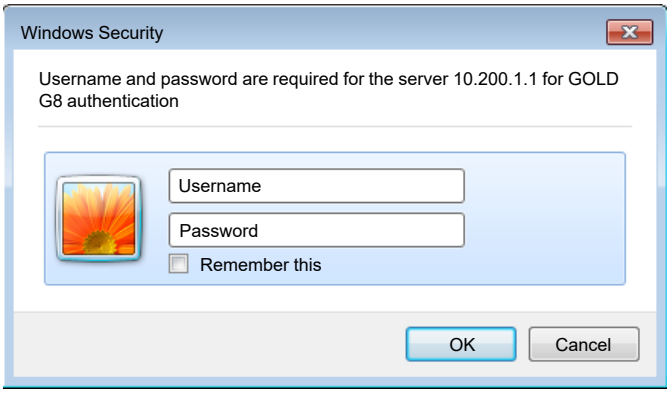
Swegon reserves the right to alter specifications.

2.2 Home page

Login for local and installation is deactivated by default.

The password for service level can be found on the label on the control circuit board and is unique to each unit.

Language is automatically selected according to the preset language of the browser.



3. View management

3.1 Navigation

Diagram below shows navigation between menus via icons at the top right of the Dashboard.

Navigation can also be done by swiping sideways between menus.

Navigating to Dashboard, see section 4.

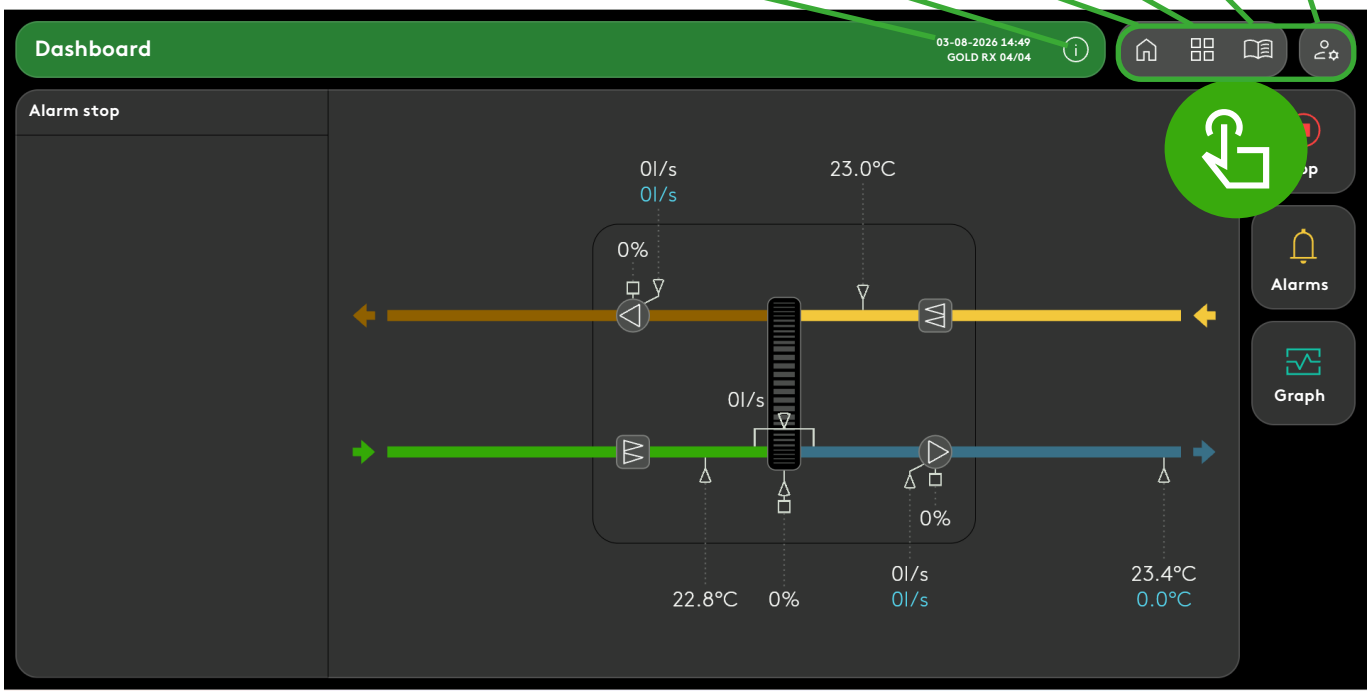
Navigating to Functions. See below and section 6.

Navigation to the Filter calibration guide. See section 5.

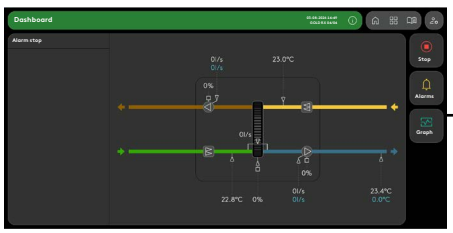
Here you can change dark and light mode, select language, see the programme version for the hand-held terminal and log in or out. Also indicates login level, see section 3.2.

Help texts for functions.

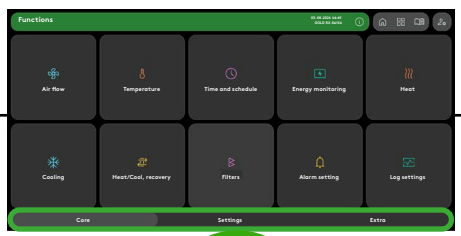
Type of air handling unit, name of air handling unit and date.



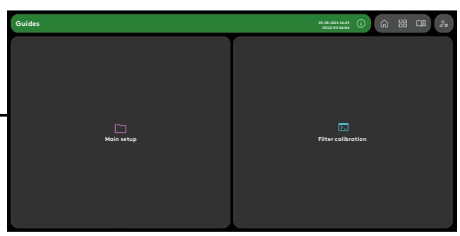
Dashboard



Functions



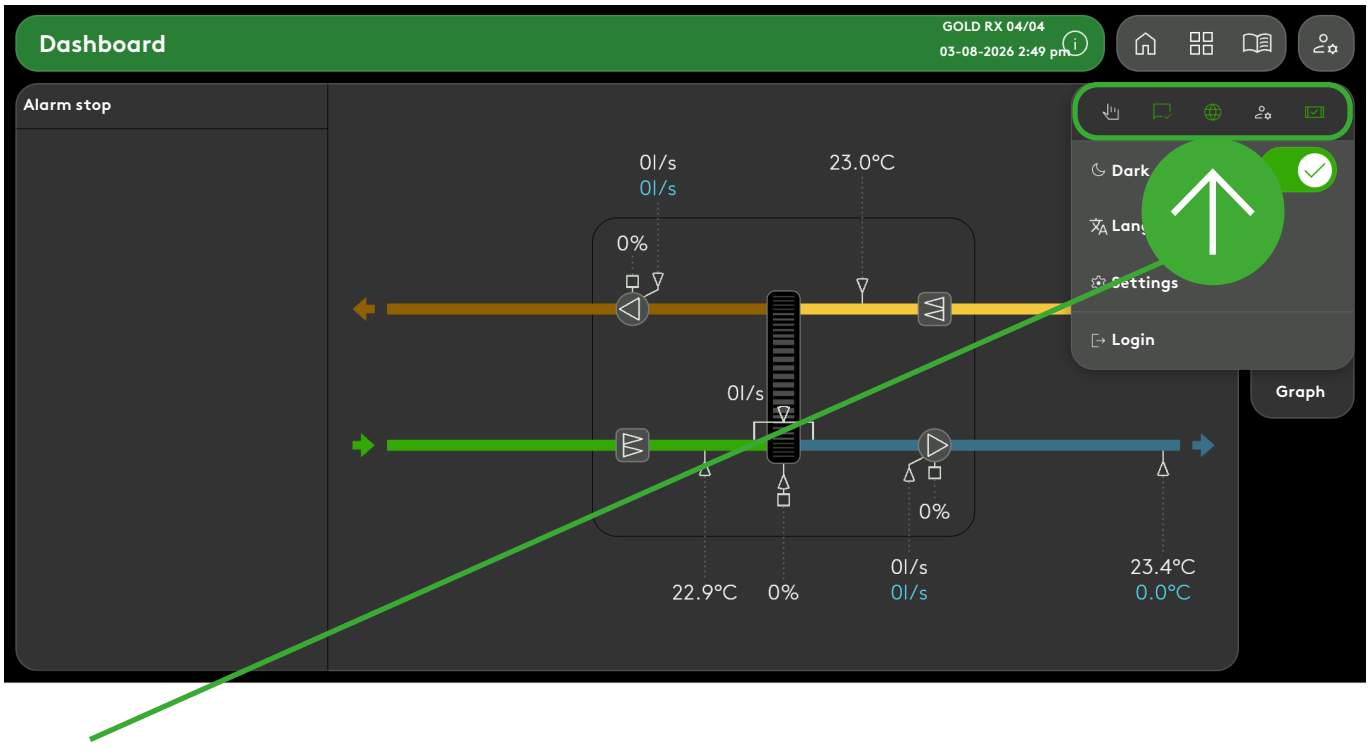
Guides



Navigating to Functions Core, Settings and Extra is done here.

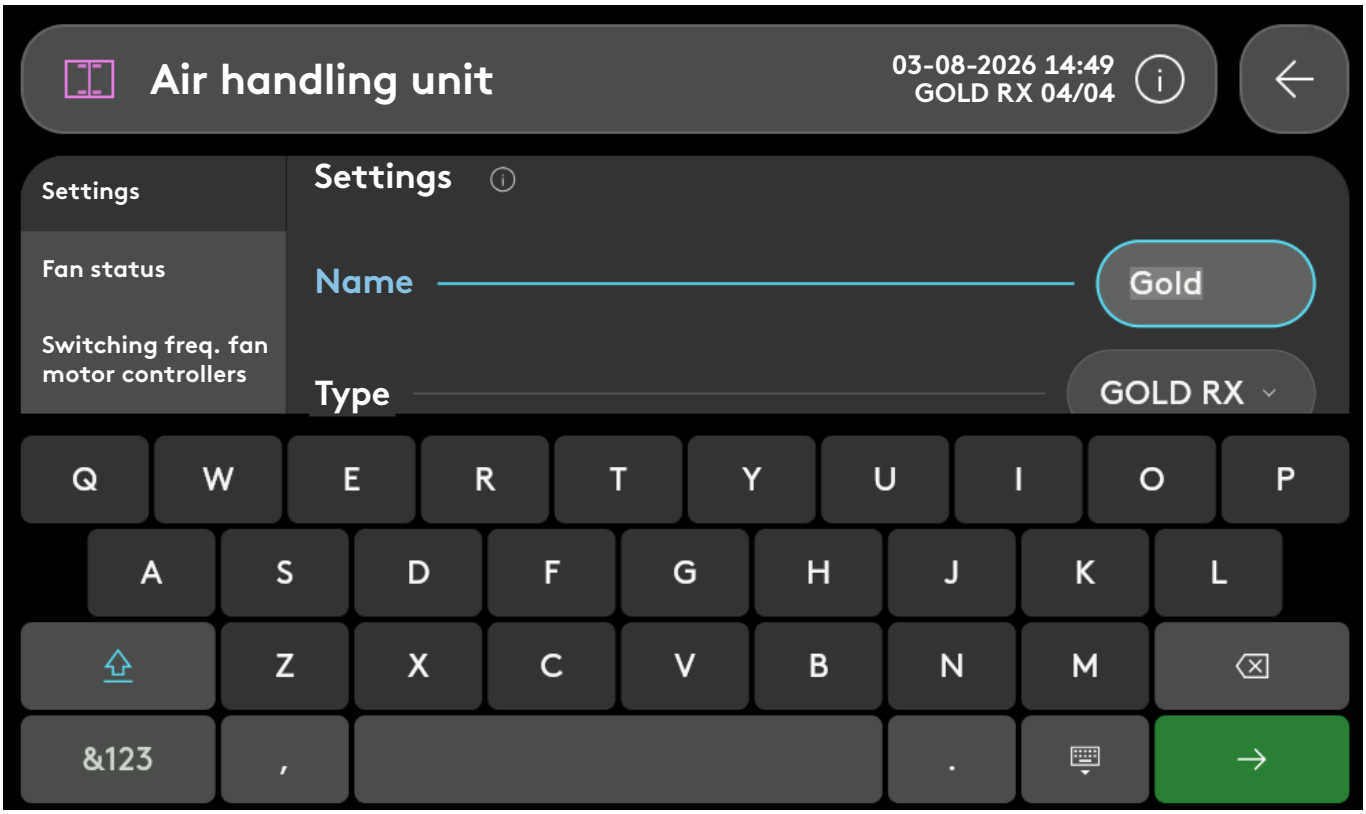
Swegon reserves the right to alter specifications.

3.2 Indicator symbols



	Manual test
	Indicates that a communication protocol is active
	Indicates that the website is active
	Logged in at user level (local)
	Logged in at installation level
	Logged in at service level
	Indicates that hand-held terminal is connected

3.3 Keyboard



When entering a value or text, a keyboard is displayed at the bottom of the touchscreen.

A value or text that needs to be changed should be highlighted by pressing the touchscreen. The value/text will then be highlighted in blue.

The required value or text is entered and saved by pressing the green button with an arrow at the bottom right

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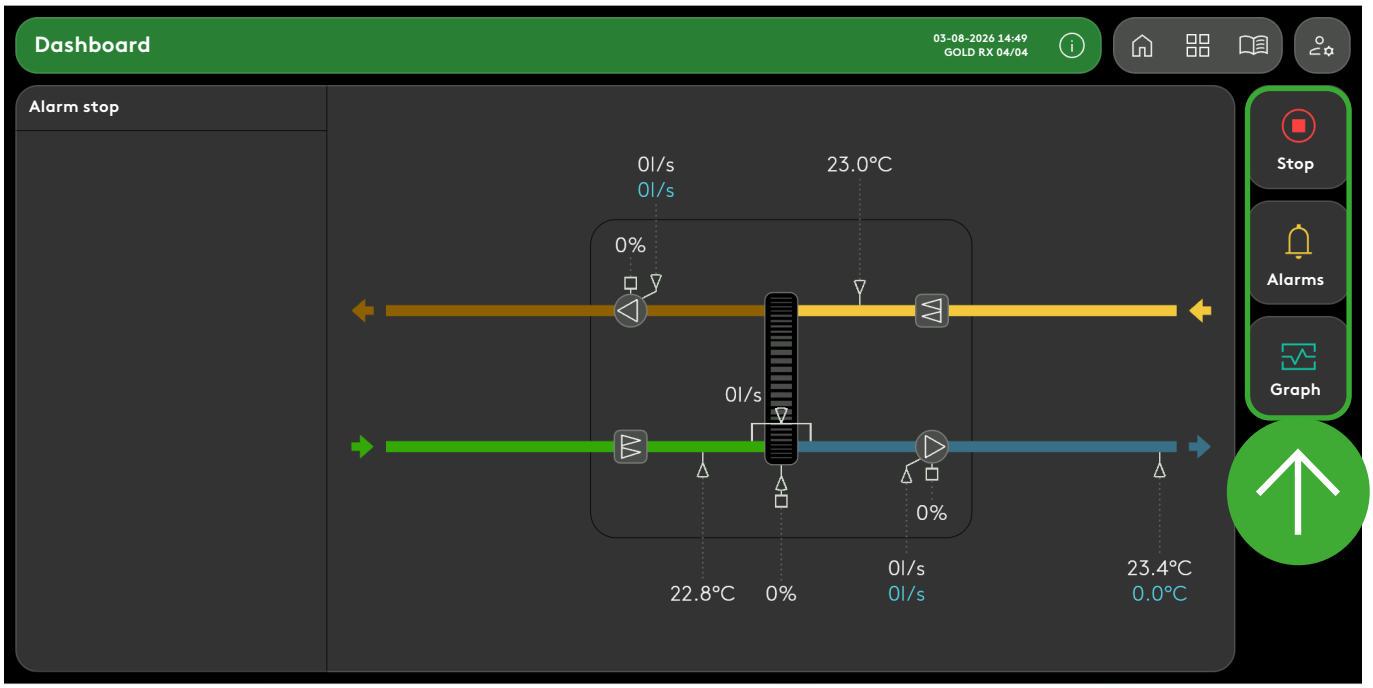
4. Dashboard



4.1 General

The dashboard is normally displayed if no other view has been selected.

The touchscreen switches to sleep mode after 45 minutes. To leave sleep mode, press the On/Off button on the touchscreen.

The content in the flow chart changes depending on the type of air handling unit selected and other functions that affect the relevant operating conditions. Click on the flow chart to display flow chart in full view. The flow chart can be edited.

Symbol names can be selected to be hidden, to be shown with the original Swegon designations or as adapted. Adapted designations can be imported from AHU Design.

4.2 Changing operating mode

You can start and stop the air handling unit or switch to manual or automatic operation from the dashboard.

The air handling unit should normally be started and stopped from the hand-held terminal, not via the safety switch.

4.3 Alarms

The alarm log shows all active alarms, pending alarms and alarm history (50 most recent). See also Section 5 in the Operation & Maintenance Instructions.

It is also possible to get in-depth information about active alarms on the touchscreen.

4.4 Graph

To make this function possible, an SD card must be fitted into the control circuit board of the air handling unit (installed from the factory). Does not apply to the real-time log.

A number of parameters can be read in diagram form. Up to six signals can be selected and read in the hand-held terminal or via the embedded website. The following log diagram time intervals can be selected: 4 hours, day, week, month or customised interval.

It is possible, via a cursor, to read values for selected signals for specific dates and times.

It is also possible to hide or display one of the signals in the log diagram by clicking on it.

The program automatically adjusts the resolution of the signals. This means that the program adapts the amplitude of the signal to the height of the diagram within the selected time interval.

Two types of Log diagram can be selected, Historical or Realtime.

5. Filter calibration

All the filters should be calibrated when the fans are started up for the first time and when the duct system, air terminals and commissioning plates, if required, have been installed and commissioned.

After that every time filters are replaced. Calibration should then be activated for the filter or filters that are new. Relevant filters are the supply air prefilter, extract air pre-filter, supply air AHU filter, extract air AHU filter, and supply air end filter.

When filter calibration is activated, the unit attempts to achieve the set max. flow/pressure (depending on the type of regulation). In order for the calibration to start, a stable air flow must be achieved. Filter calibration continues until the right conditions occur or for max. 15 minutes.

An indication of ongoing filter calibration can be sent via communication and/or I/O module (digital output signal).

When the flow has been stable (variation of less than +/-3%) for 30 seconds (adjustable), the calibration starts.

The calibration continues for three minutes.

The calibration fails if:

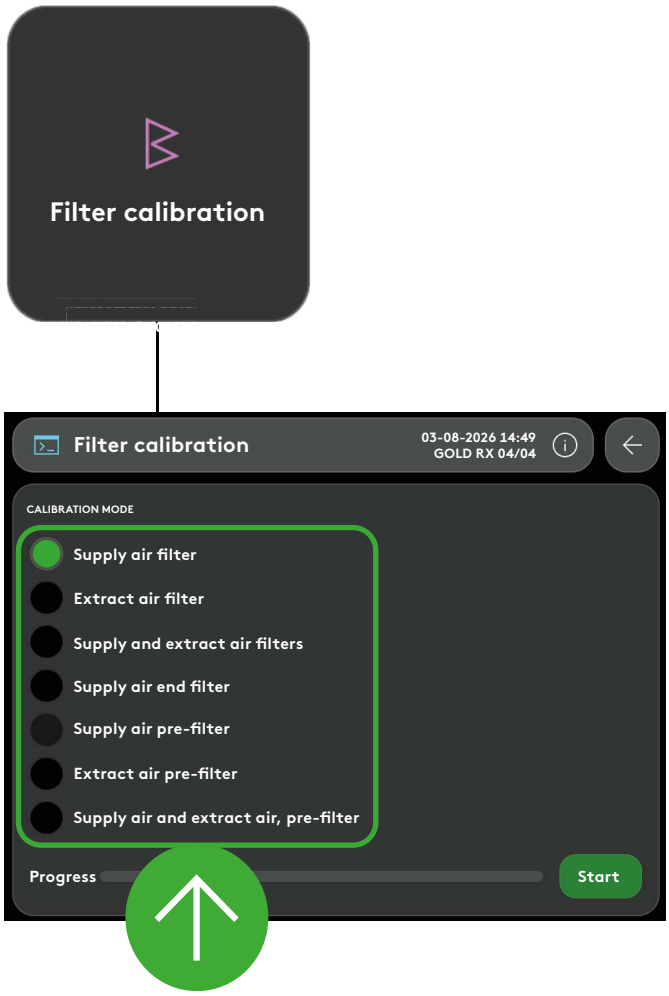
- The flow does not remain stable for 12 minutes.

- The filter pressure drop is not greater than 5 Pa.

- The flow does not exceed the minimum flow.

After the filters have been calibrated, a pressure rise of up to 100 Pa is permissible (as the filters arrest impurities) after which an alarm indicating fouled filter is initiated. The alarm limit can be changed under Installation, Functions, Filters.

The filter function must be activated (see Section 8.1.8 in the Function manual, Installation) to enable filter calibration and alarm functions in the supply air and extract air, and for the end filter and pre-filter in GOLD SD air handling units.



Swegon reserves the right to alter specifications.

6. Functions

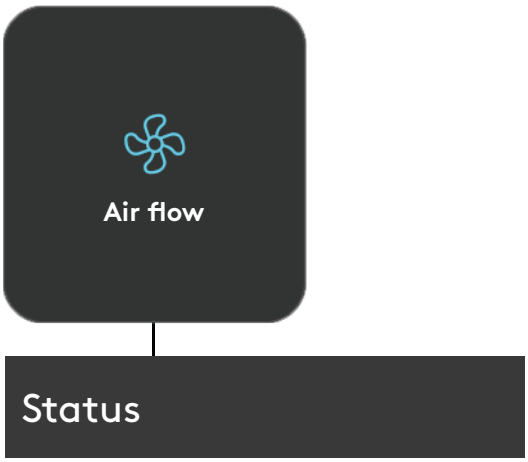
6.1 Core

6.1.1 Air flow

See also section 8.1.1 in the Function Manual, Installation in which the functions for air flow are described in detail.

6.1.1.1 Status

All the relevant values can be read here. Used for function checks.



6.1.1.2 Operation level

The functions selected and the min. and max. airflows of each AHU size (see the table below) determine which values can be set.

Depending on the function selected, flows can be set as follows (l/s, m³/s, m³/h, cfm), pressure (Pa, psi, in.wc) or input signal strength (%).

Low speed

Should always be preset. The value for low speed cannot be higher than the value for high speed. Low speed can be set to 0, which means that the AHU is idle.

High speed

Should always be preset. The value or pressure for high speed cannot be lower than the value for low speed.

Max. speed

Should always be preset. Used mainly for filter calibration. While filter calibration is in progress, the max. speed setting should be as high as the ventilation system permits without causing any breakdown. Also used for the pressure regulation, boosting, Heating Boost and Cooling Boost functions. The value for max speed cannot be lower than the value for high speed.

Min./Max. speed

Used for the demand control function (the previous section also applies to max. speed). Preset the lowest and highest permissible flows for each fan. This means that the fans will not operate outside these limits, regardless the load.

Operation level

Slave

The flow difference for any slave controlled fan can be set between the slave controlled fan and the other fan. The setting occurs in a fixed flow difference and/or a percentage difference.

Min./Max. flows

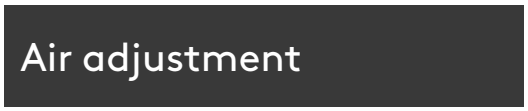
AIR FLOW	MIN. FLOW FOR AIRFLOW REG., ALL VARIANTS[2]		MAX. FLOW AIR HANDLING UNIT. ROTARY EXCHANGER (RX, RX+) STE, MPE		MAX. FLOW AIR HANDLING UNIT. ROTARY EXCHANGER (RX, RX+) MTE		MAX. FLOW AIR HANDLING UNIT. PLATE HEAT EXCHANGER (PX)		MAX. FLOW AIR HANDLING UNIT COIL EXCHANGER (CX)		MAX. FLOW, SUPPLY AND AND EXTRACT AIR HANDLING UNIT (SD)	
SIZE	m³/h [1]	m³/s	m³/h	m³/s	m³/h	m³/s	m³/h	m³/s	m³/h	m³/s	m³/h	m³/s
GOLD 004	288	0.08	1620	0.45	1370	0.38	1620	0.45			2160	0.6
GOLD 005	288	0.08	2340	0.65	1980	0.55	2340	0.65			2880	0.8
GOLD 007	288	0.08	2700	0.75	2300	0.64	2700	0.75			2880	0.8
GOLD 008	720	0.20	3600	1.00	3060	0.85	3600	1.00			4320	1.2
GOLD 011	720	0.20	3960	1.10	3380	0.94	3960	1.10			4320	1.2
GOLD 012	720	0.20	5040	1.40	4280	1.19	5040	1.40			6480	1.8
GOLD 014	720	0.20	5940	1.65	5040	1.40	5940	1.65			6480	1.8
GOLD 020	1080	0.30	7560	2.10	6440	1.79	7560	2,10			10080	2,8
GOLD 025	1080	0.30	9000	2.50	7200	2.00	9000	2.50			10080	2,8
GOLD 030	1800	0.50	11520	3.20	9210	2.56%	11520	3.20			14400	4.0
GOLD 035	1800	0.50	14040	3.90	11230	3.12	14040	3.90	14040	3.90	14400	4.0
GOLD 040	2700	0.75	18000	5.00	14400	4.00	18000	5.00	18000	5.00	21600	6.0
GOLD 040+	2700	0.75	-	-	-	-	19800	5.50	-	-	-	-
GOLD 050	2700	0.75	18000	5.00	14400	4.00	-	-	18000	5.00	20160	5.6
GOLD 050+	2700	0.75	-	-	-	-	21600	6.00	-	-	-	-
GOLD 060	3600	1.00	23400	6.50	18720	5.20	23400	6.50	23400	6.50	28800	8.0
GOLD 070	3600	1.00	28800	8.00	27360	7.60	28800	8.00	27000	7.50	28800	8.0
GOLD 080	5400	1.50	34200	9.50	27360	7.60	34200	9.5	34200	9.50	43200	12.0
GOLD 100	5400	1.50	39600	11.0	31680	8.80			39600	11.0	43200	12.0
GOLD 120	9000	2.50	50400	14.0	40320	11.2			50400	14.0	64800	18,0

1) When adjusting the flow, round off the value to the nearest settable step.
2) If pressure regulation is used, the airflow can be regulated to zero, however this presupposes a certain static pressure drop in the ducting (approx. 50 Pa).

Swegon reserves the right to alter specifications.

6.1.1.3 Air adjustment

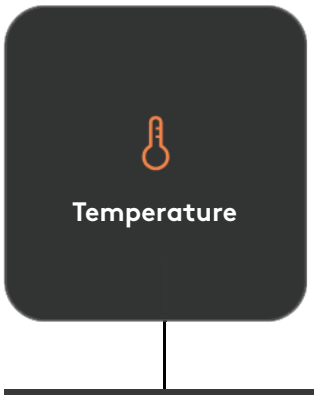
The speed of the fans can be locked for up to 72 hours. When the function is activated, the speed is locked at the current speed of operation. This is practical when making airflow adjustments in the duct system and air diffusers. The desired period is preset, but can be interrupted earlier by selecting Stop or by changing the time setting to 0.



6.1.2 Temperature

Basic functions can be set under Installation and the values can be read and set under User (local).

Therefore see also section 8.1.2 in the Function Manual, Installation in which the functions for temperature are described in detail.







NOTE! If the entry of new temperature settings involve large changes, you should first stop the AHU before you enter the new settings.

Specific temperatures, such as set points, are specified in °C or °F, whereas displacements, deviations and differentials are specified in K (Kelvin).

If GOLD SD supply air handling units only are installed, they require an external room sensor for ERS, ORE and extract air regulation.

6.1.2.1 Status

All the relevant values can be read here. Used for function checks.

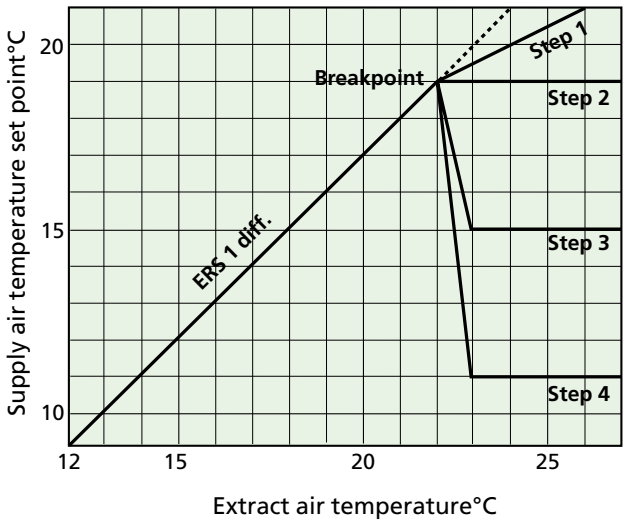
6.1.2.2 Settings

ERS regulation 1 (Extract air temperature-Related supply air temperature regulation)
The control unit regulates the ratio between the supply air and extract air temperature according to a factory-preset curve.

Settings *(see also diagram to the right)*:

Value	Setting range	Factory settings
Extract related supply air-1 step	1–4	2
Extract related supply air-1 diff	1–7 K	3 K
Extract-related supply air-1 breakpoint (refers to extract air temperature)	12–26°C	22°C

ERS Regulation 1, example



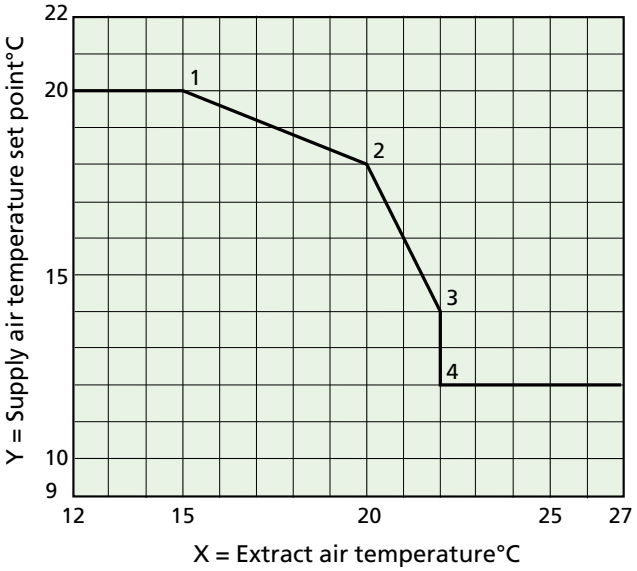
ERS Regulation 2

An individually adjusted curve regulates the ratio between the supply air and the extract air temperature. The curve has four adjustable breakpoints.

Settings *(see also diagram to the right)*:

Value	Setting range	Factory settings
Extract air temperature		
Extract related supply air-2 X1	10–40°C	15°C
Extract related supply air-2 X2	10–40°C	20°C
Extract related supply air-2 X3	10–40°C	22°C
Extract related supply air-2 X4	10–40°C	22°C
Supply air temperature set point		
Extract related supply air-2 Y1	10–40°C	20°C
Extract related supply air-2 Y2	10–40°C	18°C
Extract related supply air-2 Y3	10–40°C	14°C
Extract related supply air-2 Y4	10–40°C	12°C

ERS Regulation 2, example



Supply air regulation

Supply air regulation means maintaining a constant supply air temperature without consideration to the load in the premises.

Settings:

Value	Setting range	Factory settings
Supply air (temp. set point)	0–40°C	21°C

Extract air regulation

Extract air control involves maintaining a constant temperature in the extract air duct (the premises), by regulating the supply air temperature.

Settings:

Value	Setting range	Factory settings
Extract air (temp. set point)	0–40°C	21°C
Supply air, min.	0–30°C	15°C
Supply air, max.	8°C–50°C	28°C

Seasonal controlled temperature regulation

Seasonal controlled temperature regulation makes it possible to have two temperature regulation modes that alternate at preset outdoor temperatures..

Settings:

Value	Setting range	Factory settings
Seasonal controlled supply air	0–40°C	21°C
Seasonal controlled extract air	0–40°C	21°C
Seasonal controlled supply air min.	0–30°C	16°C
Seasonal controlled supply air max.	8°C–50°C	28°C

Swegon reserves the right to alter specifications.

ORS regulation (Outdoor air temperature-Related supply temperature regulation.

An individually adjusted curve regulates the ratio between the supply air and the outdoor air temperature. The curve has four adjustable breakpoints.

Settings *(see also diagram to the right)*:

Value	Setting range	Factory settings
Outdoor air temperature		
Outdoor related supply air X1	-50°C–+50°C	-20°C
Outdoor related supply air X2	-50°C–+50°C	-10°C
Outdoor related supply air X3	-50°C–+50°C	10°C
Outdoor related supply air X4	-50°C–+50°C	20°C
Supply air temperature set point		
Outdoor related supply air Y1	10°C–40°C	21.5°C
Outdoor related supply air Y2	10°C–40°C	21.5°C
Outdoor related supply air Y3	10°C–40°C	21.5°C
Outdoor related supply air Y4	10°C–40°C	21.5°C

URF regulation (Outdoor air temperature-Related extract air temperature regulation)

An individually adjusted curve regulates the ratio between the extract air and the outdoor air temperature. The curve has four adjustable breakpoints.

Settings *(see also diagram to the right)*:

Value	Setting range	Factory settings
Supply air, min.	0–20°C	16°C
Supply air, max.	16°C–50°C	28°C
Outdoor air temperature		
Outdoor related extract air X1	-50°C–+50°C	-20°C
Outdoor related extract air X2	-50°C–+50°C	-10°C
Outdoor related extract air X3	-50°C–+50°C	10°C
Outdoor related extract air X4	-50°C–+50°C	20°C
Extract air temperature set point		
Outdoor related extract air Y1	10°C–40°C	21.5°C
Outdoor related extract air Y2	10°C–40°C	21.5°C
Outdoor related extract air Y3	10°C–40°C	21.5°C
Outdoor related extract air Y4	10°C–40°C	21.5°C

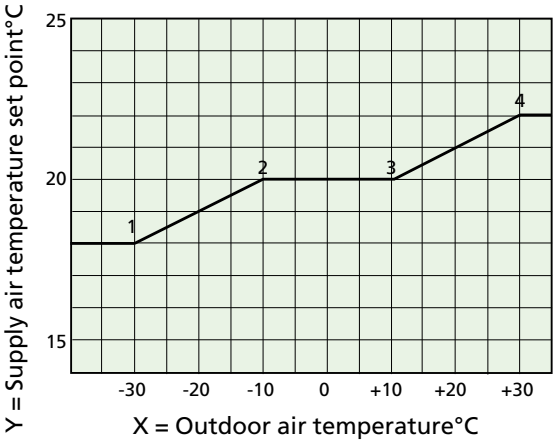
6.1.2.3 Regulation mode

The temperature, at which seasonal controlled temperature regulation shall be active or inactive, can be preset.

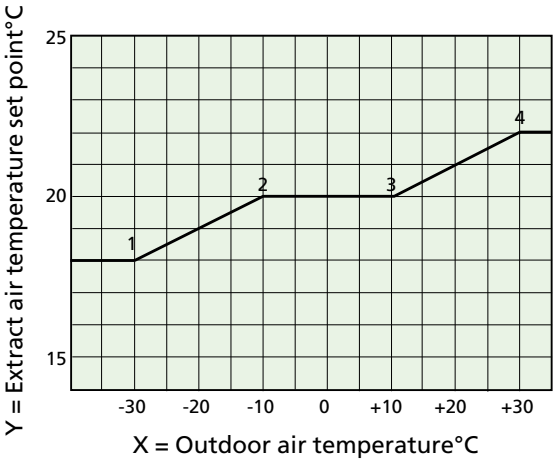
Settings:

Value	Setting range	Factory settings
Seasonal controlled temperature regulation, enabled	-20°C–+40°C	0°C
Seasonal controlled temperature regulation, disabled	-20°C–+40°C	20°C

ORS regulation, example



ORE regulation, example

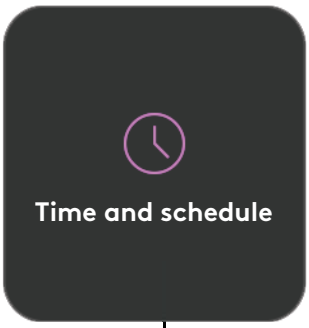


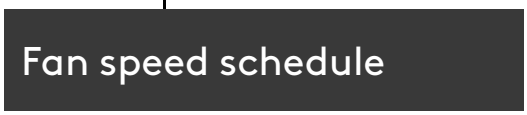
Regulation mode

6.1.3 Time and schedule

The built-in timer enables you to control the AHU's operating mode/time. Certain other overriding functions such as external timer, communication, etc. affect the preset operating modes.

There are five different operating modes:
Total stop = The AHU is completely stopped, no internal automatic functions or external control commands can start the AHU.
Normal Stop = The AHU has stopped, however all the internal and external automatic functions oversteer the stop.
Extended Normal Stop = The AHU has stopped, however all the internal and external automatic functions, with exception of Summer night cool, oversteer the stop.
Low speed = The AHU is running at the preset low speed setting.
High speed = The AHU is running at preset high speed setting.





6.1.3.1 Fan speed schedule

The current operating mode is displayed under schedule settings. The operating schedule is shown in an overview with weekdays and times and exceptions 1 and 2 if these are enabled. A cursor shows the current operating point.

Here a standard action, which the unit always is operating in at non programmed times under day schedule and exception schedule, is set. This setting (start and stop date not activated) is used most often and covers the majority of needs.

Times and days can be set when the unit is to run in the high speed mode, low speed mode or be switched off.

For every day (Monday - Sunday) six different events can be set at a given point in time.

Add the required steps for the operating schedule concerned for each day. Note that the preset event will not be carried over to the next 24-hour period. If no event is set from 00.00 hours of the next 24-hour period, the AHU will operate in the preselected operating mode preset under Schedule settings.

It is possible to copy one day's events to other weekdays.

Settings:

Value	Setting range	Factory settings
Standard action	Total stop/Low speed/ High speed/Normal Stop/ Extended Normal Stop	Low speed
Day	Mon/Tues/Wed/Thur/Fri/ Sat/Sun	Add action
Time	00:00 – 23:59	
Action	Add action/Total stop/Low speed/High speed/Normal stop/ Extended normal stop/Ignore	Add action

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6.1.3.2 Enter start and stop date

Enter start and stop date

When the start and stop date are activated, this means that during the preset period (date) preset time applies during the day schedule and the exceptions schedule and at all other times, the air handling unit runs in the preselected operating mode.

Value	Setting range	Factory settings
Start date	Active/Inactive	Inactive
Start date	Year/Month/Day	
Stop date	Active/Inactive	Inactive
Stop date	Year/Month/Day	

6.1.3.3 Exceptions

Exceptions

Any exceptions (E1 and E2) previously preset in the exception schedule can be added and set. Here it is possible to determine the date or weekday on which the relevant exception is to apply. If Calendar 1 or Calendar 2 are selected, these are set according to details in the next section.

Settings:

Value	Setting range	Factory settings
Exception 1/2		
Exceptions method	Add action/Date/ Date range/ Weekday/Calendar 1/Calendar 2	Add action
Date		
Year	Enter year	Today's date
Month	Each/Odd/Even/ Months 1-12	Today's date
Day	Each/Odd/Even/ Last 1-31	Today's date
Weekday	Each day/ Monday/Tuesday/ Wednesday/ Thursday/Friday/ Saturday/Sunday	Today's date
Date range		
Start date	Enter date	
Stop date	Enter date	
Weekday		
Month	Every Odd/Even/ Months 1–12	Today's date
Days	Every day/Last 7 days/Days 1-7/8-14/15-21/22-28/29-31	
Weekday	Each day/ Monday/Tuesday/ Wednesday/ Thursday/Friday/ Saturday/Sunday	Today's date
Calendar 1	See next chapter	
Calendar 2	See next chapter	

6.1.3.4 Calendar 1 and 2

The specific days when Exceptions schedule 1 or 2 shall apply can be set in Calendars 1 and 2. On condition that Calendar 1 or 2 is selected, see previous section. In other cases, these settings will have no effect.

There is a total of ten possible settings under each calendar and various functions can be selected for each.

Settings (For Calendar 1 and Calendar 2):

Value	Settings range	Factory settings
Function 1–10	Add Function/Date/Date range/ Weekday	Add Function
Date		
Year	Enter year	Today's date
Month	Every Odd/Even/Months 1-12	Today's date
Day	Each Odd/Even/Last 1–31	Today's date
Weekday	Each day/Monday/Tuesday/ Wednesday/Thursday/Friday/ Saturday/Sunday	Today's date
Date range		
Start date	Enter date	
Stop date	Enter date	
Weekday		
Month	Every Odd/Even/Months 1-12	Today's date
Days	Every day/Last 7 days/Days 1-7/8-14/15-21/22-28/29-31	Days 1–7
Weekday	Each day/Monday/Tuesday/ Wednesday/Thursday/Friday/ Saturday/Sunday	Today's date

Calendar 1

Calendar 2

6.1.3.5 Prolonged operation

The control unit inputs for external low speed (terminals 14-15) and external high speed (terminals 16-17) respectively, can be supplemented with Prolonged operation. They can be used for overtime running activated by a pushbutton, for example.

The required time in hours and minutes can be set as follows.

Settings:

Value	Setting range	Factory settings
Ext. timer for low speed	0:00 – 23:59	00:00
Ext. timer for high speed	0:00 – 23:59 (hrs.:min.)	00:00 (hrs.:min.)

Prolonged operation

6.1.3.6 Time and date

The current date and time can be set and adjusted if needed. The timer automatically takes leap years into consideration.

The relevant region and city can be selected, summer time/winter time changeover will then be managed automatically.

Time source can be set to manual or via SNTP (requires connection to network) and BACnet. The time format and date format can be set.

Time and date

Swegon reserves the right to alter specifications.

6.1.4 Energy monitoring

Here energy consumption for fans, heat exchanger, air handling unit, connected MIRUVENT roof fan, as well as collected energy values from a pulse counter can be read. SFP status for the AHU fans and connected MIRUVENT fans as well as the efficiency of the rotary heat exchanger can also be viewed. Calculated power for reheating and cooling are displayed. With an energy measurement module, liquid flow and temperature, measured powers can be shown for reheating and cooling.

Accumulated energy consumption can be reset to zero.



6.1.5 Filters

Basic functions can be set under Installation and the values can be read and set under User (local).

The filter status and the current alarm limit status for filters with activated monitoring can be viewed here. Relevant filters are the supply air prefilter, extract air pre-filter, supply air AHU filter, extract air AHU filter, and supply air end filter.

Filter calibration can be manually activated for each filter. For more detailed information, see ssction 5.



6.2 Settings

6.2.1 Software

The current program versions for the IQlogic control unit, IQnavigator hand-held terminal and the units on the communication bus can be read and updated from the SD card/USB memory stick.



Swegon reserves the right to alter specifications.