# GOLD

Air Handling Unit

## Function manual, users

# GOLD RX/PX/CX/SD version F/G

Applicable to Program Version 2.50 and newer versions

Swegon

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**The document was originally written in Swedish.**



We reserve the right to alter specifications without notice.

# 1. Image Management

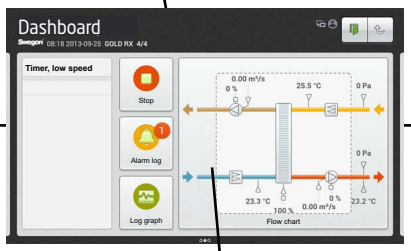
If the touch screen is at rest, press the hand-held terminal's On/ Off button.




*Profile selection. Press on local (user). Does not require entering a code*




*Filter calibration. See Section 2*




*Dashboard. See Section 2.2 in the Operating Procedures Manual of the IQnavigator hand-held micro terminal.*




*Functions. See Section 3*

# 2. 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, SA and EA 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).

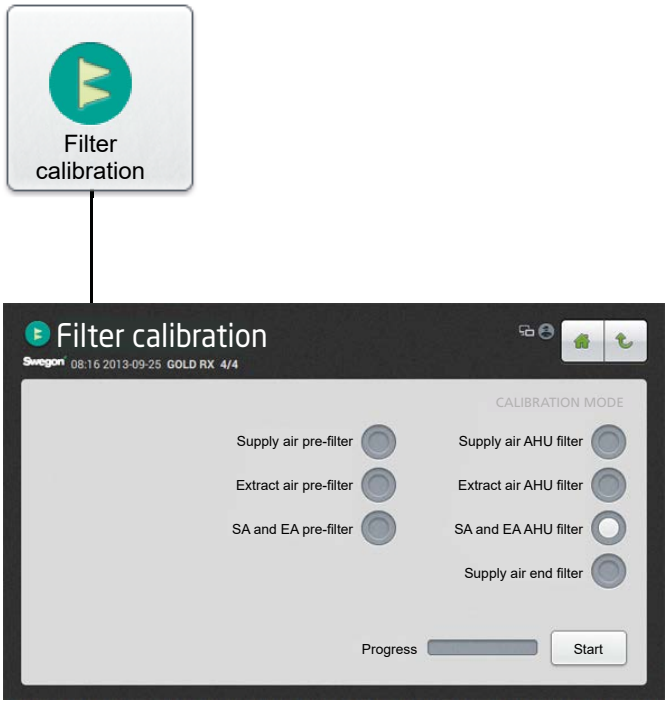
When the flow has been stable (variation of less than +/- 3%) for 30 seconds (adjustable), the calibration starts.

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 min. 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 4.5 in the Function Manual, Installation.) in order to make it possible to enable filter calibration and alarm functions of the end filter and prefilter in GOLD SD supply air and extract air handling units.






We reserve the right to alter specifications without notice.

# 3 Functions
## 3.1 Airflow

See also Section 4.1 in the Function Manual, Installation in which the functions for airflow are described in detail.

### 3.1.1 Status

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

### 3.1.2 Operation level

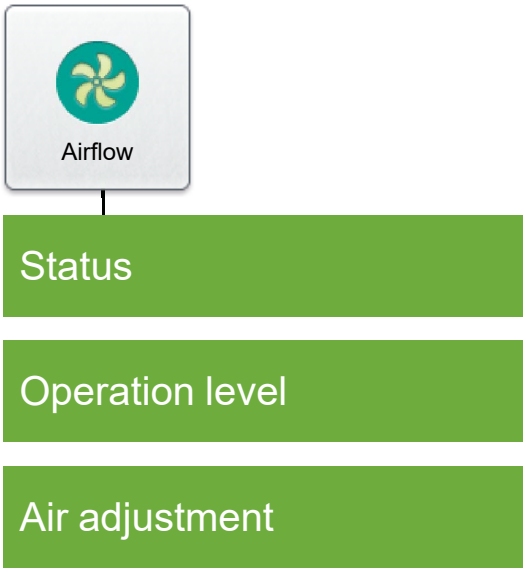
The functions selected (under Installation) and the min. and max. airflows of each AHU size (see the table below) determine which values can be set.

Values for airflow (l/s, m³/s, m³/h, cfm), pressure (Pa, psi, in.wc) or input signal strength (%) can be preset depending on the function selected.

**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, forcing, 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.

**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**

| AIRFLOW | MIN. FLOW FOR AIRFLOW REG., ALL VARIANTS[2] | | MAX. FLOW, ONE-PIECE AHU ROTARY HEAT EXCH (RX, RX+) STE, MPE | | MAX. FLOW, ONE-PIECE AHU ROTARY HEAT EXCH. (RX, RX+) MTE | | MAX. FLOW, ONE-PIECE AHU PLATE H. EXCH. (PX) | | MAX. FLOW, ONE-PIECE AHU COIL H. EXCH. (CX) | | MAX. FLOW, SA AND EA AHU'S (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).*

## 3.1.3 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 terminals. The desired period is preset, but can be interrupted earlier by selecting Stop or by changing the time setting to 0.

# *3.2 Temperature*

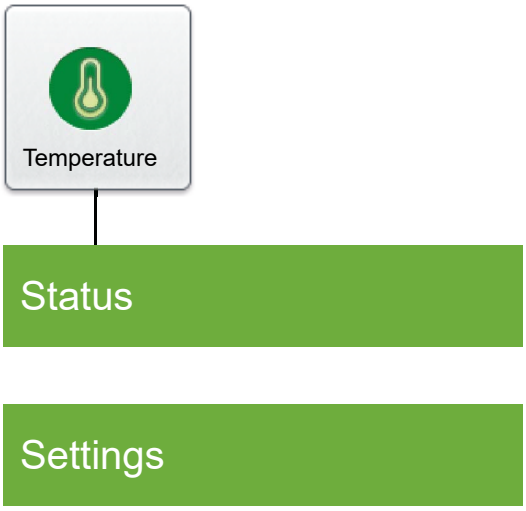
Basic functions can be set under Installation and the values can be read and set under User (local).

Therefore see also Section 4.2 in the Function Manual, Installation in which the functions for temperature are described in detail.

**N.B.!** 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, should be specified in °C or °F, whereas displacements, deviations and differentials should be specified in K (Kelvin).

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




## 3.2.1 Status

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

## 3.2.2 Settings

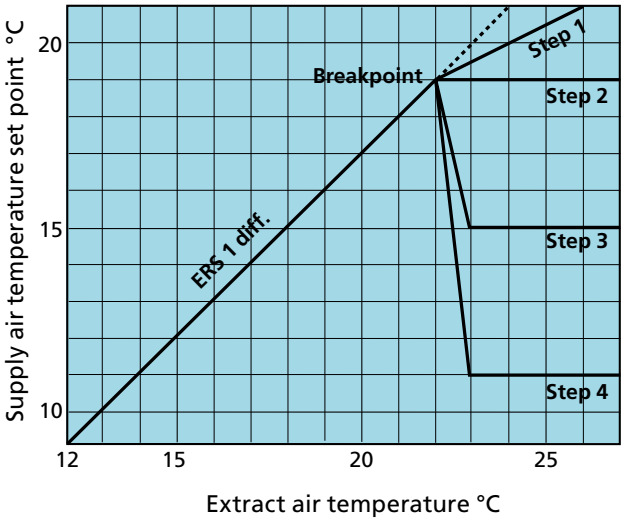
### ERS Regulation 1

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 setting |
|---|---|---|
| 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**






We reserve the right to alter specifications without notice.

## 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 setting |
|---|---|---|
| *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 |

## Supply air regulation

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

Settings:

| Value | Setting range | Factory setting |
|---|---|---|
| Supply air (temp. set point) | 0-40 °C | 21 °C |

## Extract air regulation

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

Settings:

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

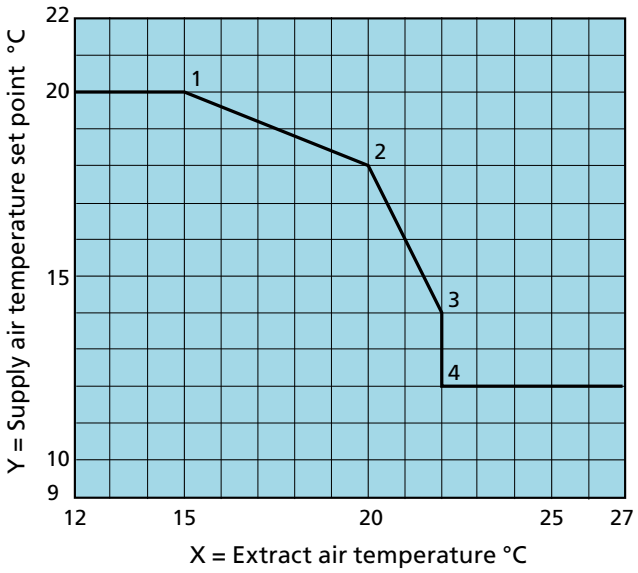
## Seasonal controlled temperature regulation

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

ettings:

| 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. | 8-50 °C | 28 °C |

## ERS Regulation 2, example



### ORS regulation

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

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

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

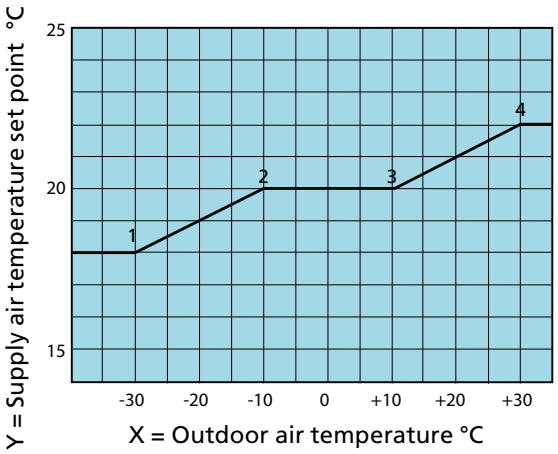
### ORE regulation

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

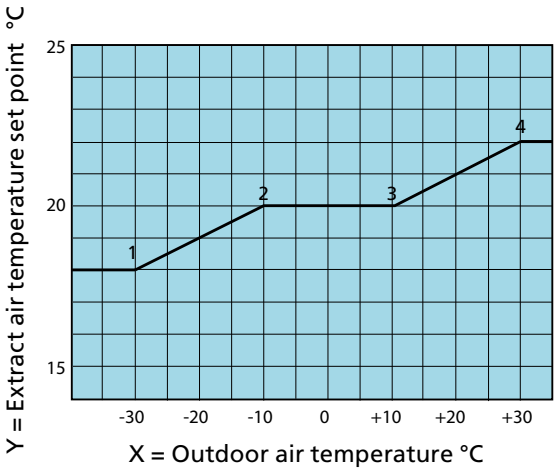
Settings *(see also diagram to the right)*:

| Value | Setting range | Factory setting |
|---|---|---|
| Supply air, min. | 0 – 20 °C | 16 °C |
| Supply air, max. | 16 – 50 °C | 28 °C |
| *Outdoor air temperature* | | |
| Outdoor related extract air X1 | -50 – +50 °C | -20 °C |
| Outdoor related extract air X2 | -50 – +50 °C | -10 °C |
| Outdoor related extract air X3 | -50 – +50 °C | 10 °C |
| Outdoor related extract air X4 | -50 – +50 °C | 20 °C |
| *Extract air temperature set point* | | |
| Outdoor related extract air Y1 | 10 – 40 °C | 21.5 °C |
| Outdoor related extract air Y2 | 10 – 40 °C | 21.5 °C |
| Outdoor related extract air Y3 | 10 – 40 °C | 21,5 °C |
| Outdoor related extract air Y4 | 10 – 40 °C | 21,5 °C |

### ORS regulation, example




### ORE regulation, example




## 3.2.3 Regulation mode

The temperature, at which seasonal controlled temperature regulation shall be enabled and disabled respectively, can be preset.

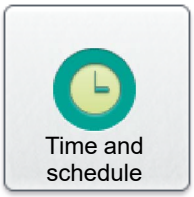
Settings:

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



We reserve the right to alter specifications without notice.

## *3.3 Time and schedule*




The built-in timer enables you to control the AHU's operating mode/time. Certain other oversteering 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. Total stop also oversteers manual operation via the hand-held terminal.

Low speed = The AHU is running at the preset low speed setting.
High speed = The AHU is running at the preset high speed setting.
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.

### 3.3.1 Time and date

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 changover 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.

### 3.3.2 Schedule settings

Schedule settings

The relevant operating mode can be read under Schedule settings. Here you can also set a preselected operating mode, in which the air handling unit always operates during non-programmed time, under Day schedule and Exceptions schedule. This setting (start and stop date not activated) is used most often and covers the majority of needs.

When the start and stop date is 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 AHU runs in the preselected operating mode.

Settings:

| **Value** | **Setting range** | **Factory settings** |
|---|---|---|
| Preselected operating mode | Total stop/Low speed/High speed/ Normal Stop/ Extended Normal Stop | Low speed |
| Start date | Active/Inactive | Inactive |
| Start date | Year/Month/Day | |
| Stop date | Active/Inactive | Inactive |
| Stop date | Year/Month/Day | |

## 3.3.3 Day schedule

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

For each day (Monday - Sunday), six different events can be set to occur at a given point in time. Here, it is also possible to set six different events for two exceptions under Ex1 and Ex2. The provisions for these exceptions can then be set under Exceptions schedule, Calendar 1 and Calendar 2.

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.

Settings:

| Value | Setting range | Factory settings |
|---|---|---|
| Day | Mon/Tues/Wed/Thurs/Fri/Sat/Sun/Ex1/Ex2 | |
| Time | 00:00-23:59 | 00:00 |
| Action | Inactive/Total stop/Low speed/High speed/Normal Stop/ Extended Normal Stop/Ignore | Inactive |

Day schedule

## 3.3.4 Exceptions schedule

Possible exceptions (Ex1 and Ex2), previously preset in the day schedule can be set in the Exceptions schedule. Here you can determine on which date or weekday the relevant exception shall apply. If you select Calendar 1 or Calendar 2, which is the most often the case, these can be set according to particulars in the next section.

Settings:

| Value | Setting range | Factory settings |
|---|---|---|
| *Exceptions schedule 1/2* | | |
| Exceptions method | Inactive/Date/Date range/Weekday/ Calendar 1/ Calendar 2 | Inactive |
| *Date* | | |
| Start date | Year/Month/Day | |
| Start weekday | Each day/ Monday/Tuesday/ Wednesday/ Thursday/Friday/ Saturday/Sunday | Each day |
| *Date range* | | |
| Start date | Year/Month/Day | |
| Start weekday | Each day/ Monday/Tuesday/ Wednesday/ Thursday/Friday/ Saturday/Sunday | Each day |
| Stop date | Year/Month/Day | |
| Stop weekday | Each day/ Monday/Tuesday/ Wednesday/ Thursday/Friday/ Saturday/Sunday | Each day |
| *Weekday* | | |
| Start date | Mon 1-12/Odd/ Even/Each Day 1-7/8-14/15-21/22-28/29-31/ Latest 7 days/Each day | |
| Start weekday | Each day/ Monday/Tuesday/ Wednesday/ Thursday/Friday/ saturday/Sunday | Each day |
| Calender 1 | See next chapter | |
| Calender 2 | See next chapter | |

Exceptions schedule



We reserve the right to alter specifications without notice.

## 3.3.5 Calendar 1 and 2

Calendar 1

Calendar 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 respectively):

| Value | Setting range | Factory setting |
|---|---|---|
| Function 1-10 | Inactive/Date/Date range/ Weekday | Inactive |
| *Date* | | |
| Start date | Year/Month/Day | |
| Start weekday | Each day/Monday/Tuesday/ Wednesday/Thursday/Friday/ Saturday/Sunday | Each day |
| *Date range* | | |
| Start date | Year/Month/Day | |
| Stop date | Year/Month/Day | |
| *Weekday* | | |
| Start date | Month 1-12/Odd/Even/Each Day 1-7/8-14/15-21/22-28/29-31/Latest 7 days/Each day | |
| Start weekday | Each day/Monday/Tuesday/ Wednesday/Thursday/Friday/ Saturday/Sunday | Each day |

## 3.3.6 Prolonged operation

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 setting |
|---|---|---|
| Ext. low speedt | 0:00 - 23:59 (hrs.:min.) | 0:00 (hrs.:min.) |
| Ext. high speed | 0:00 - 23:59 (hrs.:min.) | 0:00 (hrs.:min.) |

## 3.4 Energy monitoring

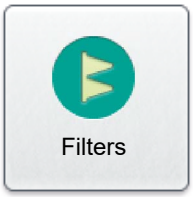



Status of the power consumed by fans and other AHU components can be viewed here. SFP status for the AHU fans and the efficiency on heat transfer of the rotary heat exchanger can also be viewed.

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.

## 3.5 Filters

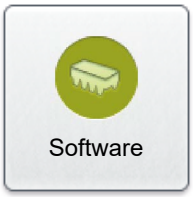



Basic functions can be set under Installation and the values can be read and set under User (local).

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, SA and EA AHU filter and Supply air end filter.

Filter calibration can be manually activated for each filter. For more detailed information, see Section 2.

## 3.6 Software




The relevant program versions for the IQlogic control unit, IQnavigator hand-held terminal and input units on the communication bus can be viewed and updated from the SD circuit card inserted in the IQlogic control unit (this can take a few minutes).

## 3.7 Language




The language desired can be set here. The appropriate language is normally selected the first time the AHU is started up. However, the language setting can be changed at any time.

Settings:

| Value | Setting range | Factory setting |
|---|---|---|
| Language | Available languages are displayed | English |



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