



SwemaFlow 4000

Operating instructions

vers 1.23 CHL20160527



SWEMA AB
Pepparv. 27
SE-123 56 FARSTA
SWEDEN
Tel: +46 8 94 00 90
Fax: +46 8 93 44 93
E-mail: swema@swema.com
Web page: www.swema.com

Contents:

1. Introduction.....	1
2. Technical data.....	1
3. Function.....	2
4. Charging.....	5
5. Driver Installation.....	5
6. SwemaTerminal 3.....	6
with firmware update.....	8
7. Instrument PC menu.....	8

1. Introduction

Thank you for choosing a quality instrument from Swema. SwemaFlow 4000 measures airflow directly in l/s, m³/h or cfm (when set to US units). The instrument is turned on and off with the red button next to the display. When the instrument is turned on the display shows first the firmware version then the voltage of the battery. After a few seconds the instrument is ready for measurement. The instrument is automatically turned off after ten minutes.

The measuring equipment includes:

- Flow capture instrument with case
- Flow hood 650x650mm with case
- Charger
- USB-cable
- Operating instructions
- Calibration certificate

Accessories:

Flow hood 250 x 1200 mm, h = 800 mm (Part.nr 764420)

Cross for Swirl diffusers (Part.nr 769630)

2. Technical data

Measuring range:

Air Flow: 3 ... 1500 l/s, 10.8 ... 5400 m³/h, 6.4... 3178 cfm

Temperature: 0... 50°C, 32... 122°F

Barometer: 600... 1200 hPa, 18... 35 inHg

Measurement uncertainty:

Air Flow: 3 ... 30 l/s : ±1 l/s or better at 20 ... 25 °C
30 ... 1500 l/s : ±3 % or better at 20 ... 25 °C
± 0.15 % per °C deviation from cal. temperature

Temperature: ±0.4°C above 50 l/s

±0.6°C below 50 l/s

Barometer: ±3.5 hPa

At 95% coverage probability in non condensing, non moist air, <80 % RH, non aggressive gases

Memory: 9999 measurements

Air Flow measuring method: Mass flow, net of hot wires

Weight: 4,0 kg (including capture hood 650x650mm)

3. Function

The current flow is presented on the display two times per second. SwemaFlow 4000 compensates automatically for the air density by measuring air temperature and barometric pressure.

On/Off (RED button)

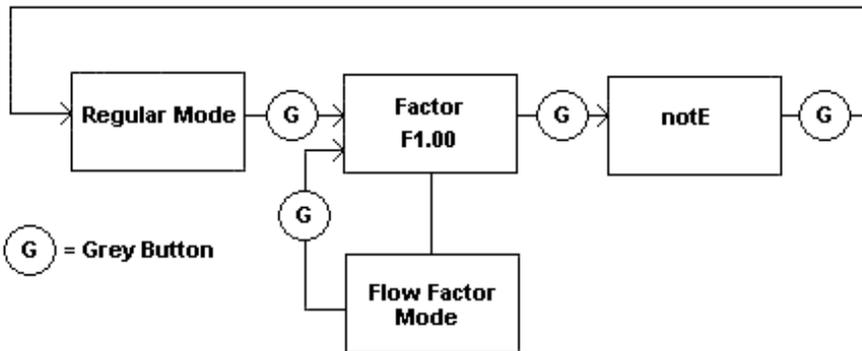
Turn on the instrument by pressing the RED button (next to display). The display will go through a sequence showing firmware version, battery status, "Std" if set to display mass equivalent flow for standard air density and lastly SwemaFlow 4000 enters regular measuring mode and displays current flow. Turn the instrument off by pressing the RED button. Toggle the display light by pressing the RED button while the BLUE button is held down.

Unit (BLUE button)

By pressing the BLUE button the display toggles between l/s, m³/h, air temperature (°C) and barometric pressure (hPa). When set to US units it toggles between cfm, air temperature (°F) and barometric pressure (inHg).

Mode (GREY button)

Toggle between Regular mode, Flow Factor mode and stored values (notE) with Grey button.



Standard Measurement

Place the hood with the sealing list making a proper seal around the valve. Read the air flow value from the display.

SwemaFlow 4000

HOLD Function (Button on HANDLE)

If the button on the HANDLE is pressed down shortly the display will freeze the measured value. "Hold" is shown in the upper left corner of the display. Press the BLUE button to toggle between the frozen values (frozen air flow, temperature and barometric pressure). Release frozen values by pressing down the HANDLE button for less than 2 s.

Save Measurement (Button on HANDLE held down)

If a measurement is frozen it can be saved by holding down the button on the HANDLE for 2 sec. The display will show which note number the measurement is saved as and then return to measuring mode.

Flow Factor Measurement (F-mode)

In Flow Factor mode the flow is multiplied with a flow factor (flow factor 1.00 will not alter the flow). A flow factor can for example be used to compensate for a leakage. Warning: Changing to anything else than 1.00 will alter the reading from the calibration certificate. The display will show the text "Factor" when the instrument is in F-mode. If in regular measuring mode and the GREY button is pressed the display will show F1.00 or the flow factor value the instrument is set to. For example F1.10 will multiply measured flow with 1.10 and display the result.

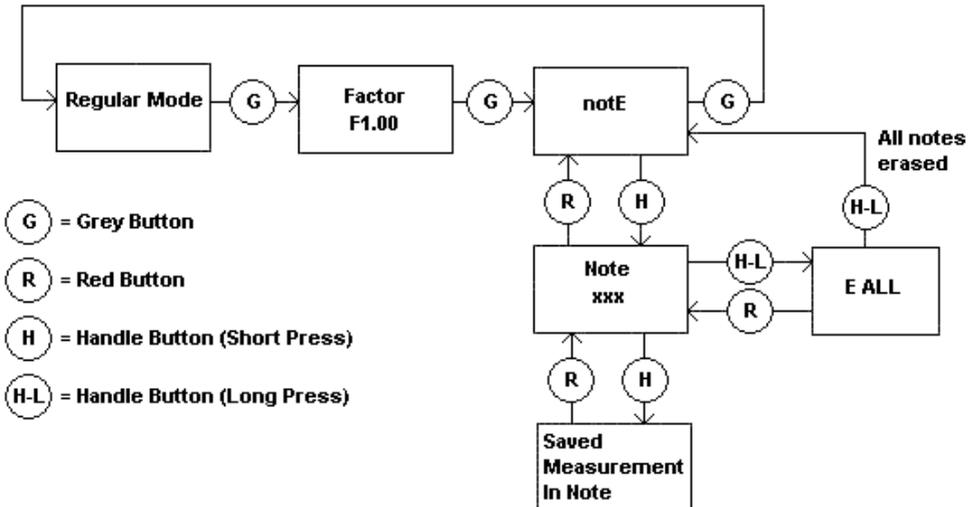
Make a Measurement with a Flow Factor

To measure with the flow factor displayed next to F press button on HANDLE. To change F-value instead hold down the HANDLE button for minimum 2 sec when F1.00 is shown. The first digit will start flashing, change value by pressing GREY or BLUE button. When correct value is chosen confirm by press shortly the button on the HANDLE and the second digit will start flashing, repeat the same procedure with the second and third digit. After the third digit is confirmed the instrument will start measuring in F-mode. Measurement can be stored in the same way as in regular measuring mode. To return to regular measuring mode press GREY button 3 times (first press will show FX.XX, second will show notE and the third will take you to regular mode).

Note book (notE)

If GREY button is pressed two times when in standard measuring mode notE will be displayed. To enter the note book press the button on the HANDLE (small red button). "Note" and the number of the last saved note will be shown on the display. With GREY and BLUE button it's possible to scroll through the saved notes. To return to notE press RED (display) button.

To see saved measurement in a note press HANDLE button. With GREY and BLUE button it's possible to scroll through the saved measurements in the note (air flow, temperature and barometric pressure). To return to notes press the RED (display) button. To erase all hold down the button on the HANDLE button for 2 sec, "E ALL" (Erase All?) will be shown in the display. To return to notes press the RED (display) button, to erase all notes hold down HANDLE button again. After all notes are erased "notE" will be shown in the display, press GREY button to go to regular mode.



4. Charging

SwemaFlow 4000 has built-in rechargeable Li-ion-batteries. Battery charge time is approximately 4h (80% after approx. 2h). The charger can be connected to the instrument longer without damaging the battery. The battery can also be charged with a USB cable connected to a computer. The green led will have a fixed light during charging, when fully charged the green led will be turned off. You can use the instrument while charging. Caution! Use only the original charger and standard USB connections to avoid damaging the batteries.

Battery check

When turning on the instrument the display shows the voltage of the battery. A fully charged instrument shows approximately 4.1 V (it will drop to 3.8-3.9V quite fast). When the supply voltage is lower than 3.2 V a battery symbol will be visible on the display. When the supply voltage is lower than 2.9 V the instrument will be automatically shut off.

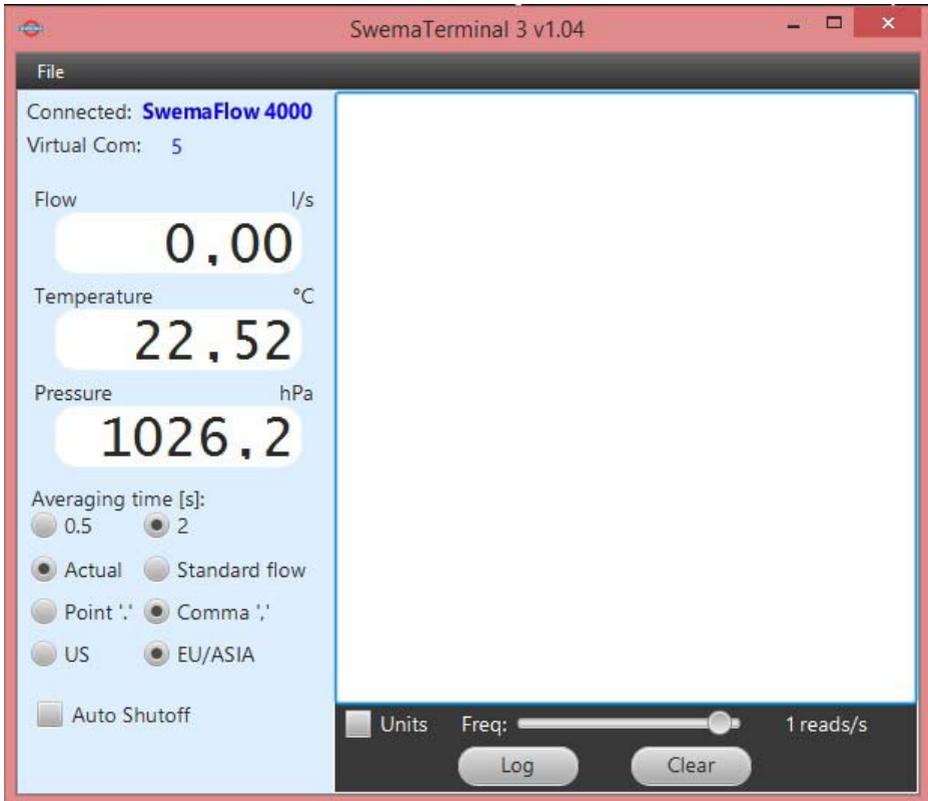
5. Driver installation

To use SwemaFlow 4000 with a Windows 10 PC, just connect the USB cable and wait for driver installation to complete. To use SwemaFlow 4000 with an earlier OS driver matching .inf-files must be used by the OS. The necessary files and drivers are automatically installed with the free Swema software "SwemaTerminal 3".

1. Download the "SwemaTerminal 3" zip-file from www.swema.com
2. Unzip the file and run the setup file. When the setup is done connect the USB cable to the PC and turn the instrument on. The PC will now install the necessary drivers automatically.

In case the driver installation doesn't succeed you can also do it manually. Open the device manager, right click on "unknown device" and then "update driver". The drivers can be found at "C:/Program Files/Swema" (make sure that the box "include sub folders" is checked).

6. SwemaTerminal 3



With SwemaTerminal 3 it's possible to change settings, print stored measurements, update firmware, print calibration protocol, do on-line logging and store the logged data on your PC. Information of what kind of instrument and at which COM-port it's connected can be found on the top left side.

"Flow", "Temperature" & "Pressure":

SwemaTerminal 3 shows the air flow, temperature and barometric pressure that SwemaFlow 4000 is currently measuring.

"Averaging time":

A higher "Averaging time" will use more internal samples for the averaging and give a more stable value.

SwemaFlow 4000

"Actual" or "Standard flow":

If set to "Real" the flow shows as it is at present temperature and barometric pressure. Standard air flow is used to present the air flow at standard condition of 1013 hPa (29,9 inHg) and 20 °C (68 °F).

"Point" or "Comma":

Set point or comma as decimal separator for the the prinout of stored values and for logged measurement to PC.

"US" or "EU/ASIA":

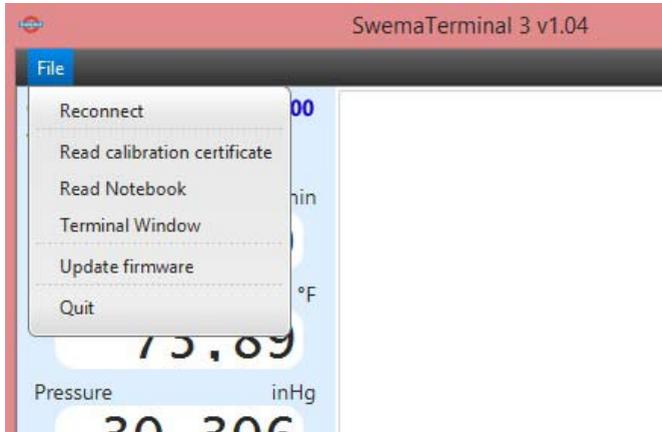
Set unit system to US (ft³/min, °F, inHg) or EU/ASIA (l/s, °C, hPa).

"Auto Shutoff":

Set in minutes after how long time the instrument will be turned off if not used. If set to 0 min the auto shutoff is disabled.

Log:

Press the "Log" button to start an online logging of measured values (can be saved as a txt-file). If the box to the left of "Unit" is checked the logged values will be shown/stored with chosen unit (m/s, fpm etc.) With "Freq:" it's possible to set how often a new value should be stored.



"Read calibration certificate" and "Read Notebook":

By clicking on "File" a dropdown menu is opened. It's here possible to show SwemaFlow 4000:s calibration certificate and print the stored measurements to the PC.

Firmware update

On www.swema.com the newest firmware version will be possible to download. To update the firmware first download the new firmware to your PC. Start SwemaTerminal 3 with the SwemaFlow 4000 connected to a USB port with the USB cable. In SwemaTerminal 3 click on "File" and then "Update firmware". A new window is opened, follow the instructions in that window.

Terminal Window

Under the "File" dropdown menu it's possible to open a Terminal window through SwemaTerminal 3 to access the instrument PC menu.

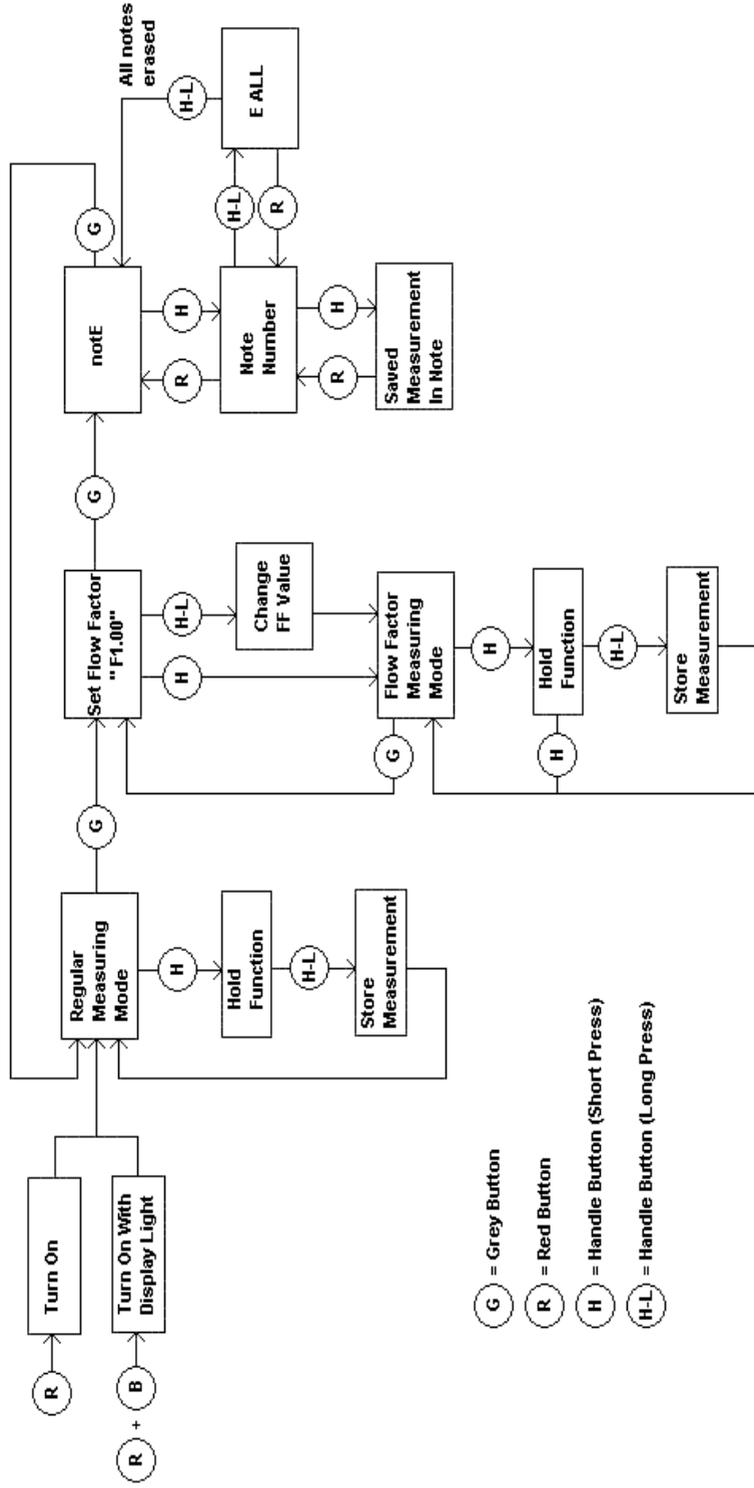
7. Instrument PC menu

After "Terminal Window" is clicked a new window is opened. Press "Enter" on the keyboard and the main terminal menu for SwemaFlow 4000 will be opened. To change a setting use the PC keyboard and press on the corresponding letter.

SwemaFlow 4000 main terminal menu:

SwemaFlow 4000 Firmware: 1.23 Hardware: 1.1

- [T] Averaging Time: 0.5 seconds
- [D] Density compensation: Actual Flow
- [S] Auto Shutoff: Disabled
- [P] Print Calibration Certificate
- [N] Print Notebook
- [E] Erase Notebook
- [O] Decimal delimiter: Comma
- [U] Unit System: EU/ASIA
- [H] Charging: On
- [] Space - Print measurement Values



G = Grey Button

R = Red Button

H = Handle Button (Short Press)

H-L = Handle Button (Long Press)



SWEMA AB
Pepparv. 27
SE-123 56 FARSTA
Tel: +46 8 94 00 90
Fax: +46 8 93 44 93
swema@swema.com
www.swema.com