SwemaMan 60 Instructions

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

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1. Introduction

SwemaMan 60 measure differential pressure or air velocity when connected to a pitot static pipe. Differential pressure displays in Pa and air velocity in m/s or fpm. Two easily changeable (regular or rechargeable) AA-batteries are used. A 220V adapter (part no. 763.050) can be used, but doesn't charge the batteries.

2. Technical data

Differential pressure: -300… 5000Pa
Air velocity: 2.0…91 m/s, 400…17900 fpm at 20°C, 1013hPa
Resulotion: 0,1 Pa
Uncertainty: ±1% read value, lowest ±1,5Pa
95% coverage probability in non condensing, non moist air, <80%RH, non aggressive gases.

Position dependence: typ. ±0,6Pa
Operating temperature: 0…+50°C
Battery: 2 x 1,5V IEC LR6, AA
Size: 180x36x82mm
Weight: 380g

The user should correct the measured values with the correction on the calibration protocol to obtain stated accuracy. Recommended calibration interval is 1 year.

3. Start of instrument

- When starting the instrument (ON/OFF-button), the display shows the battery voltage and the version number of the firmware. After one second it goes to measuring mode.

- If the voltage should drop below 1.8 V, the symbol for low battery is shown.
  If the voltage should drop below 1.6 V, the instrument can't be turned on.
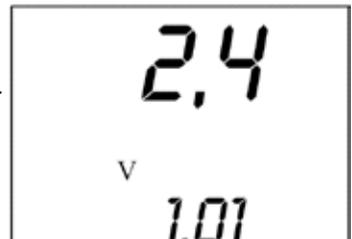
- **Calibrate to zero**
  By pressing short on **UNIT** SwemaMan 60 is set to zero. Make sure that you have zero differential pressure connected and that you don't move the instrument during zeroing.

- **Pressure or Air velocity**
  Press on UNIT for at least 3 seconds to shift between Pa, m/s or fpm. (If the differential pressure is higher than 5050 or lower than −303 Pa the display blinks due out of instrument measuring range.) To measure air velocity (m/s or fpm) connect a pitot static pipe. Selected unit will be used next time you turn the instrument on.

4. Calculation of air velocity

Air velocity is calculated from the formula:

$$v = \sqrt{\frac{2 \cdot \Delta P}{\rho}}$$

ΔP = dynamic pressure = stagnation pr.-static pressure (Pa)

ρ = desity of air = $1.293 \cdot \dfrac{B \cdot 273}{1013 \cdot (273 + t)}$ (kg/m^3)

B   = barometric pressure (calculated value 1013hPa)
t   = Air temperature   (calculated value 20ºC)

Use the correction table on the backside of the instrument when measuring at different temperatures and barometric pressures.

5. Data transfer to PC

Connect SwemaMan 60 to a computer by using "PC-cable to SwemaMan" (Part no: 763040). The PC-cable has a RS232 connection so connect it to a free COM-port on the computer. If the computer hasn't a COM-port use a USB-adapter (Part no: 583225).

To transfer data use a terminal software for example "Hyperterminal" or "Teraterm" (Teraterm can be downloaded at www.swema.com).

Set in the terminal software which COM-port the instrumentet is connected to. Use following settings in the software for the COM-port:

Bits per second:	**9600**
Data bits:	**8**
Parity:	**None**
Stop bits:	**1**
Flow control:	**Hardware**

Press **ENTER** on the computer-keyboard and you get a calibration protocol. In the calibration protocol the values between –300 and 500 have one decimal but are printed without a decimal comma. Temp is the surrounding temperature at calibration with 2 decimals, without comma.

Press **Space** and the measurement data is printed on the screen (the same unit that is shown in the display). The instrument shows only one value at a time Pa (with 1 decimal), m/s (with 1 decimal) or fpm (without decimals).

6. Alter settings by PC

When SwemaMan 60 is connected to a PC it is possible to change some settings.

Press **%M ENTER ENTER** to enter settings menu:

[P] Point	0
[S] Shut	0
[T] Time constant	0
[V] Valve	0

Press **P** or **p** to change between ","(comma) and "." (point) as indicating decimal (comma = 0) or (point = 1).
This is for PC printouts of measured value. Confirm with **ENTER**.

Press **S** or **s** to change shut off time in minutes. Select 0 to disable auto shut off. Confirm with **ENTER**

Press **T** or **t** to change display time constant. The display is updated every 0,25 seconds (T=0) or 0,5 seconds (T=1) or 2 second (T=2) or 8 seconds (T=3). Confirm with **ENTER**

V is only used if Swema has installed a valve (short-circuits the pressure automatically). Normally there are no valve installed and the value should be 0.

Exit the menu by pressing **% ENTER.**