

# HK INSTRUMENTS

USER-FRIENDLY MEASURING DEVICES



## PHM-V1 MICROMANOMETER

User guide

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## TECHNICAL SPECIFICATIONS

### TECHNICAL SPECIFICATIONS

Measurement range:	-250 ... 2550 Pa
Accuracy*:	1.4 % from reading
Maximum overpressure:	30 kPa
Compatible mediums:	Air and non-aggressive gases
Power supply:	4 x AAA batteries or rechargeables
Connectors:	Pressure hoses: male Ø 5.0 mm USB: Mini B
Weight:	170 g
Dimensions:	175.0 x 80.5 x 30.0 mm
Operating temp. range:	-10 ... 50 °C
Operating humidity range:	0 ... 95 % rH
Protection class:	IP 54
Units on display:	Air volume flow: l/s, m <sup>3</sup> /s, m <sup>3</sup> /h Pressure: Pa, mmH <sub>2</sub> O, inchWC, mbar

\*) Includes general accuracy, temperature drift, linearity, hysteresis and repetition error. All devices are individually calibrated and temperature compensated.

### MEASUREMENT TECHNOLOGY

Measurement is based on differential pressure measurement, where the volume flow is calculated by K-values stated by valve manufacturers. The device uses the following formula:  $q = k \cdot \sqrt{\Delta P}$ , where [q] = l/s and [ $\Delta P$ ] = Pa.

Can be used with a pitot tube.

### CONFORMITY

The device conforms to the following requirements:

	CE:	UKCA:
RoHS:	2011/65/EU	S.I. 2012/3032
EMC:	2014/30/EU	S.I. 2016/1091
WEEE:	2012/19/EU	S.I. 2013/3113

## UNPACKING

Unpack the device and accessories carefully from the shipping container and check that all the items listed below can be found. Notify your reseller immediately if any items are damaged or missing.

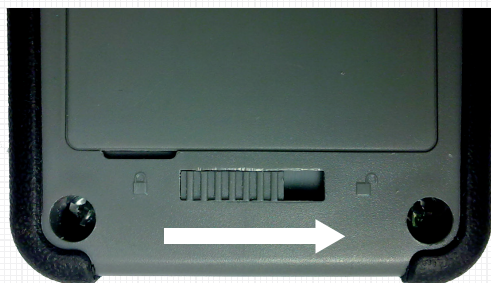
- The PHM-V1 device
- 2-meter-long PVC hose (2 pcs)
- USB Mini B cable
- Fläkt Woods valve measurement tool
- Carry strap (attached to the device)

## COMMISSIONING

The PHM-V1 works using four AAA alkaline batteries or rechargeables. The device has been fitted with alkaline batteries from the factory, so there is no need to install batteries when first starting to use the device.

### INSTALLING BATTERIES

Open the battery compartment by pushing the locking tab to the unlocked (right) position.

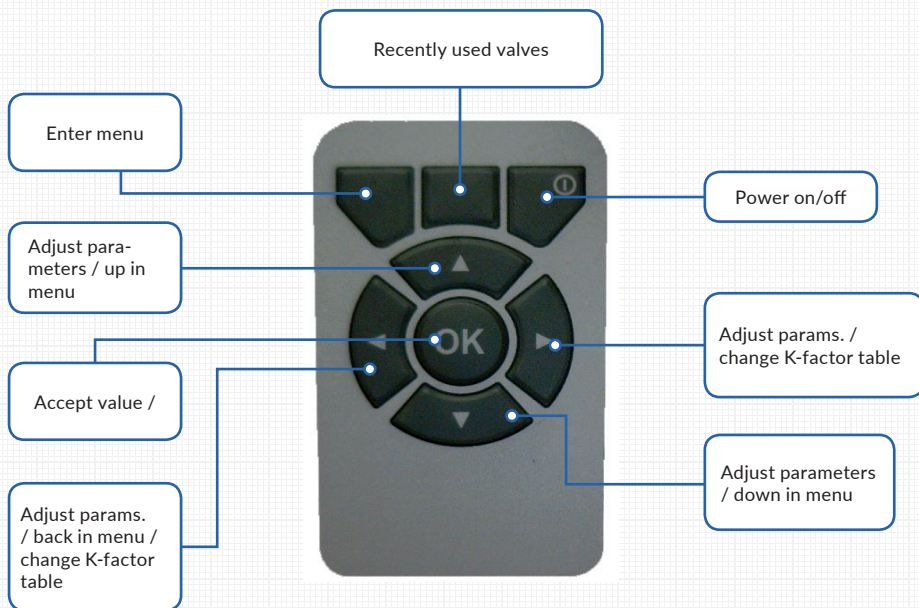


*Picture 1. Opening the battery compartment*

Install four AAA batteries into the compartment as shown inside. Close the compartment and lock it by pushing the locking tab to the locked (left) position.

## USING THE METER

### BUTTON FUNCTIONS



Picture 2. The keyboard

The device is turned off by pressing the power button continuously for over 2 seconds.

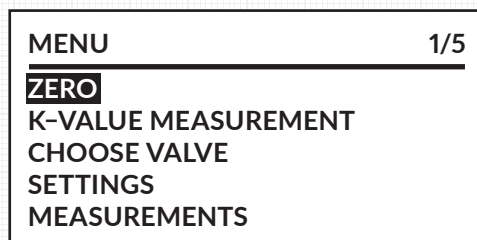
## MENU

The menu is accessed by pressing the top left-hand corner button. When navigating the menus, **OK** moves forward and **left arrow** moves back.

### Main menu

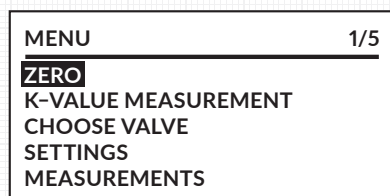
Following choices are available in the main menu:

- ZERO
- K-VALUE MEASUREMENT
- CHOOSE VALVE
- SETTINGS
- MEASUREMENTS



### Zeroing measurement

Measurement is zeroed by selecting ZERO. A bar graph on the display indicates when the zeroing is completed. The device will automatically return to measurement mode once the zeroing is completed.



### Measure using K-value

In the K-value measurement mode, one K-value is selected for measurement. K-value can be changed using the keyboard. (See "K-factor measurement, page 12").

### Select valve

One pre-installed ventilation valve can be selected at a time in the **CHOOSE VALVE** menu. You may adjust the valve opening using the keyboard which automatically yields the correct K-value. (See "Measurement using chosen valve, page 12").

## SETTINGS

General device settings are altered in the settings menu. The following settings are available:

- CHOOSE UNITS
- MEAS. TYPE
- DISP SETTINGS
- DATE
- CLOCK
- AUTO OFF
- TEMPERATURE

SETTINGS		1/7
<b>CHOOSE UNITS</b>		
MEAS. TYPE		
DISP SETTINGS		
DATE	17.11.2016	
CLOCK	10:19:43	

## CHOOSE UNITS

Pressure and volume flow units can be changed via the CHOOSE UNITS menu. Possible units for pressure are: Pa, mmH<sub>2</sub>O, inchWC and mbar. Possible units for volume flow are: l/s, m<sup>3</sup>/h and m<sup>3</sup>/s. The selected unit is shown in bold text.

MENU	1/5
ZERO	
K-VALUE MEASUREMENT	
CHOOSE VALVE	
<b>SETTINGS</b>	
MEASUREMENTS	



SETTINGS		1/7
<b>CHOOSE UNITS</b>		
MEAS. TYPE		
DISP SETTINGS		
DATE	17.11.2016	
CLOCK	10:19:43	



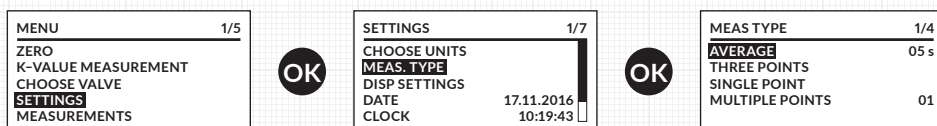
CHOOSE UNITS		1/2
<b>FLOW</b>		l/s
PRESSURE		Pa



## MEASUREMENT TYPE

The user may select from four different measurement methods: averaging, three-point measurement single-point or multiple points measurement. (See "Making measurements", page 12).

**Average** measures pressure and volume flow averages from time period selected by the user. The period can be changed when Averaging is selected and OK is pressed. The period will start to blink. Desired time period (1...59 s) may now be selected using up and down arrows. Selection is confirmed by pressing OK. Selected measurement method is shown in bold text.



**Three points** takes three separate measurements of pressure and volume flow and the end result is an average of the three measurements.

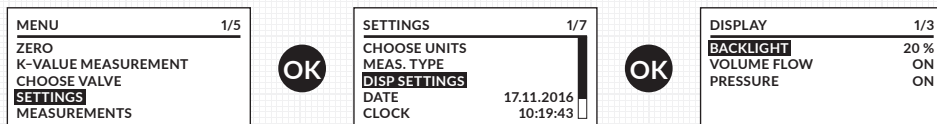
**Single point** uses instantaneous pressure and volume flow measurements.

**Multiple points measurement** allows pressure and flow measuring from the multiple measuring points and the result is an average of the measured points (max. 15 points).

## DISPLAY SETTINGS

Backlight brightness and visibility of pressure and volume flow measurements can be adjusted in the display settings.

**Please note!** To maximize the battery life of the device it is recommended to set the backlight brightness to only as bright as the surroundings dictate. Typically, 20 % is bright enough for all surroundings. This will make the battery life significantly longer.



## DATE

Date is set by pressing **OK** and changing values using the **up** and **down** buttons. Active selection will blink on the screen. You may move to the next value by pressing **right** button and to the previous by pressing **left** button. When the date is set, press **OK** to confirm.

## CLOCK

Time is set by pressing **OK** and changing values using the **up** and **down** buttons. Active selection will blink on the screen. You may move to the next value by pressing **right** button and to the previous by pressing **left** button. When the time is set, press **OK** to confirm.

## AUTO OFF

Auto Off will shut down the device automatically after it has been left unused for 10 minutes. Auto Off can be turned on or off by pressing **OK**.

## TEMPERATURE

Temperature is set by pressing **OK** and adjusting with **up** and **down** buttons. Air density changes with temperature, and therefore affects the volume flow calculation. K-values usually apply under normal room conditions (temperature 20 °C). Changing the temperature value the device will automatically compensate the volume flow calculation.

## MEASUREMENTS

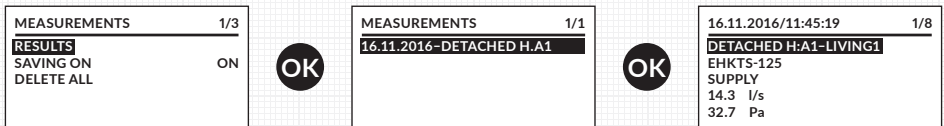
Old measurement savings can be viewed and deleted in the **Measurements**-menu. It is also possible to toggle measurement saving on or off. There are three selections available in the menu:

- RESULTS
- SAVING ON
- DELETE ALL

## MEASUREMENTS

All previously recorded measurements are available for viewing in the **Measurements** menu. The device will sort all records by date and time so that the oldest is first and latest is last. Each recording contains the following information:

- space/room (for example, bathroom)
- valve type and size (for example KSO-100)
- K-factor
- volume flow and pressure
- valve opening
- temperature



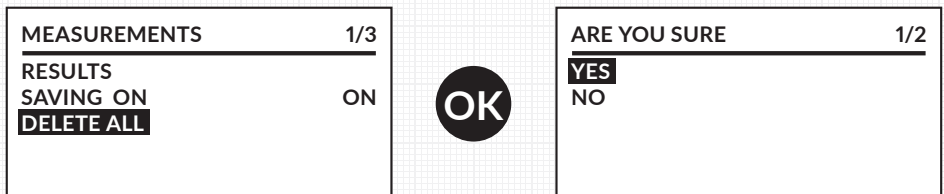
Return back in menu by pressing the **left** arrow key.

## SAVING ON

If recording is on, the device will ask after each measurement whether to record the measurement. Recording can be switched on or off by pressing **OK**.

## DELETE ALL

**Delete all** permanently erases all the records. Records are erased by pressing **OK** after which the device will ask for confirmation. Select **Yes** if you are sure, otherwise select **No**.



## MAKING MEASUREMENTS

There are two distinct measurement modes; measuring using K-factor and measuring using chosen valve.

K-factor measurement the chosen measurement parameter is the K-factor. In valve measurement, the K-factor is derived from the chosen valve and a parameter relating to, for example, its opening value.

Measuring using K-factor

P: 0.0 Pa
0.0 l/s
<b>K:0001.00</b>

Measuring chosen valve

EHKTS-100-K1	K:1.60
	a(mm)
0.0 l/s	3
0.0 Pa	4
	5

Before commencing measuring the user has to set up units (Select units, pg. 8) and measurement mode (Measurement mode, pg. 9)

### K-FACTOR MEASUREMENT

When in K-factor measurement mode, the K-factor can be changed on display. K-factor number is chosen by pressing **left** and **right** arrows and its value is changed using the **up** and **down** arrows. When the desired K-factor is shown on display, the measurement is carried out by pressing **OK**. Once measurement is completed, it will blink on display. If sliding average is selected, the measurement is the sliding average with the most recent measurement calculated in it. In the case of the three-point measurement, the measurement is the average of three measurements. With the blinking measurement on display, the device returns back to measurement mode by pressing **OK**. If measurement recording has been enabled the device will ask to record the measurement before returning to measurement mode.

### MEASUREMENT USING CHOSEN VALVE

Different valves with different K-values can be saved to the device's internal memory. By selecting a valve, there is no longer need to remember separate K-factors, instead K-factor is derived by other parameters. Before measuring a valve is chosen from the device's memory.

<b>MENU</b> 1/5 ZERO K-VALUE MEASUREMENT <b>CHOOSE VALVE</b> SETTINGS MEASUREMENTS	OK	<b>MANUFACTURER</b> 1/8 EH-Muovi Fläkt Woods Halton Lindab Pitot measurement	OK	<b>TYPE</b> 1/5 <b>EHKTS</b> EHP EHS EHSS EHTH
<b>SIZE</b> 1/2 <b>EHKTS-100</b> EHKTS-125	OK	<b>K-TABLE</b> 1/2 <b>K1</b> K2	OK	<b>EHKTS-100-K1</b> K:1.60 a(mm) 0.0 l/s 0.0 Pa 3 4 5

When a valve has been selected, valve parameter (f.e. valve opening) can be adjusted using up and down arrow keys.

<b>EHKTS-100-K1</b>	<b>K:1.60</b>
	a(mm)
0.0 l/s	3
0.0 Pa	4
	5

When the desired parameter is selected, the measuring can be carried out by pressing OK. When the measuring is completed, the results of the measurement will blink on display. If the measurement method is an average, the measurement result is an average of measurements for the selected period (e.g. 5 sec). In three point measurement the number is the average of three measurement points. When the measurement result is blinking on the display, the device will return to the main mode by pressing OK. If the data recording is on, the device will offer the option to save results before returning to the basic mode.

## SAVING THE MEASUREMENT RESULTS

To save the results of measurement, the Save mode must be turned on. When measuring with the device, the device will offer an option to save results. To save results, press Yes, if not, press No. After this the device will ask for direction, choose between extract air or supply air. Next choose the apartment number. Lastly, choose suitable room or space to be measured. Measurement information can be browsed in the data storage menu.

<b>SAVE?</b> 1/2 <b>YES</b> NO	OK	<b>SELECT DIRECTION</b> 1/2 <b>SUPPLY</b> EXTRACT	OK	<b>APARTMENT?</b> 1/61 <b>DETACHED H.A1</b> A1 A2 A3 A4
<b>CHOOSE ROOM</b> 1/2 <b>BED1</b> BED2 BED3 BED4 KITCHEN	OK			

## NOTIFICATIONS

### Low battery

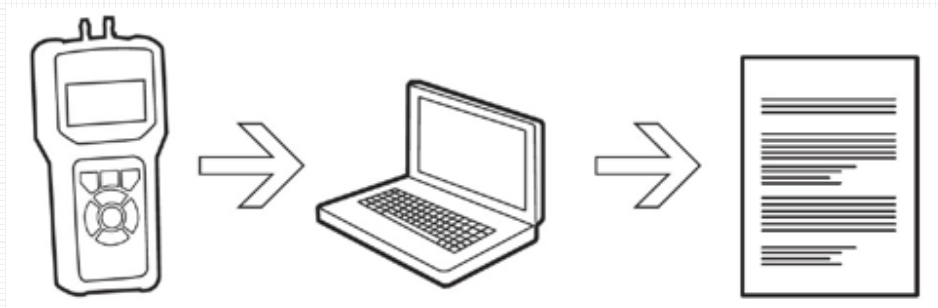
The display will notify of low battery 30 minutes before it will turn off automatically.

### Memory full

The device can store 512 measurements when in the Save mode. A notification of memory being too full will appear on the display.

## PHM-V1 MANAGER -PROGRAM

With the PHM-V1 MANAGER -program you can select and remove types of valves from the gauge, download measuring data on your PC and create measurement records.



Hand-held  
meter PHM-V1

PC program

Measurement record

## COMPATIBILITY

The PHM-V1 Manager -program and the device are compatible with the operating systems:

- Windows 7
- Windows 8/8.1
- Windows 10

Before installing, make sure your computer runs one of the abovementioned operating systems.

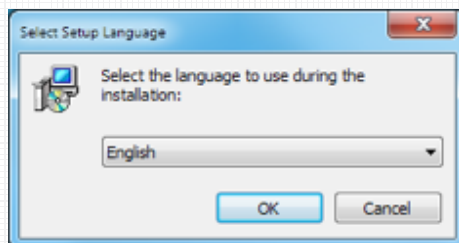
## INSTALLATION

1. Download the installer from the website:

<https://hkinstruments.fi/products/micromanometer/phm-v1-2/>

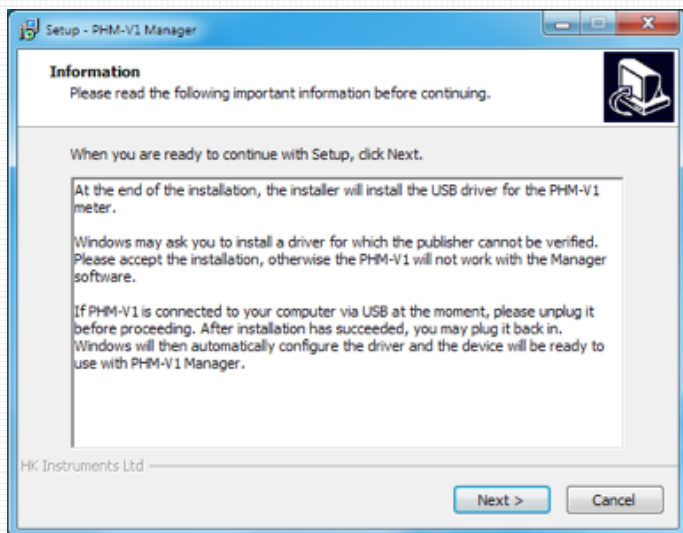
Password to the download page of the installer will be delivered in product package.

Run the downloaded file PHM-V1\_Manager\_Setup.exe.



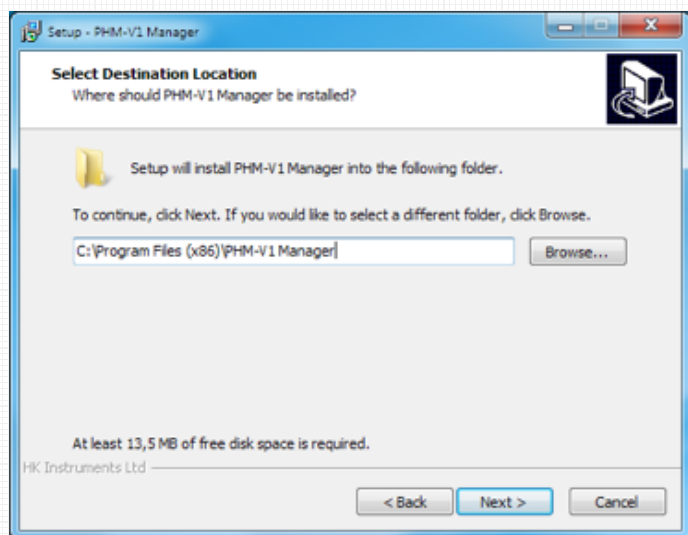
Picture 2. Language selection

2. After language selection the installer program gives overview of the installation process in an information window. After reading the information, click Next.



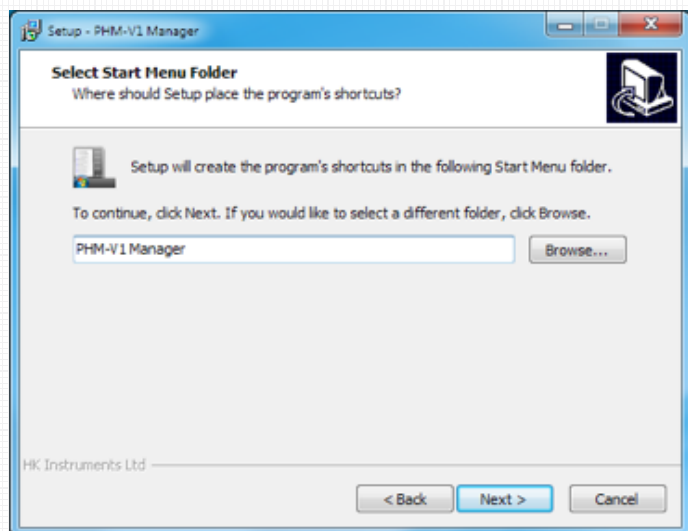
Picture 3. Installer information window

3. Select destination folder for the program.



Picture 4. Selecting destination folder

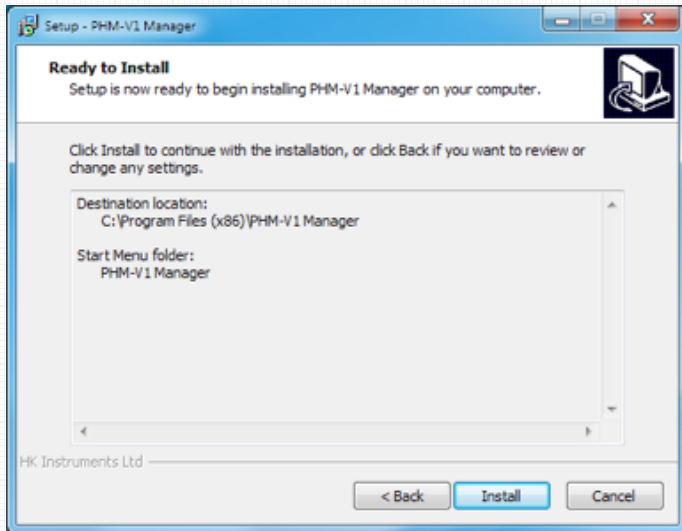
4. Select Start Menu shortcut folder name.



Picture 5. Selecting start menu folder

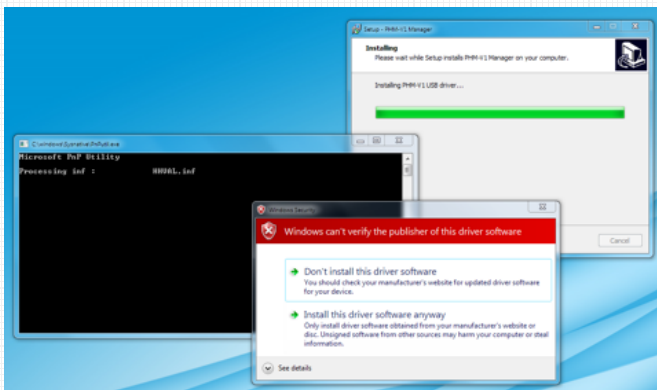


5. An overview of installation choices will appear. Click Install to continue.



Picture 6. Installation overview

6. Installer will install PHM-V1 Manager and necessary run-time libraries. After they have been installed, installer will install the USB device driver. At this point, Windows may ask to confirm a driver for which the publisher can't be verified. Please accept the installation, otherwise PHM-V1 might not connect to PHM-V1 Manager.



7. Installation is now complete, click Finish

Picture 7. Prompt to accept driver software installation

## CONNECTING TO COMPUTER

Before connecting to a computer, press the power button to turn on the device. Remove the protective rubber from the USB connector. Connect the device to your computer using the USB cable provided. The device will display the text "USB" when it is connected to the computer.

## PHM-V1 DRIVER INSTALLATION ON WINDOWS 10

This guide describes how to install the PHM-V1 handheld meter driver manually, if it does not work on your device automatically using the installation program supplied with the device.

1. Download the Zadig driver installer from:

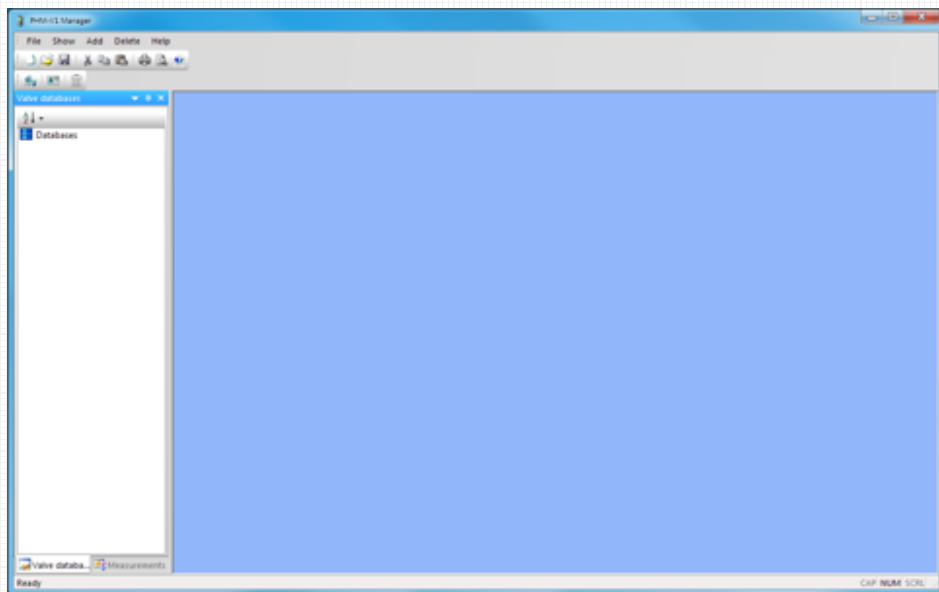
<https://zadig.akeo.ie/>

(requires Windows 7 or later operating system)

2. Switch on the PHM-V1 meter and plug it into a free USB port on your computer. The PHM-V1 will display "USB".
3. Launch the Zadig driver installer.
4. If Zadig says "0 devices found." at the bottom of the window, click on "Options", and then "List All Devices".
5. Select "HHVAL" from the drop-down menu
6. Select "libusb-win32 (v1.2.6.0)" from the right side of the arrow and click "Install Driver"
7. After a few moments you will get a message that the driver is installed.
8. Close Zadig. PHM-V1 is now ready to use!

## STARTING THE PROGRAM

The setup program has created shortcuts labeled “PHM-V1 Manager” in the Start menu. Run program by clicking on the Start menu shortcut.



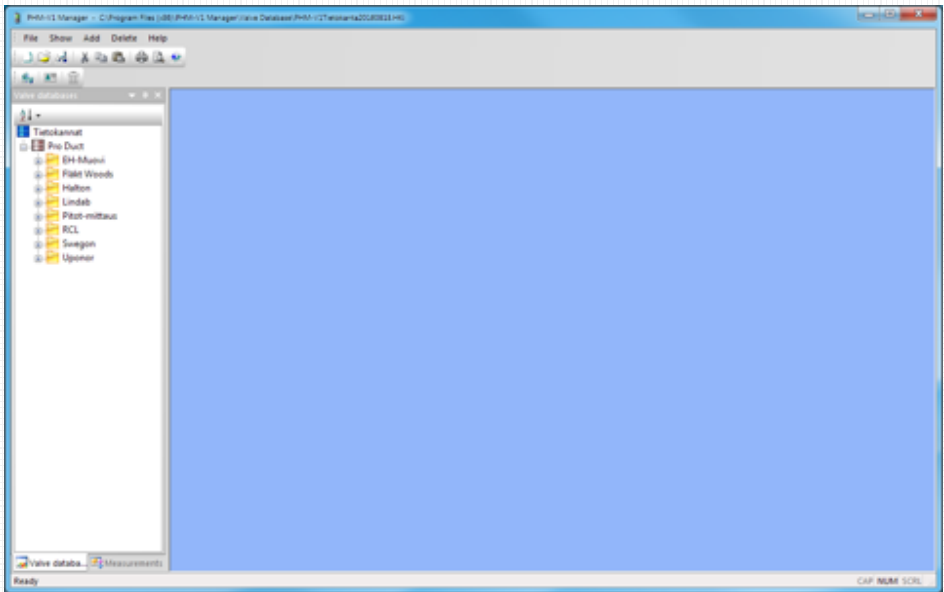
Picture 14. Main window

## VALVE DATABASE

The “Valve database” is the database for the handheld meter valves. The program comes with a valve database, that is pre-installed in the device. The file extension is \*.hki. Open the valve database from the menu:

1. File -> Open...->
2. Browse for the valve database file (in the program installation folder)
3. Click “Open”.

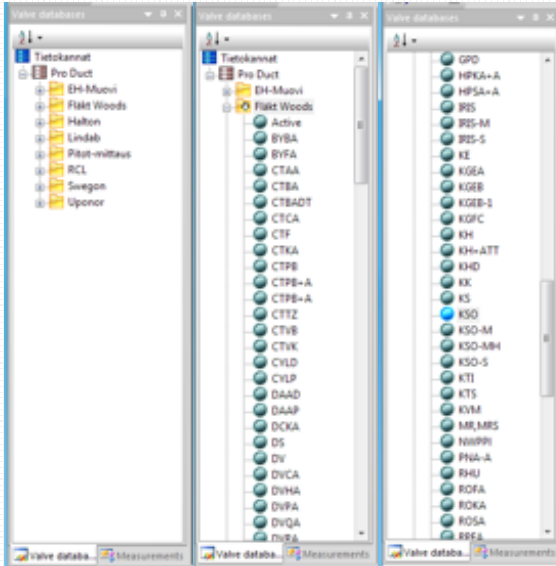
After this the tree view will display saved manufacturers and the valves they provide



Picture 15. Valve database

By clicking on the name of the manufacturer, the valves they provide will appear on the tree view (shown in picture 16)

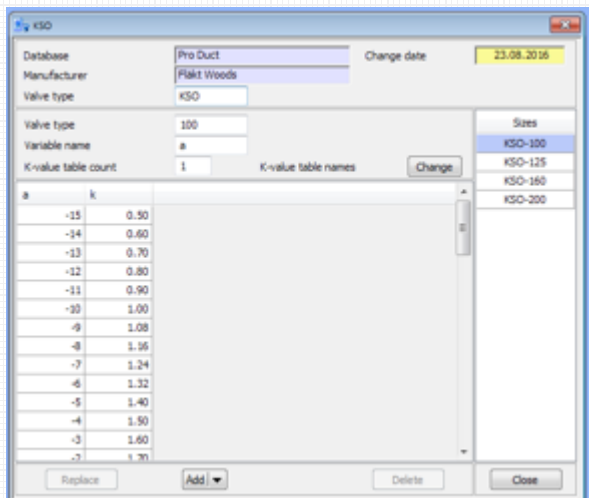
Select valve to display its detailed information (picture 17)



Picture 16. Database directory

In this tree view you can see and modify the following information:

- size of valve
- variable name, for example a(mm). This can mean the opening of the valve, for example.
- values of the variable (for example, the opening of the valve every 1 mm)
- K-factors and K-value table



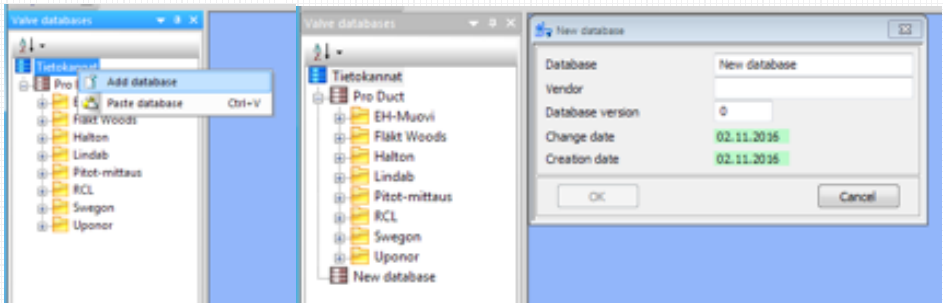
Picture 17. Valve window

## ADDING DATA INTO DATABASE

New manufacturers, valves and terminals can be easily added and modified in the database

### 1. Adding a database.

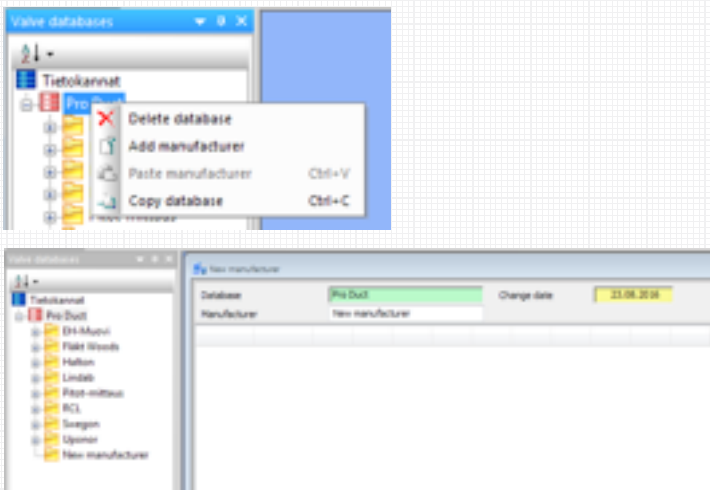
If you want to create a new database, add a database by right-clicking “database” on the directory. Select “Add database”. A new window will appear. Name the database.



Picture 18. Adding a database

### 2. Adding a manufacturer.

Add a manufacturer by right-clicking the name of your chosen database shown in the directory. Select “add manufacturer”. A new window will appear, type in the name of your chosen manufacturer



Picture 19. Adding a manufacturer

### 3. Adding a valve.

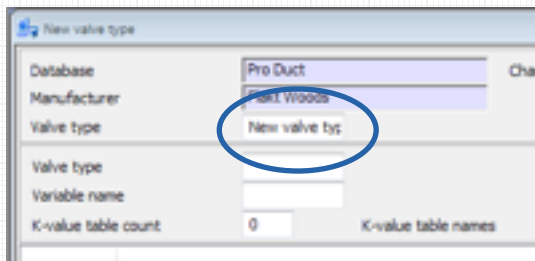
Add a valve by right-clicking the name of the valve shown in the directory. Select “add valve type”. A new window will appear. Enter the information of your chosen valve.



Picture 20. Add valve type

### 4. Adding valve data

a. Enter name of the valve in “type of valve” (for example KSO) Authorize changes by clicking “Replace”



Picture 21. Name of valve

b. Enter the size of the valve (for example 100) in “Valve type”. Authorize changes by clicking “Replace”. More sizes can be added by clicking on “Add” located on the bottom of the window. Further instructions will be provided in this document later on. The sizes of the valve are displayed on the right-hand side of the window

KSO

Database: Pro Duct Change date: 14.11.2016

Manufacturer: Fläkt Woods

Valve type: KSO

Valve type: 100

Variable name:

K-value table count: 0 K-value table names: Change

Sizes: KSO-100

Picture 22. Size of valve

- c. Enter variable name in “Variable name”, for example “o(mm)” for opening in millimeters. Authorize changes by clicking “Replace”.
- d. Enter the number of K-value tables. The number will vary depending on the valve. For example, with the KSO-valve the number is one, whilst the STI-valve the number is three. Click “replace” after typing in the chosen number. The window will display new columns accordingly, in which you can enter data.

KSO-100		STI-100			
a	k	s (mm)	k1	k2	k3
-15	0,5	0	0,6	-	0,6
-12	0,8	2	1,6	-	1,6
-10	1,0	3	2,1	-	1,8
-5	1,4	4	2,7	2,5	2,1
0	1,9	6	3,6	3,3	2,4
5	2,3	8	4,6	4,1	2,9
10	2,8	10	5,6	4,8	3,2
		12	6,1	5,3	3,6
		16	7,0	6,3	4,3

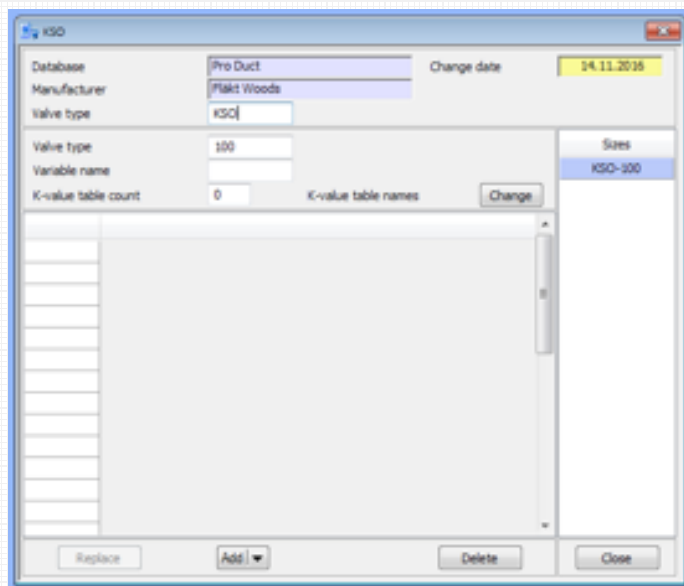
**K1**

**K2**

**K3**

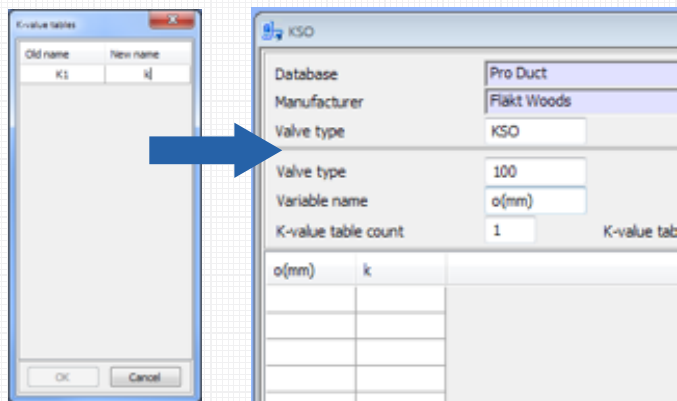
Picture 23. Number of K-values tables (Pictures: Fläkt Woods air flow measurement guide)





Picture 24. Overview of the valve type window

- e. If you want to re-name the K-value tables (that are named K1, K2, K3... by default), click on "Change". In picture 25 "K1" is renamed "k"



Picture 25. Changing K-value table names

Database: Pro Duct  
 Manufacturer: Flakt Woods  
 Valve type: KSO  
 Valve type: 100  
 Variable name: o(mm)  
 K-value table count: 1

o(mm)	k
-15	0.50
-14	0.60
-13	0.70
-12	0.80
-11	0.90
-10	1.00
-9	1.08
-8	1.16
-7	1.24
-6	1.32
-5	1.40
-4	1.50
-3	1.60
-2	1.70

Buttons: Replace, Add

f. Enter variables and the corresponding K-factors in the index displayed in the window (picture 26). Click “replace” when changes are ready.

Picture 26. Entering variables and K-values

g. Enter new valve size by clicking on “add”. Select “add new” to create a new size or “create copy” if you want to create a new valve size with the same specifications as the valve selected. Enter the specifications of the new size as described before.

Database: Pro Duct  
 Manufacturer: Flakt Woods  
 Valve type: KSO  
 Valve type: 100  
 Variable name: o(mm)  
 K-value table count: 0

Change date: 14.11.2016

K-value table names: Change

Buttons: Replace, Add, Delete, Close

Sub-menu for Add:  
 Add new (Ctrl+N)  
 Add copy (Ctrl+C)

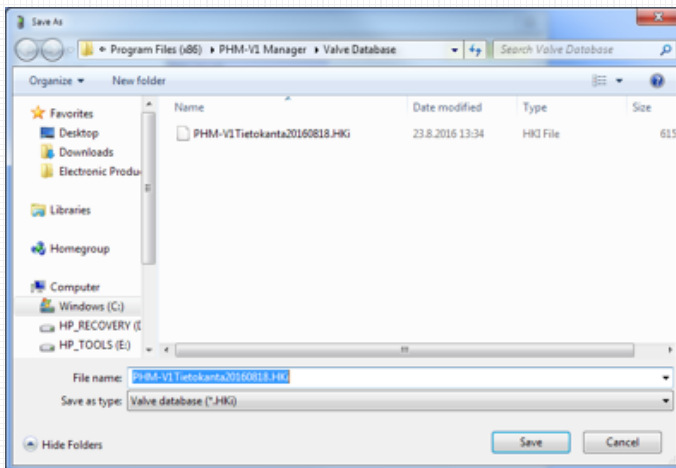
Picture 27.  
Enter new valve size

## SAVING VALVE DATABASE

After creating or modifying a database, save from top menu

File -> Save as...->

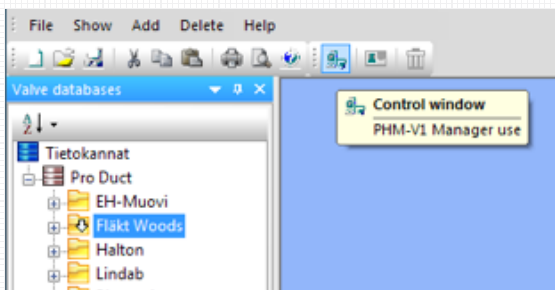
Format as "Valve database" (\*.HKI), select desired folder to save, enter name of file and click save.



Picture 28. Saving a valve database

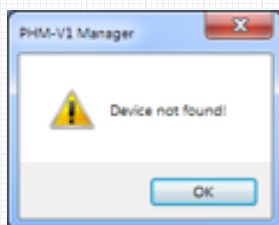
## DOWNLOADING DATABASE FROM THE METER AND ONTO THE METER

Transferring all data between the meter and PHM-V1 Manager is done in the control window. Control window is opened in the menu bar, the key is a picture of a meter. Open the control window by clicking on the key.



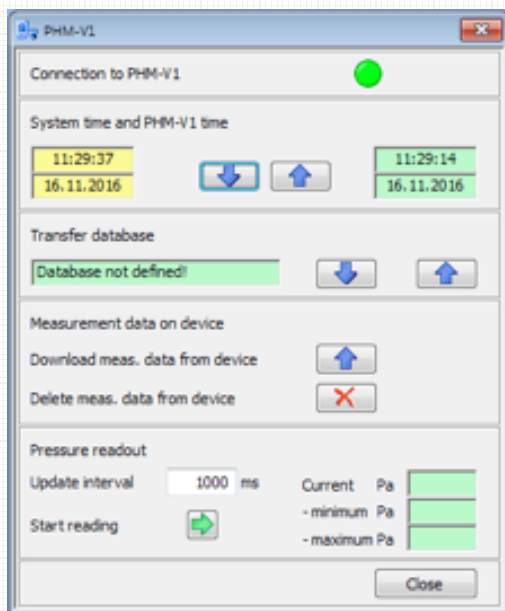
Picture 29. Opening the Control window

If the device is not connected to the computer, the notification will read “Device not found!”. Click OK.



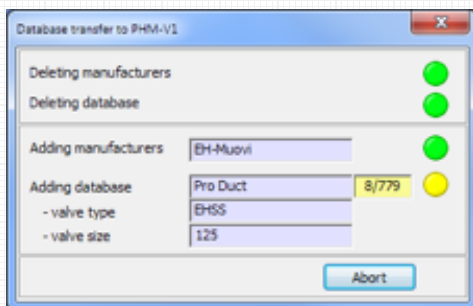
Picture 30. Could not find device

Connect the device into the computer by switching the device on first and then the cable (as instructed on page 18) PHM-V1 Manager recognizes automatically when the device is properly connected. The device is connected when the control window button is green, if not, the button is shown in red.



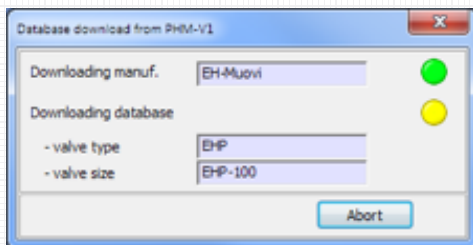
Picture 31. Control window

1. To transfer the database from your computer to the meter open the control window and select the key with the arrow pointing downward. This opens a new window from which you can track the transferring of data. When transferring is complete and you do not wish to transfer other data to or from the meter, disconnect the USB cable. The meter is now ready to be used.



Picture 23. Tracking the transferring of data

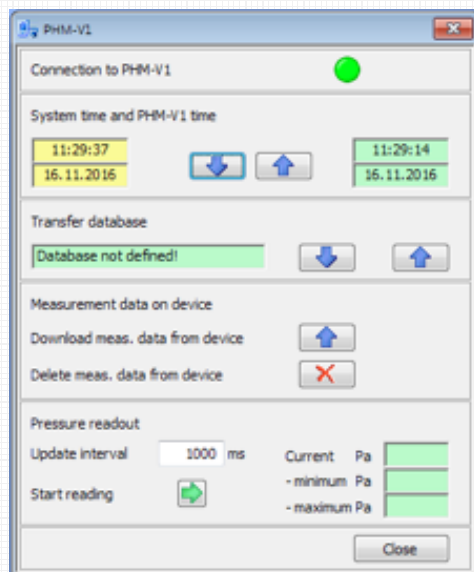
2. To transfer the database from the meter to your computer, open the control-window and select the key with the arrow pointing upward. This opens a new window from which you can track the transferring of data.



Picture 33. Tracking the transferring of data from the meter

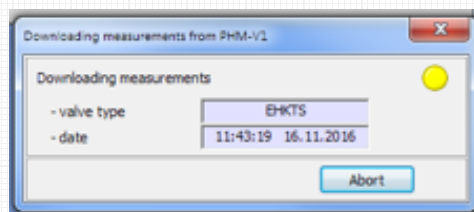
## DOWNLOADING MEASUREMENT DATA FROM THE METER

To download measuring data onto your computer, open the control window. Click on “Device’s measuring data”. Download measuring data by clicking on the arrow pointing up in “Measurement data on device”.



Picture 34. Download or transfer measuring data

Tracking download can be seen in the new window that pops up.



Picture 35. Tracking download of measurement data

The measurement data transferred from the meter will be displayed in its own window

Measurements from Pkld-02

Transfer date: 25.11.2016

Customer list

Customer	Measurement...	Space	Meas...	Value	Size	Variable	Value	K-value	Press...	Unit	Flow	Unit	Tempera...
16.11.2016	11-4 DETACHED H.A.1-1N	Supply air	DHCTS	125	dm³/s	5	2.500	32.661	Pa		14.300	l/s	20
17.11.2016	10-2 DETACHED H.A.1-8E	Supply air	DHCTS	100	dm³/s	2	0.900	0.000	Pa		0.000	l/s	20
21.11.2016	09-3 DETACHED H.A.1-8E	Supply air	DHCTS	125	dm³/s	2	0.900	291.663	Pa		15.400	l/s	20

Close

Picture 36. Measurement data

## CREATING MEASUREMENT DATA MANUALLY

Measurement can also be created manually with the PHM-V1 Manager. This is useful when measuring with another device, for example. Right-click on the “measurements”-key and select “add other than PHM-V1 measurement” (picture 37)

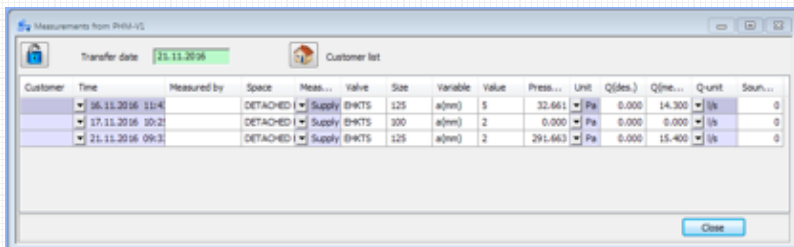
[illegible]

Picture 38. Blank measurements

## CREATING A MEASUREMENT RECORD

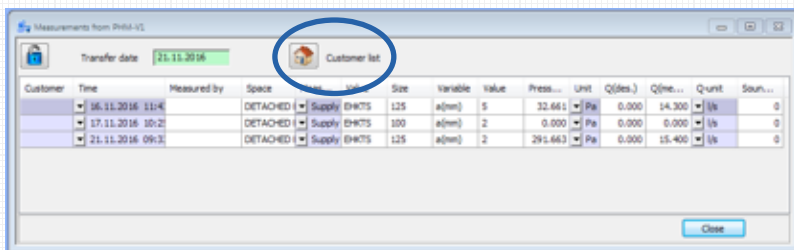
You can create measurement records with the PHM-V1 Manager. You must first download or manually enter all measurement data into the program.

To modify a measurement, click on the picture of a lock located on the upper left-hand side of the window. When you are finished making changes, click on the lock again.



Picture 39. Modifying measurements

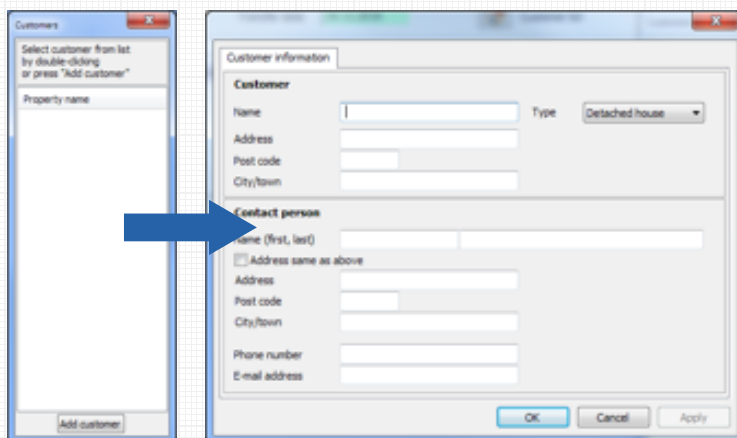
Next, create the measurement place. Measurement place refers to a certain apartment, building etc. where measurements are to be, or have been, carried out. The measurement place can be created beforehand, for example, before starting to take the measurements. Click on Customer list (picture 40)



Picture 40. Customer list

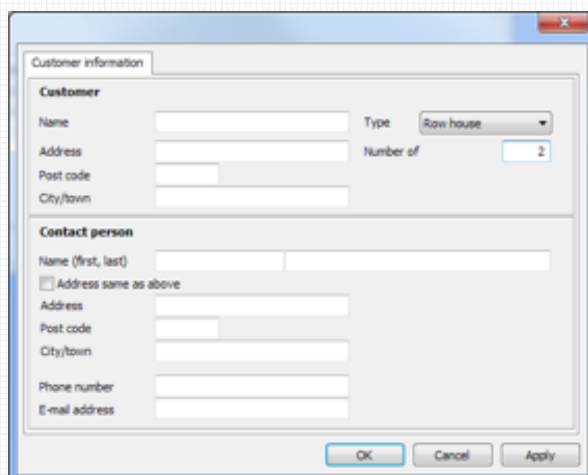


A list of previously created items will appear. Click on “Add customer”. Enter contacts of the place that is measured.



Picture 41. Add measurement place

With high rise buildings, rowhouses or any types of buildings with multiple flats, you can calculate the difference between the exhaust and supply air by each flat and create a measurement table. Select the suitable type of building. Select the number of flats. The example picture (picture 42) shows a building with two flats. Click OK when you are ready.



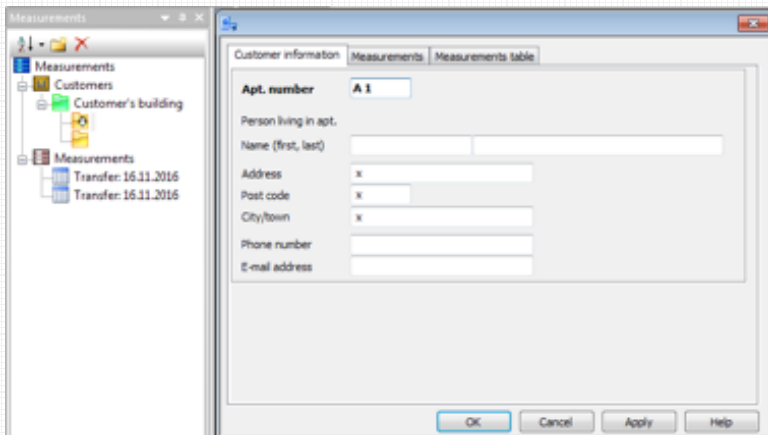
Picture 42. Select building type

The “measurement”-directory will now display a new place (building) and below that an amount of blank rows that correspond to the number of flats in the building.



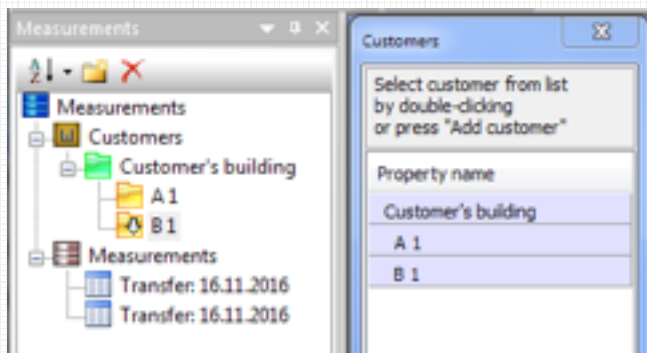
Picture 43. New customer

By clicking on the specific flat in a building on the menu, a new window will open in which you can label the flat with a number, if the building contains several flats. If needed, you can also enter other data of specific flats here.



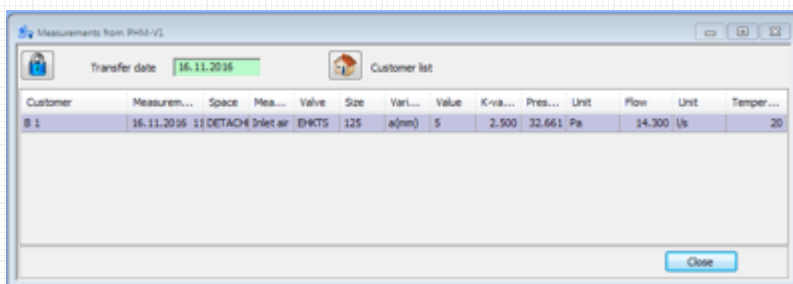
Picture 44. Labeling flats

After you have labeled the flats with a number the corresponding numbers will be shown in the measurement places-directory



Picture 45. Flat numbers shown in the directory

By double-clicking an item on the measurement places -directory you can move the object into the measurement of your choice. Continuing to double-click the item will automatically move into the next measurement. When the measurement place has been moved into the measurement of your choice and no other modifications are needed, click OK in the window that displays the measurement data (picture 46)



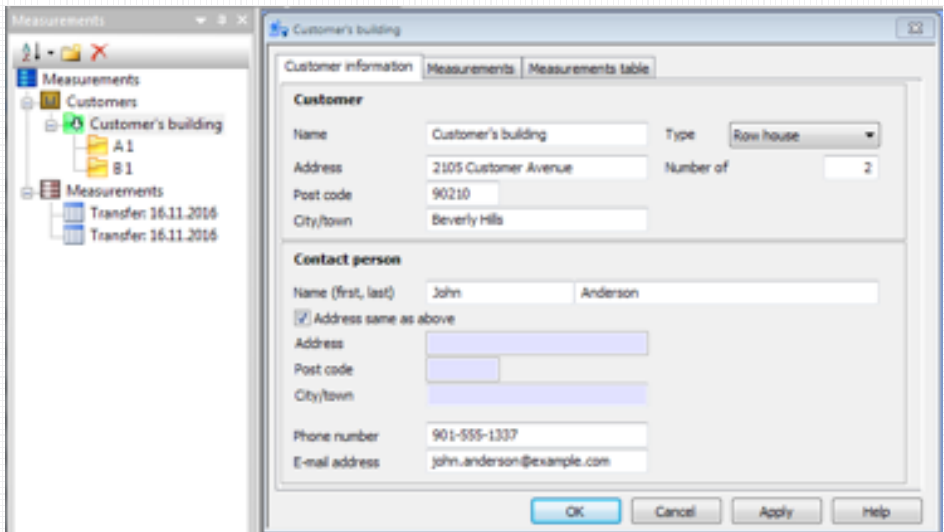
Picture 46. Measurement places

When clicking on the created item in the directory (picture 47) a new window will open with three tabs.

In the Measurement place specifications-tab you can modify previously entered data.

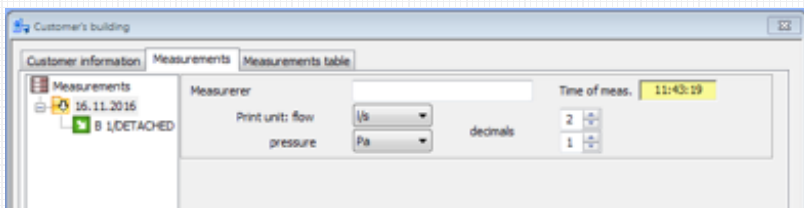
The Measurement place measurements-tab lets you create a measurement table etc.

Measurement table-tab lets you view measurements done in the flat.

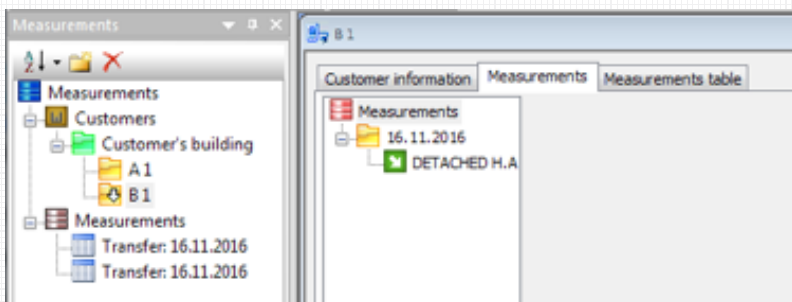


Picture 47. Measurement place information

Measurements in place-tab has a tree-view on left-hand side that shows dates for different measurements. Measurement operator's name may also be input, as well as measurement units (for automatic unit conversion) and number of decimals (picture 48). Same information can be viewed by clicking on the apartment in the Measurements-directory (picture 49) but in this case it is only possible to view the measurements.



Picture 48. Measurements on customer's premises



Picture 49. Measurements per flat

Select a flat from the directory. You can give the valve/terminal a planned flow value and a decibel value for the space. Enter the missing data and the planned values for every measurement object, if necessary. The necessary data for the measurement table is now complete.

Measurements	
Room / space	DETACHED H.A.1-LIVING
Time of meas.	11:43:19
Flow, measured	14.3 l/s
Flow, designed	0 l/s
Pressure	20.7 Pa
Temperature	20 °C
Sound level	0 dB

Valve information	
Valve	BHKTS
Valve size	125
K-value table	K2
Valve name	a(mm)
Valve opening	5
K-value	2.500

Other information

Picture 50. Planned values

## ADDING BUSINESS CONTACT INFORMATION

Enter business contact information in the program before printing, if they haven't already been entered. Business contact information only needs to be entered once, after which they will be automatically entered in the measurements table by the program. Click on the key located in the upper bar (see picture 51) to open the window in which you can enter the business contact information.



Picture 51. Business contact information

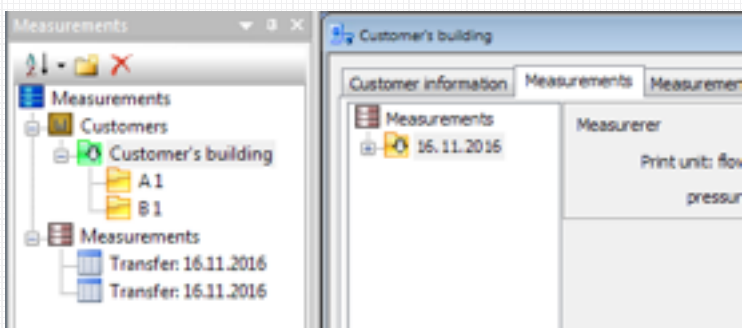
In this window, fill in the information you wish to see in the measurement table. When ready, remember to click “Save company information registry”.

A screenshot of a 'Company information' dialog box. It contains several text input fields for: Company name (Measurement Company), Business ID (123456789-10), Address (1108 Measuring blvd), Post code (31337), City/town (Madison), Phone number (686-4371), E-mail address (meas.company@example.com), and Contact person (Vincent Hardwood). There is a 'Company logo' field with a file path 'C:\0000\measure.png' and a browse button. Below this is a preview area showing a stick figure holding a measuring tape. At the bottom, there are radio button options for printing: 'Company logo and contact person on print' (selected), 'Company logo and name on print', 'Company logo on print', and 'No logo on print'. A 'Save company information to registry' button with a shield icon is at the very bottom.

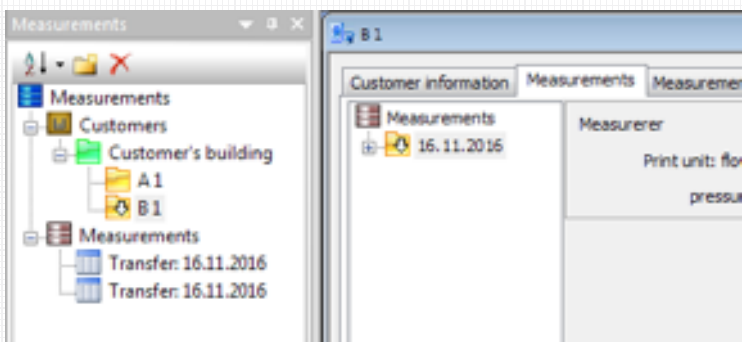
Picture 52. Entering business contact information

## PRINTING

If you wish to print all the measurements of the measurement places at once (or the measurement place contains only one flat), click on the date in the measurement directory to activate. If you only wish to print one measurement, click on the measurement. If you wish to print the measurements of only one flat, select the flat from the measurement directory and then the date, as shown in picture 54.



Picture 53. Activate date



Picture 54. Activate date per flat

If you wish to preview the Measurement table before printing, select from the upper bar

File -> Print preview... -> Print measurement table

File-> Print...

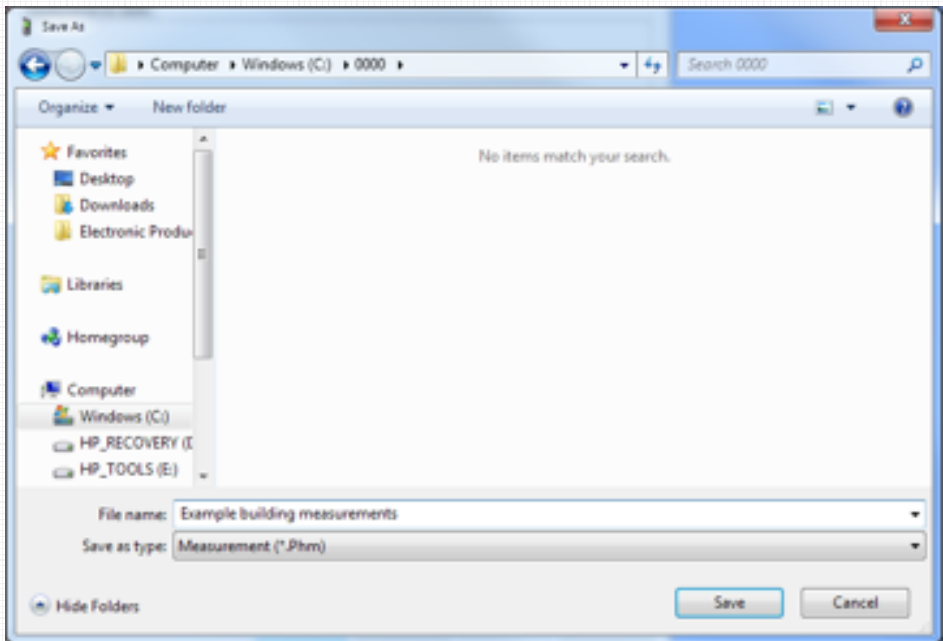
If none of the measurement is activated, the program will notify of it before printing.

## SAVING MEASUREMENT DATA

When you have downloaded or modified measurements, added measurement objects etc., save the measurement data and its measurement objects in the upper menu bar:

File-> Save as...->

Format as Measurement file (\*.phm) (picture 55). Select a file to save in, name the file and click save.



Picture 55. Saving a Measurement file



## SERVICE

The meter requires very little service in order to function impeccably.

### CALIBRATION

To preserve measurement accuracy, we recommend sending the meter to the manufacturer to be re-calibrated annually. To send the meter to be re-calibrated, contact your retailer or manufacturer.

### HOUSING

The housing of the device can be cleaned with a soft cloth and mild detergent. Do not immerse into any kind of liquid.

### STORAGE

If the device is left unused for more than a month, we recommend removing the battery to prevent possible damage caused by leaking of batteries.

## WARRANTY POLICY

The seller is obligated to provide a warranty of five years for the delivered goods regarding material and manufacturing. The warranty period is considered to start on the delivery date of the product. If a defect in raw materials or a production flaw is found, the seller is obligated, when the product is sent to the seller without delay or before expiration of the warranty, to amend the mistake at his/her discretion either by repairing the defective product or by delivering free of charge to the buyer a new flawless product and sending it to the buyer. Delivery costs for the repair under warranty will be paid by the buyer and the return costs by the seller. The warranty does not comprise damages caused by accident, lightning, flood or other natural phenomenon, normal wear and tear, improper or careless handling, abnormal use, overloading, improper storage, incorrect care or reconstruction, or changes and installation work not done by the seller. The selection of materials for devices prone to corrosion is the buyer's responsibility, unless otherwise is legally agreed upon. Should the manufacturer alter the structure of the device, the seller is not obligated to make comparable changes to devices already purchased. Appealing for warranty requires that the buyer has correctly fulfilled his/her duties arisen from the delivery and stated in the contract. The seller will give a new warranty for goods that have been replaced or repaired within the warranty, however only to the expiration of the original product's warranty time. The warranty includes the repair of a defective part or device, or if needed, a new part or device, but not installation or exchange costs. Under no circumstance is the seller liable for damages compensation for indirect damage.



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