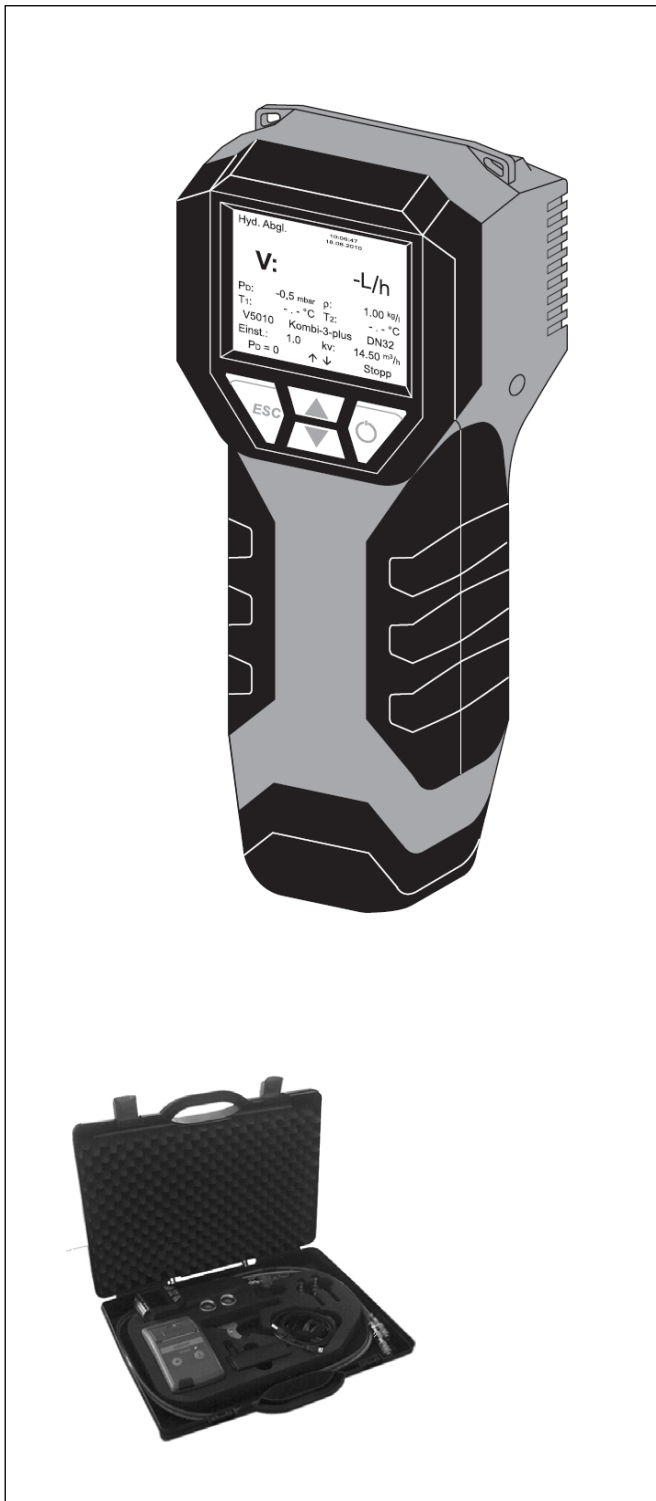


VM242A BasicMes-2

HANDHELD FLOW MEASURING COMPUTER

OPERATING INSTRUCTIONS



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1 INTRODUCTION

1.1 How to use these Instructions

The Operating and Setup Instructions include step by step instructions for setup and operation functions of the BasicMes-2. The step by step instructions are normally structured as follows:

- Description of function
- Step by step instructions how to access function as displayed below:

Operation	Command	Key
Stop ongoing measurement	Stop	ON
<i>Measurement can be carried on later</i>		

where

- “Operation” is action to be carried out
- “Command” is command in menu bar at bottom end of screen above corresponding keys
- “Key” is corresponding key (see Table 1 further below)
- Remarks are indicated by *italic* print
- Step by step instructions how to input data or modify existing data

Table 1. Terminology used for keys

Number in Fig. 1	Terminology used in instructions
6	Menu bar
7	ON key
8	UP/DOWN key
9	ESC key

1.2 Safety Guidelines

- Follow these operating instructions
- Use the BasicMes-2
 - according to its intended use
 - in good condition
 - with due regard to safety and risk of danger.
- Note that the BasicMes-2 is exclusively for use in applications detailed in these instructions. Any other use will not be considered compliant with requirements and would invalidate the warranty
- Please take note that any assembly, commissioning, servicing and adjustment work may only be carried out by authorized persons
- Immediately rectify any malfunctions which may influence safety



WARNING

Attention has to be paid when hoses are removed from valve after measuring! When quick connection is pulled off, remaining hot media may leak presenting danger of scalding.



CAUTION

Media: gas, water, oil – do not mix!

2 BASIC INFORMATION

2.1 Intended Use

The BasicMes-2 handheld flow measurement computer is a high-precision multifunctional device for measuring and recording differential pressure and temperatures in hydronic heating and cooling systems.

2.2 Before Use

2.2.1 Before first use

The BasicMes-2 is supplied ready for use with English as default language, however:

- Batteries have to be inserted and may require charging
- Date and time have to be set
- Other options may require changing
- Check that all accessories are included

2.2.2 Before any use

- Check that device is in good working order
- Check that batteries have enough charge for operations intended

2.3 Scope of Delivery

Item	Spare part ordering number
VM242A BasicMes-2 handheld flow measuring device	VMS242A001
Four rechargeable AA size NiMH batteries	N/A
Lanyard	N/A
Bypass assembly with installed hoses and quick connections	VMS242A002
Mains power unit	VMS242A006
USB cable	VMS242A005
Adapter Rectus 21 onto Honeywell SafeCon® quick connection	VA2500B001
Adapter Rectus 21 onto 3/4" internal thread	VMS242A004
Multilingual setup and operating instructions	MU2H-2321GE25 ¹
CD with instructions and user software	EN9H-2321GE25 ¹

¹ Only available as download

Item	Spare part ordering number
Carry case with foam insert	VMS242A007

2.4 Names of the Components

Table 2. Names of the components

See Fig. 1	1	Mode
	2	Time and date
	3	Battery status
	4	Measured value
	5	Selected valve and valve setting
	6	Menu bar
	7	Power on/off / enter key
	8	Line up / line down keys
	9	Escape / return key
See Fig. 2	10	Screen and keyboard (details see above)
	11	Device housing with rubber padding
	12	Cover for hose and temperature sensor connections
See Fig. 3	13	Battery cover
	14	Typeplate and calibration mark (attached after first re-calibration)
	15	Cover for hose and temperature sensor connections
See Fig. 4	16	Socket for battery charger
See Fig. 5	17	Infrared transmitter
	18	USB socket
See Fig. 6	19	Socket T ₁ for temperature sensor
	20	Socket T ₂ for temperature sensor
	21	Connection for high pressure hose
	22	Connection for low pressure hose

2.5 Charging Batteries

- Plug battery charger into line voltage power socket and into power socket on right side of device (see Fig. 4, item 16)
- Batteries are charged. Charging is indicated by a light on the battery charger with the following states:
 - Yellow: not connected or initialising
 - Orange: fast charge
 - Green/yellow: top-off charge
 - Green: trickle charge
 - Orange/green: error
- Full charge of original batteries takes approx. three hours

NOTE

- Use dedicated battery charger supplied with device only

- Charge batteries indoors or in a sheltered environment within specified ambient temperature (see data sheet in appendix) only
- Batteries will be exhausted if left for a long period of time after being charged
- Battery charger can be used as mains power supply for device, e.g. during data logging, if device is equipped with rechargeable batteries
- Device does not work when not equipped with batteries. Also not when battery charger is connected



WARNING

Battery charger must NOT be used when device is equipped with non rechargeable batteries

2.6 Replacing Batteries

The lid of the battery compartment is opposite the display.

- Remove lid by pushing down tab on topside of device and sliding lid off
- Remove old batteries. Pull ribbon to remove lower two batteries
- Insert new batteries. Pay attention to correct polarity as indicated in battery compartment. Place ribbon below lower batteries
- Replace lid. Ensure tab snaps back into place

NOTE: Instead of rechargeable batteries four standard AA size dry batteries can be used alternatively. Never try to recharge standard dry batteries. Never mix standard dry batteries with rechargeable batteries

2.7 Setup

2.7.1 Setting Device Clock

To set or change time and date proceed as follows:

Operation	Command	Key
Switch on device	—	ON
<i>Device carries out zero calibration and then automatically switches to measuring mode</i>		
Stop ongoing measurement	Stop	ON
Enter main menu	Menu	ESC
Scroll down to menu item "Setup"	↓	DOWN
Enter Setup menu	Ok	ON
<i>"Time" is first item in setup menu</i>		
Move cursor into data field until first digit to be changed is highlighted	→	ON
Change value of digit	↑↓	UP/DOWN
Move to next digit	→	ON
Change value of digit	↑↓	UP/DOWN
<i>Etc., when all changes are done:</i>		
Move cursor out of data field	→	ON
<i>Cursor disappears and new value is stored</i>		

Operation	Command	Key
Move to date	↓	DOWN
<i>Change date same way as described above. When all changes are done:</i>		
Leave setup menu	Return	ESC
Confirm or decline changes	Yes / No	ON / ESC
Return to main screen	Esc	ESC

2.7.2 Other Setup Options

Other options in the setup menu are listed below. Default value is underlined or in brackets:

- Time format: 12 / 24 hours
- Date format: dd.mm.yyyy, mm/dd/yyyy
- Medium density: 0.10...5.00 kg/l (1.00)
- Pressure unit: bar, mbar, kPa, hPa, m H₂O, psi, in_{wc}
- Pressure measurement mode: normal (i.e. measurement is updated every four seconds) or fast (measurement is updated every second)
- Temperature unit: °C or °F
- Display brightness: 20...100% (60%)
- Printer: TD600, Other
- Search by: Cust. num., Cust. name
- Language: English, Deutsch
- Printer logo: allows up to six lines of text which are printed at the beginning of each printout with the optional pocket printer. Default is: (line 1): Honeywell, (line 2) VM242A, (line 3) BasicMes-2

3 QUICK START

When the BasicMes-2 is switched on it performs a zero calibration, i.e. the pressure differential between high and low pressure sensor is set to zero. This takes approx. 10 seconds and is indicated by a progress bar. After zero calibration the BasicMes-2 switches to the main screen:

Table 3. Components of main screen

See Fig. 7	1	Mode – Hydronic balancing
	2	Measured flow based on selected valve and valve presetting
	3	Measured differential pressure
	4	Measured temperature over T1 (if connected)
	5	Selected valve type and size
	6	Selected valve presetting
	7	Date and time, device and battery status
	8	Density
	9	Measured temperature over T2 (if connected)
	10	kv-value of selected valve at selected presetting
	11	Menu bar

The following descriptions assume the main screen as starting point.

3.1 Flow Measurement using Valve Database

- Select valve and valve size from device database
- Compare valve presetting with presetting shown in display of the BasicMes-2. Values must be identical!
- Connect the BasicMes-2 to valve
 - red hose is installed to higher pressure outlet (before orifice or valve seat)
 - blue hose is installed to lower pressure outlet (after orifice or valve seat)
- Ensure that both pressure hoses are free of air and dirt. If required flush hoses by opening bypass and ballvalve at end of red hose
- Perform zero calibration. Make sure to open and close bypass and ballvalve as instructed by the BasicMes-2

3.1.1 Valve Selection

The BasicMes-2 has a database with valve data of Honeywell balancing valves and common balancing valves of some other manufacturers. When valve database is used kv-values of valve being measured are read out of database and do not need to be input by hand.

The BasicMes-2 uses last selected valve and valve presetting until value is changed or device is reset.

How to access valve selection menu and select a valve:

Operation	Command	Key
Stop ongoing measurement	Stop	ON
Change to main menu	Menu	ESC
<i>“Select valve” is first menu point and already highlighted</i>		
Select “Select valve”	Ok	ON
Highlight manufacturer, e.g. “Honeywell”	↑↓	UP/DOWN
Select manufacturer	Ok	ON
Highlight and select valve and valve size in same way	↑↓ / Ok	UP/DOWN / ON
<i>The BasicMes-2 automatically returns to main screen where valve presetting can be changed. Default presetting is lowest presetting stored in database</i>		

- See Fig. 8
- 1 Selected valve
 - 2 Valve presetting
 - 3 kv-value of presetting

- See Fig. 9
- 1 Valve presetting (5.9)
 - 2 High pressure outlet (red)
 - 3 Low pressure outlet (blue)

How to change presetting of selected valve:

Operation	Command	Key
Restart measurement	Proceed	ON
Increase presetting value	↑	UP
Decrease presetting value	↓	DOWN

Operation	Command	Key
<i>New presetting and kv-value are shown in display and are immediately used for flow calculation</i>		

How to change presetting during measurement:

Operation	Command	Key
Increase presetting value	↑	UP
Decrease presetting value	↓	DOWN
<i>New presetting and kv-value are shown in display and are immediately used for flow calculation</i>		

3.2 Flow Measurement after Direct Input of kv-value

The process is similar as described above. However, instead of selecting a valve option “Direct kv input” is selected.

How to access direct kv-input option:

Operation	Command	Key
Stop ongoing measurement	Stop	ON
Change to main menu	Menu	ESC
<i>“Select valve” is first menu point and already highlighted</i>		
Select “Select valve”	Ok	ON
Highlight “Direct kv input”	↑↓	UP/DOWN
Select “Direct kv input”	Ok	ON
<i>The BasicMes-2 automatically returns to main screen where kv-value can be changed. Default value is last value used</i>		
Change kv-value	↑↓	UP/DOWN
<i>A cursor appears at first position.</i>		
Move to digit which should be changed	→	ON
Increase or decrease value	↑↓	UP/DOWN
<i>Continue with next digit, etc. When finished volume unit can also be changed::</i>		
Move cursor to right until unit is highlighted	→	ON
Change unit	↑↓	UP/DOWN
Confirm kv-value and unit and return to measuring mode	Ok	ON

4 FUNCTION OVERVIEW

The function overview is based on the main menu of the BasicMes-2. Functions are explained in the same order as they appear in the main menu.

4.1 How to access the Main Menu

When switched on the BasicMes-2 shows the main screen as a default. How to access the main menu and a menu item:

Operation	Command	Key
Stop ongoing measurement	Stop	ON
Change to main menu	Menu	ESC

Operation	Command	Key
Highlight menu item	↑↓	UP/DOWN
Select menu item	Ok	ON

The main menu has the following menu items:

Table 4. Menu items of main menu

Menu item	Purpose
Select valve	Select valve from database
Select project	Select project from database
Hydr. balancing	Tag measuring result for printing and/or saving
Temp. measurement	Save temperature measurements and tag for printing and/or saving
Leakage test	Set parameters and perform leakage test
Data logging	Set parameters and start data log
DP measurement	Display of differential pressure only (no flow)
USB data exchange	Activate data exchange with PC
Print	Print results via pocket printer
Save measurements	Save tagged measurements
Data management	Delete projects or risers
Setup	Change setup options
Calibration	Access calibration menu

4.2 Valve Selection (“Select valve”)

Used to select a valve from internal database.

Operation	Command	Key
Highlight manufacturer (e.g. “Honeywell”)	↑↓	UP/DOWN
Select manufacturer	Ok	ON
Highlight and select valve and valve size in the same way	↑↓ / Ok	UP/DOWN / ON
<i>The BasicMes-2 automatically returns to the main screen where the valve presetting can be changed. Default presetting is the lowest presetting stored in the database</i>		

4.2.1 Setting presetting after valve selection

Operation	Command	Key
Restart measurement	Proceed	ON
Increase presetting value	↑	UP
Decrease presetting value	↓	DOWN
<i>New presetting and kv-value are shown in the display and are immediately used for flow calculation</i>		

4.2.2 Changing presetting during flow measurement

Operation	Command	Key
Increase presetting value	↑	UP

Operation	Command	Key
Decrease presetting value	↓	DOWN
<i>New presetting and kv-value are shown in the display and are immediately used for flow calculation</i>		

4.3 Project Function (“Select project”)

A project is a collection of pre-defined valves and valve presettings which can be worked off one by one without having to select valve and valve presetting from database first.

A project can be created in two ways:

- with user software and then uploaded onto device
- with device itself by selection menu item “New project”

4.3.1 Selecting an existing project

See chapter 5.3.1 on page 9 on details how to create a project on a PC and upload it onto device.

Operation	Command	Key
Highlight project	↑↓	UP/DOWN
Select project	Ok	ON
Highlight and select riser	↑↓ / Ok	UP/DOWN / ON
<i>The BasicMes-2 automatically returns to main screen where valve presetting can be changed. Default presetting is presetting stored in project</i>		
<i>When desired flow is reached:</i>		
Stop measurement	Stop	ON
Open menu	Menu	ESC
<i>To save measured value in project:</i>		
Save measurement	Save	ON
Select project and riser	↑↓ / Ok	UP/DOWN / ON
<i>A – If no measurement has been stored for this riser before, confirmation appears that measurement has been saved</i>		
Confirm message	Yes	ON
<i>The BasicMes-2 returns to main menu</i>		
<i>B1 – If measurement has already been stored for this riser but should be overwritten with new data:</i>		
Confirm to overwrite existing data	Yes	ON
<i>Confirmation that measurement has been saved</i>		
Confirm message	Ok	ON
<i>The BasicMes-2 returns to main menu</i>		
<i>B2 – If measurement has already been stored for this riser which should not be overwritten:</i>		
Decline to overwrite existing data	No	ESC

Operation	Command	Key
<i>The BasicMes-2 returns to riser selection where either - another riser can be selected to store measurement, or - a new riser can be defined to store measurement, or - function can be left without storing measurement</i>		
<i>The measurement stays in the buffer memory of the BasicMes-2 until another riser is selected from the projects database or another valve is selected from the valve database or the device is switched off</i>		

4.3.2 Defining a new project

Operation	Command	Key
Highlight “New project”	↑↓	UP/DOWN
Select “New project”	Ok	ON
<i>Project name and number and name of first riser can be changed if desired</i>		
Select “Create project”	↑↓	UP/DOWN
Confirm	Ok	ON
<i>The new project is added to the projects list</i>		

4.3.3 Defining a new riser

A new riser can be defined within any project regardless if it was created on a PC or on device itself

Operation	Command	Key
<i>If a valve and valve presetting should be assigned to new riser first select valve from database and set to desired presetting. If no valve is selected the BasicMes-2 will automatically assign valve and valve presetting from last measurement.</i>		
<i>Select project to which new riser should be added. List of existing risers is shown. Item “New riser” is the first item in the list.</i>		
Highlight and select “New riser”	↑↓ / Ok	UP/DOWN / ON
<i>Riser name can be changed if desired</i>		
Select “Create riser”	↑↓	UP/DOWN
Confirm	Ok	ON
<i>The new riser is added to the projects list.</i>		

4.4 Flow Measurement (“Hydr. balancing”)

Used to mark measuring data for printing or saving.

Operation	Command	Key
Return to main screen without tagging data	Esc	ESC
Tag data and return to main screen	Ok	ON

Only tagged data is printed when print function is used or saved when save function is used.

4.5 Temperature Measurement

Used to store temperature measurements into data fields. At least one temperature sensor is required which can be connected to either port T₁ or T₂. Available data fields are:

- “T_{Supply} b. B.” – supply temperature before balancing
- “T_{Return} b. B.” – return temperature before balancing
- “T_{Supply} a. B.” – supply temperature after balancing
- “T_{Return} a. B.” – return temperature after balancing

Actual measuring value of temperature sensor can be stored in any data field. Data already present is overwritten.

The screen shows the following information:

- Top row (first line): actual value of T₁ and T₂
- Rows below (second to fifth line): four data fields mentioned above

How to store actual temperature in a data field:

Operation	Command	Key
Highlight data field	↑↓	UP/DOWN
Assign temperature T ₁ to data field	T ₁	ESC
Assign temperature T ₂ to data field	T ₂	ON

Highlight “Accept” to return to main menu:

Operation	Command	Key
Return to main menu without tagging data	Return	ESC
Return to main menu with data tagged	Ok	ON

Data is saved in any case, no matter which option is selected. Tagged data is flagged by a check mark next to menu item in main menu.

Tagged data can be printed using print function or saved using Save function (see below). Any unsaved data is lost when the BasicMes-2 is switched off.

4.6 Leakage Test

Used to set parameters and start a leakage test.

The screen shows the following four options:

- “Start test” – start test or return to main menu,
- “Test press.” – test pressure which should be held,
- “Stab. time” – duration of stabilisation time, and
- “Test time” – duration of actual leakage test time, with following options:

Operation	Command	Key
Return to main menu without starting the test	Esc	ESC
Select data field	↑↓	UP/DOWN
Change data	→	ON

The test consists of three parts:

- Switch on and/or set pump speed
- Stabilisation period indicated by a countdown clock
- Leakage test during which a graph is drawn

Operation	Command	Key
Confirm that pump has been switched on and set to correct speed	Proceed	ON
Override stabilisation period and start leakage test	Proceed	ON
Finish leakage test	Finish	ON
Abort test at any stage	Esc	ESC

4.7 Data Logging

Used for programming and start of longterm data logs with the following options:

- “Start recording” – starts data logging
- “Interval” – defines at which interval a measurement is done. Minimum is 1s, maximum is 23h 59m 59s
- “Measureings” – defines how many measurements should be done altogether. Minimum is 1, maximum is 9,999
- “Display” – defines if display should be switched on or off during logging
- “Stop date” and “Stop time” – informs when data logging is finished

To change a value:

Operation	Command	Key
Highlight option to be changed	↑↓	UP/DOWN
Enter data field	→	ON
<i>Cursor appears at first digit</i>		
Change value	↑↓	UP/DOWN
Move cursor to next digit to be changed	→	ON
Change value	↑↓	UP/DOWN
etc., when done:		
Move cursor until it disappears to save the value	→	ON

4.8 DP Measurement

Used to display differential pressure not linked to a kv-value. If only one hose is connected static pressure is shown.

Data shown on screen:

- Large centered figure: actual differential pressure
- T₁ – temperature measured over temperature sensor connected to port T₁ (optional)
- T₂ – temperature measured over temperature sensor connected to port T₂ (optional)
- T₁₋₂ – temperature difference between T₁ and T₂
- T_{int} – internal device temperature

The following commands are available:

Operation	Command	Key
Return to main menu	Return	ESC
Zoom	Zoom	UP/DOWN
Zero calibration	P _D = 0	ON

Digits are enlarged when “Zoom” is pressed. To return to normal size press “Zoom” for longer than one second.

4.9 USB Data Exchange

Used to activate device for data exchange with PC over USB cable supplied. BasicMes-2 software has to be installed to up- and download data to and from device.

Operation	Command	Key
Return to main screen without activating data exchange	Esc	ESC
Activate data exchange	Ok	ON

4.10 Print

Used to print measuring results over optional pocket printer (OS-No. VMA241A001).

Operation	Command	Key
Return to main menu without printing or after printing	Esc	ESC
View printout on the screen	↑↓	UP/DOWN
Send data to printer	Print	ON

Data is sent via infrared port to printer. Ensure that printer is switched on and infrared receiver on printer is in direct line of sight with the BasicMes-2.

NOTE: Only tagged data is printed

4.11 Save Measurements

Used to save measurements under a project. A project file can be created with the BasicMes-2 in the field or with the PC software supplied with the BasicMes-2 and then uploaded onto the device.

How to assign a measurement to a project:

Operation	Command	Key
Highlight project	↑↓	UP/DOWN
Select project	Ok	ON
Highlight riser	↑↓	UP/DOWN
Assign measurement to riser	Ok	ON
<i>Information screen appears</i>		
Confirm notification	Ok	ON
<i>If a measurement has already been assigned to the riser a confirmation screen appears</i>		
Do not overwrite old data	No	ESC
<i>Device returns to riser selection screen</i>		
Overwrite old data	Yes	ON
<i>Information screen appears</i>		
Confirm notification	Ok	ON
<i>Device returns to main menu</i>		

4.12 Data management

Used for following functions:

Menu item	Purpose
Print protocol	Print measurements saved within a project over optional pocket printer
Delete riser	Delete single riser of a project
Delete project	Delete complete project
Delete all projects	Delete all projects stored in device

4.13 Setup

See chapter 2.7 on page 3.

4.14 Calibration

Only used during factory calibration. Password protected and without functions required for operation in the field.

The BasicMes-2 should be calibrated once per year. For factory calibration, inspection and repair please send device to following address:

Wöhler Messgeräte Kehrgeräte GmbH

Schützenstraße 41
33181 Bad Wünnenberg
Germany

Phone +49 (2953) 73-100
Fax +49 (2953) 73-250
E-mail mgkg@woehler.de
<http://mgkg.woehler.de>

Please include the following information:

- Your own contact details and return address
- Serial number of device
- What needs to be done: inspection, factory calibration or repair
- In case of repair: please describe problem

5 PC SOFTWARE

5.1 Overview

The PC software supplied with the BasicMes-2 has the following functions:

- Manage general projects data, e.g. address
- Define consumers (“risers”) within a project
- Assign valves from the valve database to risers and predefine presetting value
- Upload data onto the BasicMes-2 before measurement
- Download data from the BasicMes-2 after measurement
- Print balancing report
- Display and export results of leakage test and data logger
- Show real time measurements of connected device

- Manage valve database
- Update function for firmware of the BasicMes-2

5.2 System Requirements

- Microsoft Windows 2000, Windows XP, Windows Vista or Windows 7
- Microsoft.net Framework 2.0
- Internet connection required for update function

5.3 Functions

The user interface has two main areas: tree structure and main area

The tree structure is on the far left and used to organise data. Two organisation levels are available: projects and risers. Risers hold data for a riser or consumer, e.g. design flow, installed valve and measuring results. One or more risers are bundled under a project.

Projects hold data for the complete project, e.g. address.

A project is added or deleted by clicking with the right mouse button onto "Projects" in the tree structure.

A riser is added or deleted by clicking onto project name with the right mouse button.

The main area has five tabs for various data:

- "Project" for general project data
- "Riser" for input of data concerning a single riser or consumer
- "Measuring results" for display, print and saving of measured data of a riser
- "Leakage test" for display and saving of data gathered during a leakage test
- "Logger" for display and saving of data collected during a data log

5.3.1 Project

Used for input of general data concerning whole project:

- Address data (two different addresses)
- Remarks field for free text
- Allows tagging if a project has been balanced successfully or not
- Allows printout of all measuring results as balancing report
- Fields for design supply and return temperature

5.3.2 Riser

Used for input of data concerning a riser, distribution pipe or heat consumer:

- Short description or name of riser (free text field)
- Design flow in l/h or m³/h
- Selection of valve for this riser (see below)
- Remarks (free text field)

5.3.2.1 Selection of valve from valve database

How to select a valve from the valve database

Operation	Command
Open valve database	Select valve
Chose valve by opening tree structure	
Click onto valve size to select	
Confirm selection	OK

5.3.2.2 Assign valve not in valve database

If a valve is not in the database it has to be input into the database first before it can be assigned to a riser.

How to add a valve to the valve database

Operation	Command
Open valve database	Select valve
Chose option "New valve"	Right click onto "Valves" in tree structure
Input valve data (Manufacturer, Valve type, Diameter, Part number and presettings)	
Confirm input	OK

Then select valve as described above.

5.3.3 Data up- and download

- Connect the BasicMes-2 to computer with USB cable
- Activate USB data exchange (see chapter "USB Data Exchange" above)
- Click onto "Send" to upload and "Receive" to download data

Data is uploaded to the BasicMes-2 or downloaded.

NOTE: Existing data is overwritten!

5.3.4 Print reports

The BasicMes-2 offers the following reports:

Report	Command
Balancing report – all risers and measuring results	"Print protocol" on screen "Project"
Measuring protocol – measuring results of riser selected in tree structure	"Print protocol" on screen "Measuring results"
Leakage test protocol – results of leakage test	"Print protocol" on screen "Leakage test"
Log protocol – results of data log	"Print protocol" on screen "Logger"

5.3.5 Display realtime measurement

Used to display measurements on a computer screen in real time

- Connect the BasicMes-2 to computer with USB cable
- Activate USB data exchange (see chapter “USB Data Exchange” above)
- Select menu “Device” and menu item “Online measurement”

A new window opens with the following functions:

Operation	Command
Start online measurement	Start
Stop online measurement	Stop
Print protocol of measuring results	Print protocol
Save measuring results to an Excel spreadsheet	Save as Excel file

For online measurement the following options are available:

- Display of time axis in real time or time difference
- Selection of values to be shown on left or right border of graph

5.3.6 Display results of leakage test or data logger

Results of a leakage test or a data log are shown on the respective pages. From there they can be printed or saved to an Excel spreadsheet.

5.3.7 Valve Database

Used to add, modify or delete valves from the valve database. The valve database can be uploaded to the BasicMes-2.

- To access valve database select menu “Device” and menu item “Valve database”

5.3.7.1 Add valve to valve database

- To add a valve to the database right click onto “Valves” in the tree structure, then click onto “New valve”
- Fill fields “Manufacturer, Valve type, Diameter, Part number and Pre-settings with data
- Click “OK” to add the data to the database or “Cancel” to abort the operation

5.3.7.2 Modify valve in valve database

- To modify a valve in the database right click onto the DN size of the valve, then click onto “Change valve data”
- Change fields as required
- Click “OK” to change data or “Cancel” to abort the operation

5.3.7.3 Delete elements from valve database

The following options are available:

- Deletion of one certain size
- Deletion of all sizes of a certain valve type

- Deletion of all valves of a certain manufacturer
- Deletion of all valves
- To delete a valve size, valve type, manufacturer or all valves from the database right click onto the respective point in the tree structure, then click onto the delete option

NOTE: Deleted elements are immediately erased and cannot be restored unless saved beforehand

5.3.8 Update firmware of BasicMes-2

Used to update the firmware of the BasicMes-2, e.g. to include a new language. Update files are available from Honeywell.

NOTE: Do not interrupt power supply or USB connection between PC and the BasicMes-2 during firmware update. Pay attention that batteries are charged sufficiently. The update will erase all settings and customer data stored in the BasicMes-2. Calibration data will be kept.

- Switch on the BasicMes-2 and connect to PC
- Change to menu item "Calibration" in main menu of the BasicMes-2
- Set access code to "3318"
- On PC select menu “Device” and menu item “Firmware update”
- Start process on PC by click onto "Update"
- Choose firmware file
- Confirm update on the BasicMes-2
- Update starts automatically and takes about 3 minutes. The display of the BasicMes-2 remains blank during this time
- The BasicMes-2 restarts after successful update. USB connection can now be removed

6 DECLARATION OF CONFORMITY

The product: **Honeywell VM242A BasicMes-2 handheld flow measuring computer**

conforms with the essential protection requirements which are set out in the directives of the European Council for to adapt the legal provisions of the Member States in respect of electromagnetic compatibility (2004/108/EG).

The following standards were available of for to evaluate the product in respect of electromagnetic compatibility:

EN61326-1:1997 + A1:1998+A2:2001

This declaration is based on the measurements of a third party.

7 ILLUSTRATIONS / ABBILDUNGEN / FIGURES / FIGURA

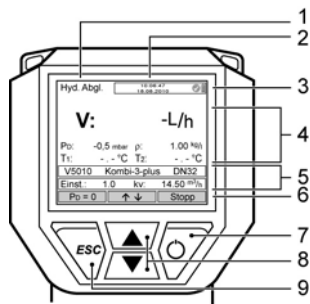


Fig. 1.

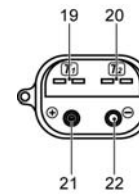


Fig. 6.

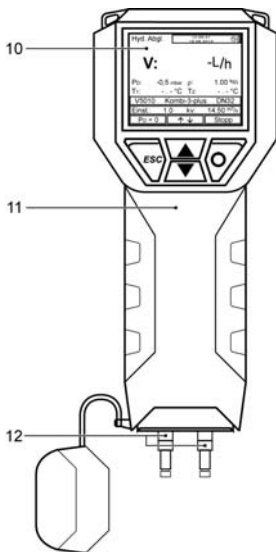


Fig. 2.

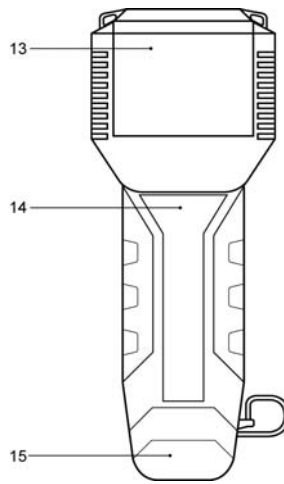


Fig. 3.

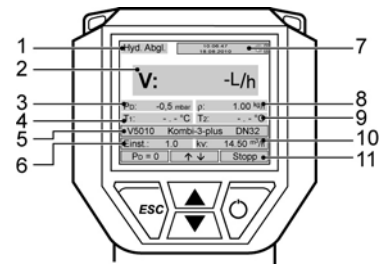


Fig. 7.

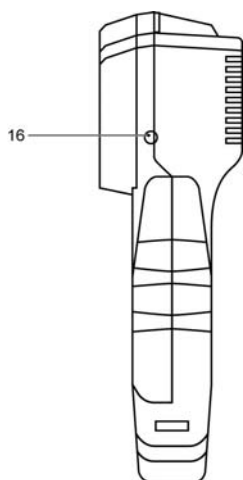


Fig. 4.

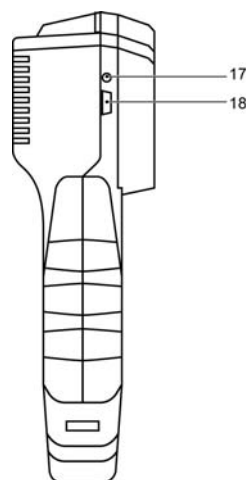


Fig. 5.

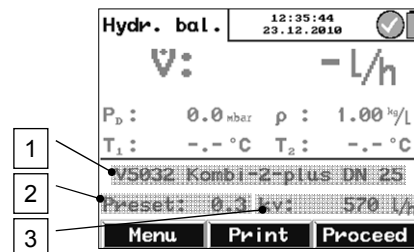


Fig. 8.

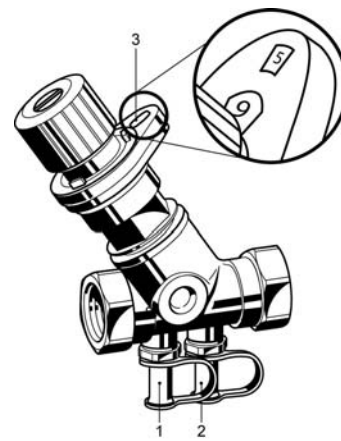


Fig. 9.

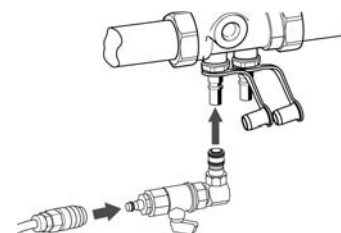
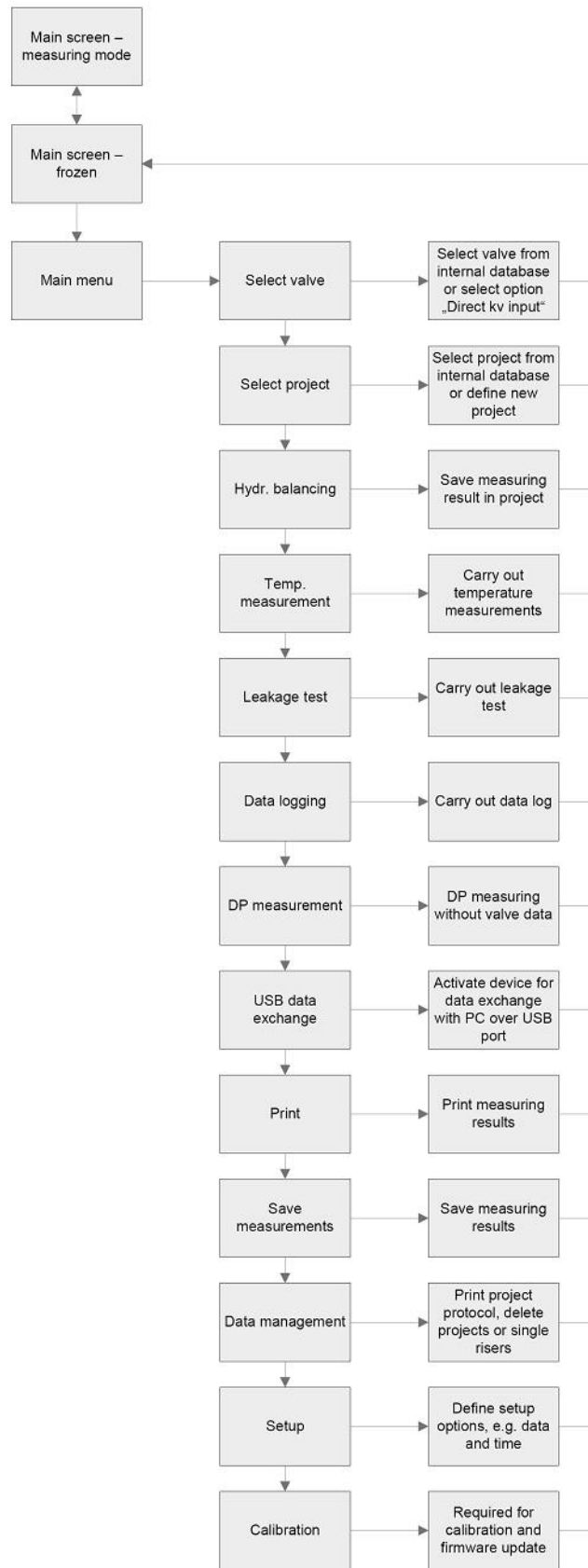


Fig. 10.

8 MENU STRUCTURE



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10 DATA SHEET

VM242A BasicMes-2

HANDHELD FLOW MEASUREMENT COMPUTER



Design

The VM242A BasicMes-2 consists of:

- Handheld flow measuring computer with colour display, rechargeable batteries and lanyard
- Bypass assembly for zero calibration and venting of the hoses
- Red and blue pressure hose
- Adapters and accessories
- Carry case

NOTE: For a detailed parts list see 'Scope of Delivery' further below

Application

The BasicMes-2 is a handheld measuring computer for flow measurements in hydronic heating and cooling systems.

The BasicMes-2 measures the differential pressure over an orifice, for example a valve seat. Together with the k_v -value of the orifice the flow is calculated using the k_v formula. The k_v -value of all Honeywell balancing valves as well as some common valves of other manufacturers are stored in an internal database. Manual input of the k_v -value is also possible.

Apart from differential pressure and flow measurement the BasicMes-2 has the following functions:

- Two temperature sensor inputs for simultaneous (using two sensors) or successive (using one sensor) temperature measurements
- Data logging function with programmable interval and duration
- Leakage test with programmable test pressure and duration
- Memory to save measured values
- PC connectivity to download measured data from the device onto a PC including PC user software
- Print function in combination with optional pocket printer (accessory)

Features

- **Easy to use device with compact dimensions**
- **Large backlit colour display**
- **Integrated valve database**
- **Bypass for venting of hoses and zero calibration**
- **PC connectivity with software included**
- **Robust case for device, accessories and optional pocket printer**
- **Magnet on back to attach to metal surfaces**

Technical specifications

Basic device specification

Medium	Water or glycol-water mixture, glycol content max. 50%. Quality to VDI 2035
Medium temperature	-20...120°C (-4...248°F)
Ambient temperature	5...40°C (41...104°F)
Storage temperature	-20...60°C (-4...140°F); see note below
Static (burst) pressure	max. 32bar (464psi)
Differential pressure	max. ± 17bar (247psi)
Differential pressure resolution	up to 1bar: 0.1mbar above 1bar: 1mbar
Accuracy	<3% of measured value in range of ±10mbar better than ±0.3mbar at stable conditions in ambient temperature range
Scan rate	Normal: 1Hz, average value of four scans (time slot four seconds) Fast: 4Hz, no averaging
Interface	USB, HP-IR for communication with pocket printer
Weight	2.5kg including accessories and carry case
Dimensions	470 x 370 x 110mm (length x width x height)

NOTE: Storage temperature below 2°C (36°F) only when device and pressure hose assembly are drained

Units and Display

Pressure units	mbar, bar, hPa, kPa, mH ₂ O, inH ₂ O, psi
Temperature units	°C, °F
Flow display	up to 5mbar: no display 0...1,000l/h: resolution 1l/h 1...100m ³ /h: resolution 0.01m ³ /h 100...1,000m ³ /h: resolution 0.1m ³ /h 1,000...10,000m ³ /h: resolution 1m ³ /h
k_v-value input	k _v < 1 in increments of 0.001 k _v 1...99.99 in increments of 0.01 k _v 100...999.9 in increments of 0.1 k _v 1,000...10,000 in increments of 1
Density correction factor	0.10...5.00kg/l in increments of 0.01kg/l

Internal Temperature Measurement

Measuring range	-20...60°C (-4...140°F)
Accuracy	< ±1K
Resolution	0.1°C

External Temperature Measurement

Measuring range	-20...300°C (-4...572°F)
Accuracy	±2K from 0°C to 133°C otherwise 1.5% of actual value, according to EN50379-2
Resolution	0.1°C
Power	
Power supply	Four rechargeable batteries type AA, mains charging adapter supplied with device
Power consumption	Typically 70mA with display brightness of 60% (default) max. 120mA with 100% brightness 50µA for real time clock during power down and log mode

Languages

Standard languages English, Dutch, French, German, Italian and Spanish

For other countries a flash upgrade can be downloaded from the DocuServer.

Eastern Europe English, Czech, Hungarian, Polish and Slovakian

Northern/Southern Europe English, Danish, Swedish and Turkish

Scope of Delivery

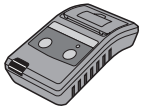
- VM242A BasicMes-2 handheld measuring computer with four rechargeable batteries and lanyard
- Set of hoses with bypass assembly and Honeywell SafeCon™ quick connections
- Battery charger
- USB cable
- Two adapters Honeywell SafeCon™ onto Rectus 21 (for connection of BasicMes-2 to Honeywell valves with old style PT valves)
- Two adapters Rectus 21 onto 3/4" internal thread
- Carry case with foam insert
- User software on CD-ROM
- Instruction manual with pocket guide

Ordering Information

OS-No.	Description
VM242A0101	Honeywell VM242A BasicMes-2 handheld flow measuring computer

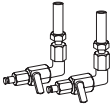
Accessories

Pocket printer for VM242 Series



Pocket printer	VMA242A001
Spare paper rolls (pack of ten)	VMA242A002

Needle adapter with Rectus 21 socket



for all VM242, also suitable for VM241 and any other device with Rectus 21 plug	VMA242A003
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Temperature sensor with clamp



for all VM242	VMA242A004
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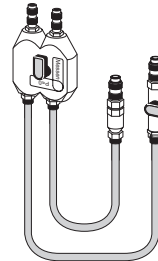
Spare Parts

Handheld measuring computer



Device only, without accessories, carry case or batteries	VMS242A001
USB interface cable	VMS242A005
Battery charger	VMS242A006

Pressure hose

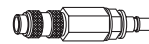


Pressure hose assembly for all VM242 including bypass assembly, red and blue pressure hose, fittings and ballvalve	VMS242A002
Spare filters (set of two)	VMS242A003
SafeCon™ plug (for blue hose)	VMS242A008
SafeCon™ plug with ball-valve (for red hose)	VMS242A009

Adapters



Rectus 21 socket onto 3/4" internal thread, with sealing	VMS242A004
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SafeCon™ socket onto Rectus 21 plug	VA2500B001
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Carry case



Carry case with foam insert for VM242A	VMS242A007
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Honeywell