PeakTech

Prüf- und Messtechnik

▶ *Spitzentechnologie, die überzeugt*

PeakTech® 5145

Bedienungsanleitung /
Operation manual

Professionelles Druckdifferenz- und
Luftströmungsmessgerät /
Professional Pressure-Difference &
Flow Meter

1. Safety Precautions

This product complies with the requirements of the following European Community Directives: 2004/108/EC (Electromagnetic Compatibility).

To ensure safe operation of the equipment and eliminate the danger of serious injury due to short-circuits (arcing), the following safety precautions must be observed.

Damages resulting from failure to observe these safety precautions are exempt from any legal claims whatever.

* Do not use this instrument near high-energy circuits.
* Do not operate the equipment near strong magnetic fields (motors, transformers etc.).
* Do not place the equipment on damp or wet surfaces.
* Do not place water-filled containers on the equipment (danger of short-circuit in case of knockover of the container)
* Do not operate the meter before the cabinet has been fully closed.
* Comply with the warning labels and other info on the equipment.
* The measurement instrument is not to be to operated unattended.
* Always start with the highest measuring range when measuring unknown values.
* Do not subject the equipment to direct sunlight or extreme temperatures, humidity or dampness.
* Do not subject the equipment to shocks or strong vibrations.
* Keep hot soldering irons or guns away from the equipment.
* Allow the equipment to stabilize at room temperature before taking up measurement (important for exact measurements).
* Replace the battery as soon as the battery indicator appears. With a low battery, the meter might produce false reading.
* Fetch out the battery when the meter will not be used for long period.
* Periodically wipe the cabinet with a damp cloth and mid detergent. Do not use abrasives or solvents.
* The meter is suitable for indoor use only
* Do not store the meter in a place of explosive, inflammable substances.
* Do not modify the equipment in any way
* Do not place the equipment face-down on any table or work bench to prevent damaging the controls at the front.
* Opening the equipment and service – and repair work must only be performed by qualified service personnel
* **Measuring instruments don't belong to children hands.**

1.1 Cleaning the cabinet

Clean only with a damp, soft cloth and a commercially available mild household cleanser. Ensure that no water gets inside the equipment to prevent possible shorts and damage to the equipment.

2. Features

1. Large LCD display with backlight.
2. Relative time clock on MAX MIN and AVG provides a time reference for measurement.
3. Pressure, velocity or air flow measurement provides Zero Adjust.
4. Display pressure, Air velocity or air flow plus environment Temperature simultaneously.
5. Easy to calculate the area of a rectangular or circular duct.
6. USB interface, USB to UART Bridge Controller.
7. Low battery indication, and Auto Power Off mode (Sleep mode) increases battery life.

3. Front Panel Description
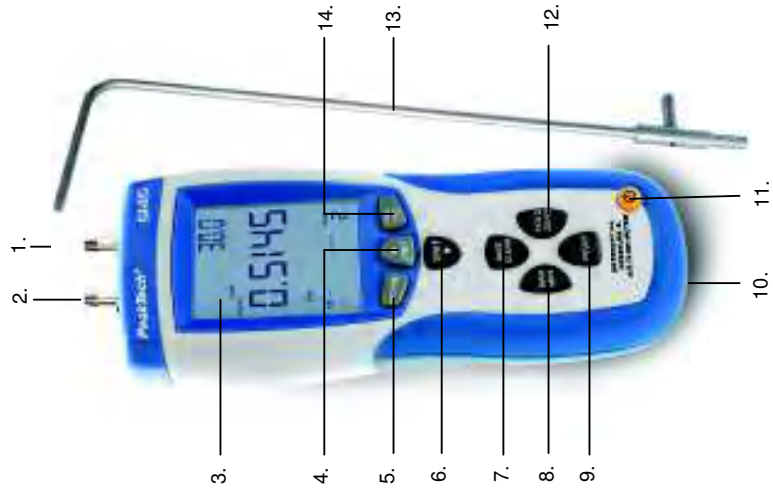
1. pressure input (+)

2. differential pressure (-)

3. LCD-display

4. Press ◄[Unit] to changes the temperature units. In Setup mode, press ◄[Unit] to scroll to the Setup option you want to change or press ◄[Unit] to increase the displayed setting. In Recall mode, press ◄[Unit] to select the desired sample number.

5. Press [Setup·❋] button to turn on the backlight. Press it again to turn off the backlight. Press [Setup·❋] button for 3 seconds to start or exit Setup. (See "Changing Setup Options.")

6. Press [Unit►] to Changes secondly showing number units. In Setup mode, press [Unit►] to scroll to the Setup option you want to change or press [Unit►] to increase the displayed setting. In Recall mode, press [Unit►] to select the desired sample number.

7. Press [Save Clear] button to store sample data or press [Save Clear] button to clear sample data in Recall mode.

8. Press [MAX MIN] to step through the maximum, minimum, and average readings. To exit the MAX/MIN/AVG mode, press the [MAX MIN] button for 2 seconds to return to normal operation

9. Press [P/V/F] to show the air velocity, press [P/V/F] secondly to show the high and length of a rectangular or the diameter circular duct, press [P/V/F] thirdly to show the air flow, press [P/V/F] to show differential pressure again.

10. battery cover

11. Press [⏻] to turn the thermometer on or off.

12. Press [Hold Zero] to freeze or unfreeze the displayed readings. Press [Hold Zero] button and hold 2 seconds to zero out the display.

13. Pitot tube for measuring of airflow

14. Press [Avg Rec] button and hold 2 seconds to enter Recall mode. In Recall mode, press [Avg Rec] to calculate the sample data. In Setup mode, press [Avg Rec] button to enter a Setup option. Press [Avg Rec] again to store the displayed setting in memory.

4. Display Elements
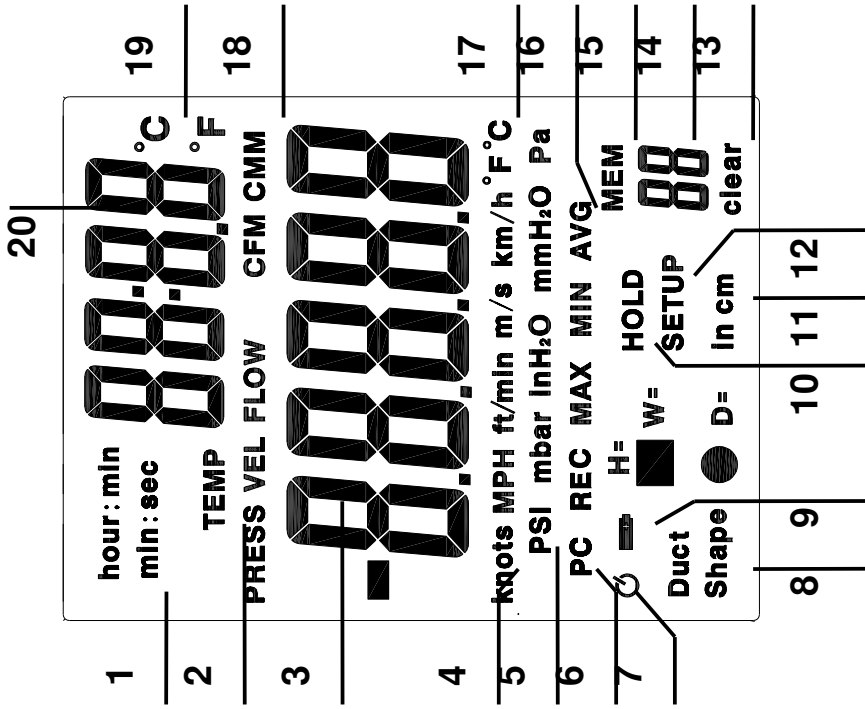
1. min : sec or hour : min Display..
2. Pressure, Velocity, Flow or temperature modes are active
3. Primary Display.
4. Units of air velocity.
5. Units of pressure.
6. The indication of meter communicating to PC.
7. Auto Power Off mode indicators.
8. Duct Shape choices.
9. Low battery indicator. Replace the battery as soon as the low battery indicator appears.
10. Data Hold indicator.
11. The units of H, W or D.
12. Entering or exiting setup mode.
13. Indicates that a stored sample (or all samples) is about to be deleted from memory.
14. The sample memory is being accessed and the number of samples.
15. Annunciators showing that sample memory is being accessed.
16. REC, MAX, MIN and AVG indicators.
17. Temperature units of primary display.
18. Units of air flow.
19. Temperature units of secondly display.
20. Digits for temperature and time.

5. Changing Setup Options

Use Setup to chose duct shape and set the duct parameters .sleep mode, Max/min/avg mode menu setting and clear memory. The thermometer stores the settings in its memory.

Setup Options

Option	Menu item	Settings
Duct dimension units	Unit	Set duct dimension units in or cm
Duct Shape and parameters	Duct Shape	set area of measuring air flow
Auto Power Off mode	SLP	auto off or on
menu setting	ENU	1, 2,or 3
clear Memory	Mem clear	Yes or No

5.1. Entering or Exiting Setup

When the thermometer is in Setup mode, the display shows SETUP.

Press [Setup] button for 2 seconds start or exit Setup.

5.2. Changing a Setup Option

1. Press [◄ Unit] or [Unit ►] to scroll to the setup option you want to change.

2. Press [Avg Rec] to indicate that you want to change this setting.

3. Press [◄ Unit] or [Unit ►] until the setting you want to use appears on the display.

   Press [Avg Rec] to store the new setting in memory.

Notes:

Setup is disabled in MIN/MAX/AVG mode.

5.3. Duct dimension units Setting

1. When the meter is in Setup mode, press [◄ Unit] or [Unit ►] to scroll to the duct dimension units setup option.
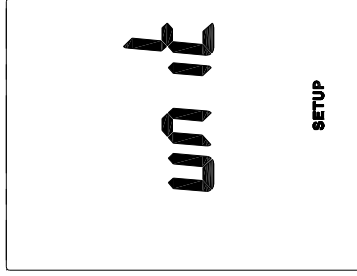
2. Press [Avg Rec] button. It shows "in" or "cm" on the display.

3. Press [◄ Unit] or [Unit ►] to scroll to the setup option you want to change.

4. Press [Avg Rec] to store the new setting in memory.

5.4. Duct Shape and Parameters Setting

When the meter is in parameters setup mode. The screen is show number of the last duct shape and size that is entered. If the duct is different than the stored version, then find the proper duct type for the measurement (rectangular or round).

5.5. Choose Duct Shape

1. When the meter is in setup mode, press ◀ Unit or Unit ▶ to scroll to the duct shape setup option.

```
Duct          SETUP
Shape
```

```
                SETUP
Duct
Shape ●
```
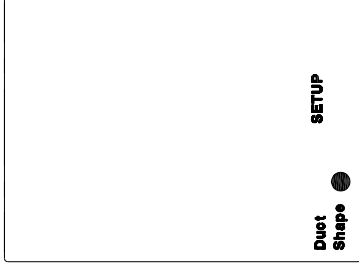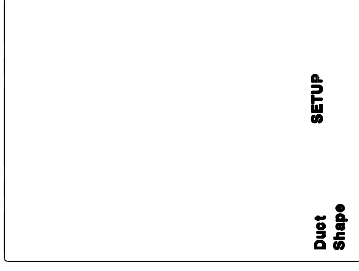
2. Press Avg/Rec button. The screen shows the "■"(rectangle) or "●"(circular).

3. Press ◀ Unit or Unit ▶ to scroll to the setup option you want to change.

4. Press Avg/Rec to store the new setting in memory and enter parameters setup option.

5.6. Parameters Setting

1. If duct is rectangle, the height of duct numbers and "H="will be first shown in the primary show.
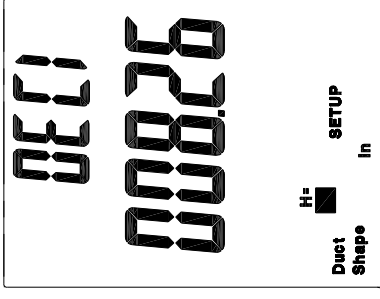
2. Press [◄ Unit] or [Unit ►] button to select the decimal point.

3. Press [Save Clear] to change the station of flashing digit and Press [◄ Unit] or [Unit ►] to change the flashing digit from 0 to 9.

4. Press button, the width of duct numbers and "W="will be shown in the primary show.

5. Press [P/V/F] button to select the next digit.

6. Press [Save Clear] or [Unit ►] to change the station of flashing digit and press [◄ Unit] to change the flashing digit from 0 to 9.

7. Press [Avg Rec] to store the new parameters in memory.

8. If duct is circular, the diameter of duct numbers and "D="will be shown in the primary show then select the duct diameter that you want to use in the same way.
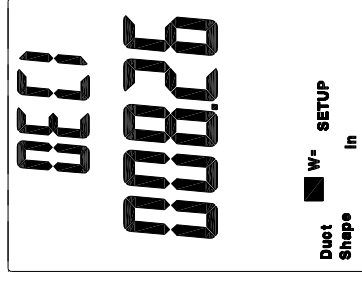
5.7. Auto Power Off Mode

The meter enters sleep mode (default). That is to say, the meter will automatically shut off after 20 minutes if no button press occurs for 20 minutes. When the meter is in Setup mode, the display shows SETUP.
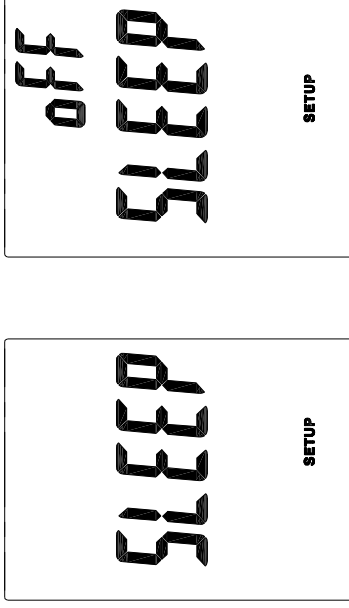
Press [Unit ▶] or [Unit ▶] to scroll to the " SLP " page . Press [Avg Rec] to indicate "ON" or "OFF".
Press [◀ Unit] or [Unit ▶] until the setting you want to use appears on the display. Press [Avg Rec] to store the new setting in memory. ON (sleep mode on) or 0FF (sleep mode off).

5.8. Menu Setting

1. When the meter is in Setup mode, Press [◀ Unit] or [Unit ▶] to scroll to the Mode Menu setup option.

2. Press [◀ Unit] or [Unit ▶] to scroll to the setup option you want to change.

3. There are three choices for selecting.
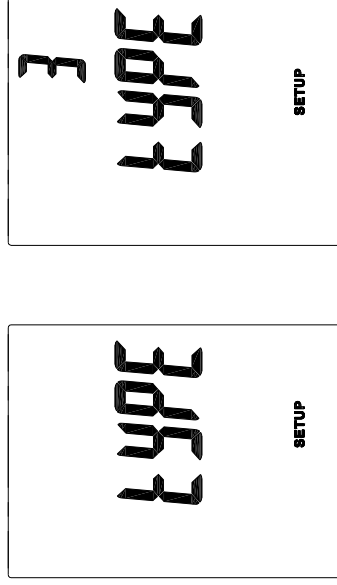
"1". Display pressure and air velocity value.

"2". Display air velocity and air flow value.

"3". Display pressure, air velocity and air flow value.

4. Press (Avg/Rec) to store the new setting in memory.

6. Clear Memory Setting

1. When the meter is in Setup mode, Press (Unit ◄) or (Unit ►) to scroll to the clear memory setup option.

2. Press (Save/clear) to select the desired sample. There are three choices for selecting.

PRESS VEL FLOW: clear all pressure, velocity and flow sample data.
PRESS: clear all pressure sample data.
VEL: clear all velocity sample data.
FLOW: clear all flow sample data.

3. Press (Unit ◄) or (Unit ►) until the display show "YES", press (Avg/Rec), then clear the memory.

-32

7. Operation

7.1. Measuring Pressure

The Primary Display number is Pressure value, the device measures Gauge/Differential Pressure ± 5000Pa, it features 5 selectable units of measure: PSI, mbar, Pa, inH2O, mmH2O.

1. Press (P/V/F) to enter the pressure mode and press (Unit ▶) to select unit.

2. Connect a single hose to the "Input (+)" port, leaving the "Ref (-)" port unconnected.
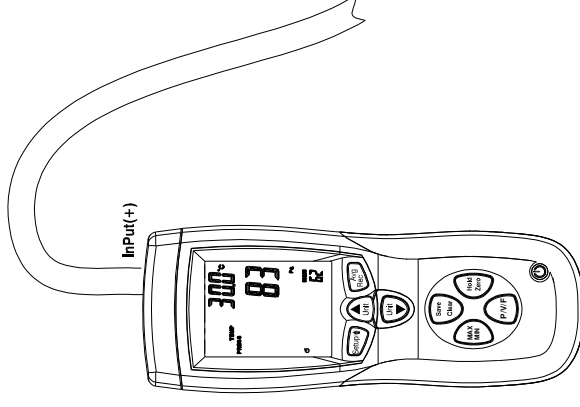
InPut(+)

3. With the tubing open to ambient conditions press (Hold Zero) and hold for 2 seconds to zero out the display.

4. Place the input hose in a different zone than the Meter.

5. The Meter displays the differential pressure of the input zone with respect to the reference zone.
   For instance, a positive reading means that the input zone is positively pressured with respect to the Meter location or its reference zone.

7.2. Measuring Velocity

The Meter uses standard ambient conditions (temperature =21.1 °C/70 °F, barometric pressure = 14.7 PSI / 1013 mbar), to approximate actual velocity and flow.

The primary display number is air velocity, the device measures air velocity, and it features 5 selectable units of velocity measure: m/s, ft/min, km/h, MPH, knots.

1. Press (P/V/F) to enter Velocity mode and press (Unit ▶) to select unit.

2. Connect the hoses to the pitot tube to the Meter. The "Input (+)" pressure port on the Meter connects to the white hose from the total pressure connection of the pitot tube. The "Ref (-)" pressure port on the Meter connects to the black hose from the static pressure connection of the pitot tube. the tubing open to ambient conditions press and hold (Hold Zero) for 2 seconds to zero out the display.

Flow

inPut(+)

Input (-)

Pitot Tube Connection

3. When make the measurement, the pitot tube tip should against the measured wind as shown in upper figure, and ensure that the axis of the duct is aligned with the fluid flow for ± 10 °. If Measure Velocity measures negative and show "o Err"on the display, check to make sure that the hoses are attached to the correct ports on the Meter and the pitot.

7.3. Measuring Flow

1. Press [P/V/F] to enter air flow mode and press [Unit ▶] select unit.

2. The Meter shows the duct shape and size. The Meter stores the last duct shape and size that is entered. If the duct is different than the stored version, press [Setup✱] button to find the proper duct type for the measurement (rectangular or round). Refer to Step duct shape and parameters setting. ("Changing Setup Options.")

Notes:

HOLD, Save, MIN/MAX/AVG, Zero, and Setup can be used when measuring pressure, velocity and flow.

7.4. Displaying Temperature

Ambient temperature is displayed on the secondly show as a reference. The temperature can be displayed in either °C or °F. Press [◀ Unit] to select unit °C or °F.

7.5. Holding the Displayed Readings

1. Press [Hold Zero] to freeze the readings on the display . The display shows HOLD.

2. Press [Hold Zero] again to turn off the HOLD function

7.6. Viewing the MIN, MAX, and AVG Readings

1. Press [MAX MIN] to step through the maximum (MAX), minimum (MIN), or the average (AVG) readings. The elapsed time since entering MAX/MIN/AVG mode, or the time at which the minimum or maximum occurred appears on the display.

2. Press [P/V/F] to show the maximum, minimum, and average of pressure, velocity or flow, and temperature value.

3. Press [MAX MIN] button for 2 seconds to exit MAX/MIN/AVG mode.

7.7. Saving Samples

The Meter saves various samples in its three major modes. To save a sample, do the following:

1. When taking a sample, press (Save/Clear) to store the sample. The Meter can save up to 99 samples in each of its three modes.

2. If the memory is full (99 samples have been stored), more samples cannot be stored. If the user attempts to store another sample, the Meter shows "FU" and does not save new readings.

7.8. Recall and Clearing Sample Data

The Meter stores data that sometime will need to be recall and periodically to be cleared. Individual samples or the entire data memory can be cleared. When the memory is full (99 samples), it shows "FU" (Full) on the display when (Save/Clear) is pressed and the Meter emits short beeps and will not save any value unless some samples are cleared.

To recall sample data, do the following:

1. Press (P/V/F) to recall samples for that mode.

2. Press (Avg/Rec) (RECALL) and hold the button for 2 seconds to recall samples. The last measurement saved appears first. Use (Unit◄) and (Unit►) to locate the desired sample.

3. Once the samples are taken, press (Avg/Rec) to view the average of all the samples.

4. Press (Avg/Rec) and hold the button for 2 seconds to exit recall mode.

REL
83
Pa
MEM
62
PRESS
ↄ
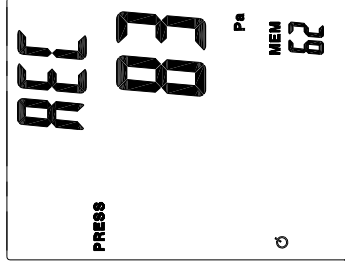
To clear individual sample data, do the following:

1. Press [P/V/F] to recall samples for that mode.
2. Press [Avg/Rec] (RECALL) and hold the button for 2 seconds to recall samples. Use [◄ Unit] and [▶] to select the desired sample.
3. Press [Save/Clear] to clear the sample. Note that the number of samples displayed is reduced.
4. Press [Avg/Rec] and hold the button for 2 seconds to exit recall mode.

To clear all sample data, Refer to Step clear memory setting. ("Changing Setup Options.")

8. Specifications

8.1. General Specifications

Operating Conditions	0 to 50 °C; <80% RH
Storage Conditions	-10 to 60°C; <80% RH
Power Supply	9V Battery
Low Battery Indicator	Yes
Dimensions (WxHxD)	75x203x50mm
Accessories	Pitot Tube 12 Inch , black and white hose, usb-cable, software for windows 2k/XP/VISTA/7, battery and operation manual
Relative Humidity:	< 10 °C	<90 % RH
	10 °C to 30 °C	<75 % RH
	30 °C to 40 °C	<45 % RH

8.2. Manometer specification

Accuracy	±0.3% FSO (25°C)
Repeatability	±0.5% FSO
Linearity/Hysteresis	±0.29% FSO
Pressure Range	± 5000 Pa
Maximum Pressure	10psi
Response Time	0.5 Seconds typical
Over range Indicator	**OL**
Under range Indicator	**-OL**

Units	Range	Resolution
PSI	0.7252	0.0001
mbar	50.00	0.01
inH2O	20.07	0.01
mmH2O	509.8	0.1
Pa	5000	1

1psi*27.68=inH2O
1psi*68.947=mbar
1psi*703.072=1*mmH2O
1psi*6894.6=Pa
FSO: Full Scale Output (The difference signal between zero and end point of range)

8.3. Range of Air Velocity

Air Velocity	Range	Resolution	Accuracy
m/s (meter per second)	1.00-80.00	0.01	±2.5% of reading at 10.00 m/s
ft/min (feet per minute)	200-15733	1	
km/h (kilometers per hour)	3.6-288.0	0.1	accuracy is function of velocity and duct size
MPH (miles per hour)	2.24-178.66	0.01	
Knots (nautical miles per hour)	2.0-154.6	0.1	

8.4. Range of Air Flow

Air Flow	Range	Resolution
CFM (cubic feet per minute)	0-99.999ft3/min	0.0001 to 100
CMM (cubic meters per minute)	0-99.999m3/min	0.001 to 100

CFM (ft3/min) = Air Velocity (ft/min) x Area (ft2)
CMM (m3/min) = Air Velocity (m/s) x Area (m2) x 60

8.5. Range of Temperature

	Range	Resolution	Accuracy
°C	0 to 50.0 °C	0.1	±1.0 °C
°F	32.0 to 122.0 °F	0.1	±2.0 °F

9. Error Codes

An error message will appear on the display if the meter fails an internal diagnostic test. And it will freeze all the buttons.

OL: Pressure or air velocity value is over the range.
-OL: Pressure value is below the range.
o Err: air velocity or air flow is below the range.

10. Replacing the Battery

When the entire display shows the low battery indication, the 9 V battery has fallen to a critically low voltage level and should be replaced as soon as possible.

1. Take off the battery cover at the button side of the instrument,

2. Remove the old battery and replace the new 9 V battery.

3. Make sure that the battery is installed to the right position and connected to the proper polarisation with the battery snap.

4. Put on the battery cover and let it snap in to secure.

Statutory Notification about the Battery Regulations

The delivery of many devices includes batteries, which for example serve to operate the remote control. There also could be batteries or accumulators built into the device itself. In connection with the sale of these batteries or accumulators, we are obliged under the Battery Regulations to notify our customers of the following:

Please dispose of old batteries at a council collection point or return them to a local shop at no cost. The disposal in domestic refuse is strictly forbidden according to the Battery Regulations. You can return used batteries obtained from us at no charge at the address on the last side in this manual or by posting with sufficient stamps.
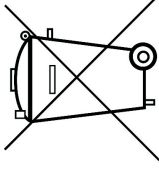
Batteries, which contain harmful substances, are marked with the symbol of a crossed-out waste bin, similar to the illustration shown left. Under the waste bin symbol is the chemical symbol for the harmful substance, e.g. „Cd" for cadmium, „Pb" stands for lead and „Hg" for mercury.

You can obtain further information about the Battery Regulations from the Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (Federal Ministry of Environment, Nature Conservation and Reactor Safety).

This manual considers the latest technical knowing. Technical changings which are in the interest of progress reserved.

We herewith confirm, that the units are calibrated by the factory according to the specifications as per the technical specifications. We recommend to calibrate the unit again, after 1 year.

© **PeakTech®** 05/2012/th/Ho.