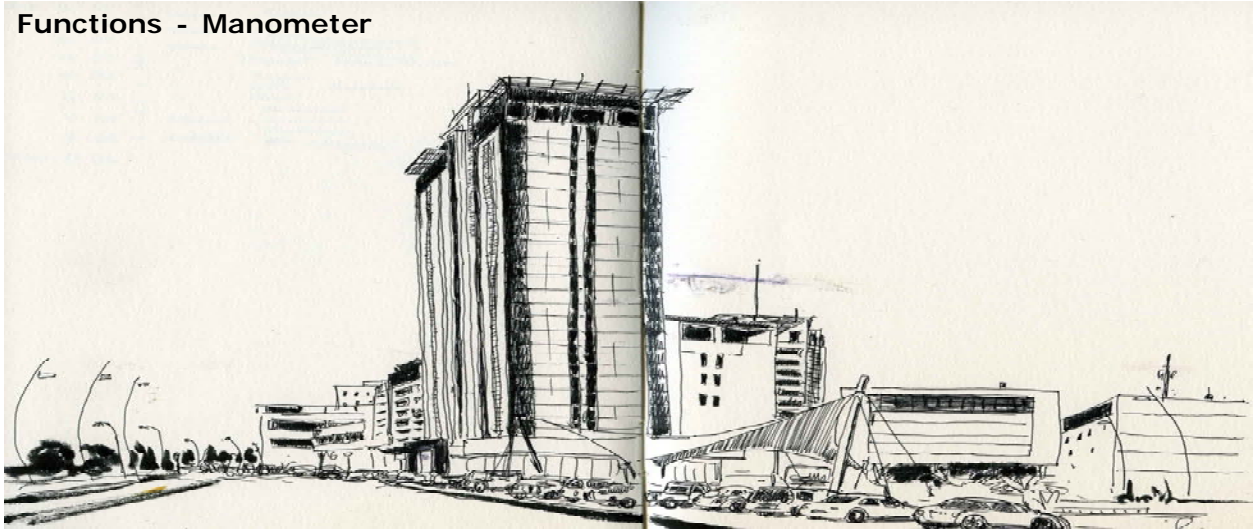


Portable Micromanometer MT V.01

Functions - Manometer



MT is an innovative product combining the elegance and prestige of the **BEINATs.r.l** brand with the versatility of a multi-functional instrument.

It offers two products in a single appliance:

a pressure gauge, thermometer.

Its main use is to assist technicians carry out their work, both during the installation of new systems and the inspection of existing ones.

Thermometer

Temperature is measured using a built-in, hidden probe and detected from **-50 °C to +100 °C**, with **0.5 °C** resolution.

Pressure Gauge

It 'a differential portable compact pressure gauge easy to use. The accuracy and autonomy make this an indispensable tool for testing and control of heating systems.

It is calibrated with sophisticated testing machines, so its measurement is very precise and is also calibrated example for:

Pressure of gas mains; Gas pressure to burner nozzles; Flue efficiency.



Thank you for choosing the **BEINAT S.r.L.** digital tool, model **MT**.

This manual was designed to help you obtain the best results and efficiency from the product.



Important Note

Read these instructions carefully before use and always keep them within hands reach while using the instrument.

The illustrations and texts shown on the screens in this manual may differ from those actually displayed

The brand products **BEINAT S.r.L.** comply with European Directives ROHS 2002/95/EC, REACH 1907/2006, BATTERIES AND ACCUMULATORS 2006/66/EC RAEE 2003/96/EC



User Guide

CONFORMITY

UNI 7129

For your safety

Read the following safety precautions carefully to avoid damaging the product or personal or third party injuries, before using the **MT** appliance

Keep them safe so they are available for consultation by anyone before using the appliance.

Immediately turn off the appliance in the event of malfunctioning.

In the event you detect smoke or a pungent or unusual odour coming from the appliance or power supply (optional accessory):

Immediately turn off the detector; disconnect the power supply from the mains, if connected to charge the battery, and send to the nearest Service Centre.

Do not try to dismantle the appliance.

Contact with internal components of the detector can cause injury. In the event of faults, the product should only be repaired by qualified personnel.

If the device is broken due to a fall or crash, consult the Service Centre for the necessary repairs.

Observe due precautions while handling the Lithium Polymer battery.

The battery must never be exposed to high temperatures, that is, over + 45°C. To ensure an optimum service life, use it at room temperature.

If used at low temperatures, the service life could be diminished.

Never dismantle the battery and never throw it on a fire as it may explode.

Never dispose of the battery as normal waste. Comply with local regulations on its disposal.

Use the correct cables supplied.

To ensure the product complies with standards, for terminal input and output connection only use the cables supplied for this purpose or those sold separately by **BEINAT S.r.l.**

Avoid contact with liquid crystals.

In the event the display breaks, pay attention not to injure yourself with the glass fragments and avoid the liquid crystals coming in contact with your skin, eyes or mouth.

To achieve long, satisfactory use of the **MT** digital appliance, use and store it in compliance with the following precautions.

ENSURE the detector is intact after removing it from the packaging.

Any use other than the designed use of the detector is considered improper and **BEINAT S.r.l.** declines all liability for any damage caused to people, animals or property.

Do not allow it to get wet.

The **MT** is not waterproof and can be seriously damaged if immersed in water or exposed to high levels of humidity.

Do not drop it.

Heavy knocks on hard surfaces and strong vibrations can damage the machine.

Avoid strong magnetic fields.

This detector should not be used or stored near radiation or strong magnetic fields. Static electricity or magnetic fields generated by devices such as radio transmitters can cause interference during measurements.

Avoid abrupt temperature fluctuations.

Sudden temperature variations can cause condensation and the batteries could supply lower voltage.

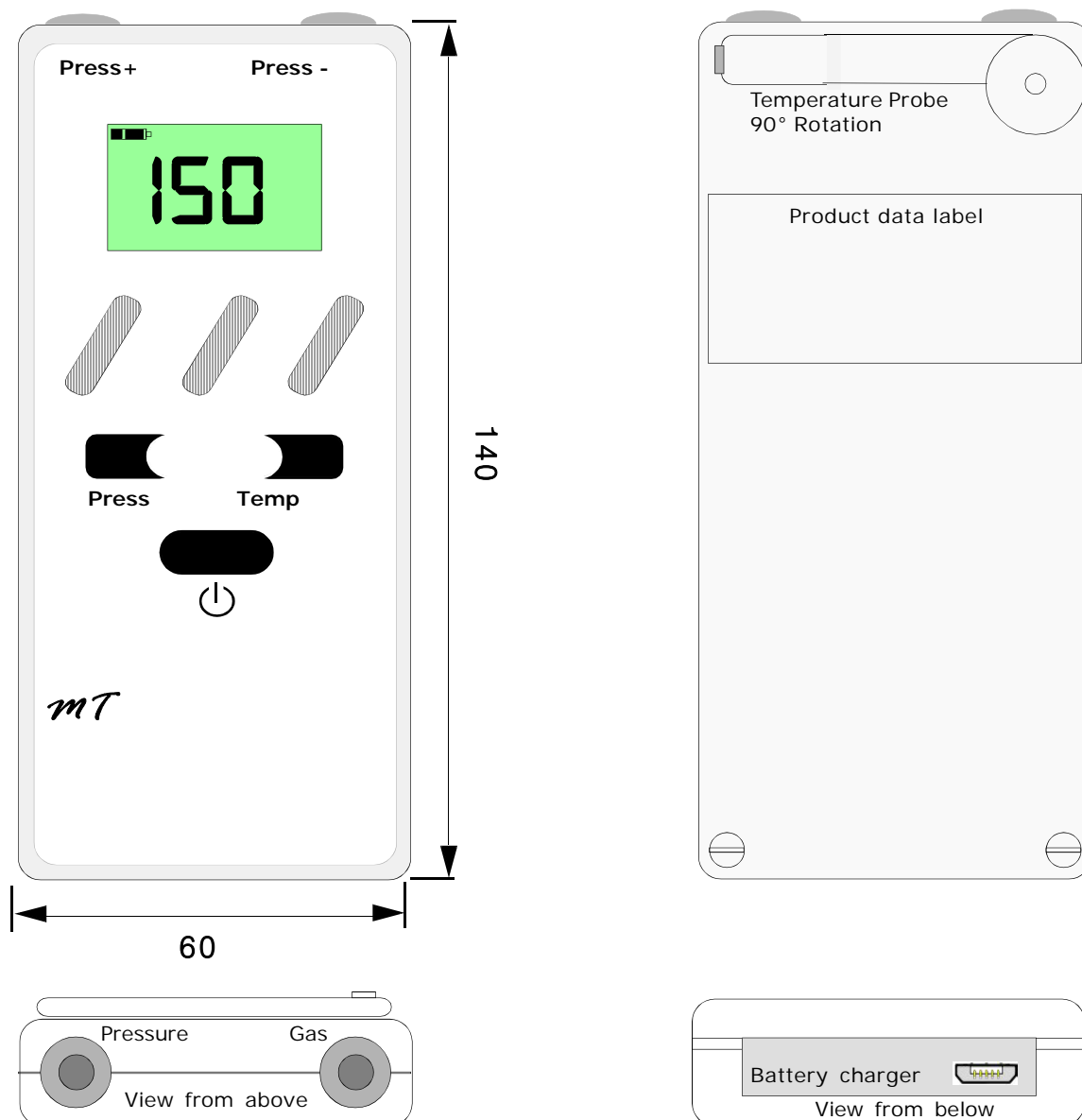
Over a certain temperature (circa + 45°C) the monitor becomes black. To restore visibility place it in a fridge for a few minutes to allow it to cool.

Cleaning


Never clean the appliance using chemical products. If necessary, wipe with a damp cloth.

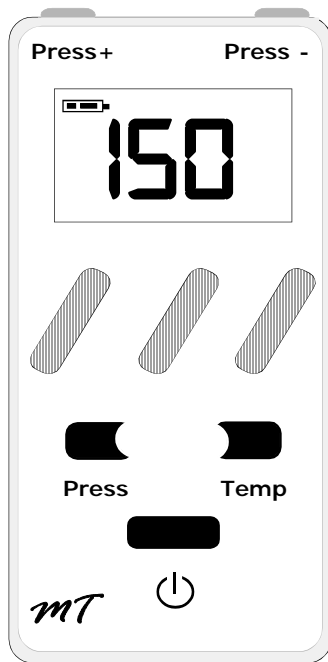
Conversion table for pressure

Units of Measures	Symbol	Pa	hPa	bar	mbar	at	mmH ₂ O
Pascal	Pa	1	0,01	0,00001	0,01	0,00001	0,1
ect Pascal	hPa	100	1	0,001	1	0,0001	10
bar	bar	100.000	1.000	1	1.000	1	10.000
millibar	mbar	0,01	1	0,001	1	0,001	10
Technical Atmosphere	at	100.000	1.000	1	1.000	1	10.000
millimeter H ₂ O	mmH ₂ O	10	0,01	0,0001	0,1	0,0001	1
PSI	PSI	0.000145038	0.0145038	1.45038	0.0145038	1.45038	0.00145038




Button functions

- **MT On/Off button.**
To turn the instrument on or off, press the  button for 5 seconds
- **PRESSURE GAUGE Function.**
The instrument can display 2 scales: one in **mmH₂O** and the other in **mbar**,
Keep the "Press" button pressed for 2" to access the Pressure Gauge function.
When the instrument is switched on it positions itself on the **999 mmH₂O** scale.
Press the "Press" button again for 2" to access the **150 mbar** scale.
- **THERMOMETER Function.**
Press the "Temp" button for 2" to access the Thermometer function. The instrument turns on and starts to measure the room temperature.
Lift the probe up, by turning it, for maximum reading precision. The measurement scale is **-50 °C to +100 °C**.




Pressure Gauge Display



mmH₂O

99.9

Measurement display:
99,9 mmH₂O maximum




150

mbar

Measurement display:
150 mbar.

Battery charger status display
The display depicts a battery. When the battery is **charged** the figure is completely **black** and as it is used it **becomes white**. It flashes when it needs to be recharged.

PRESSURE GAUGE Function.

● Press the  button and then the "Press" function button.

PRESSURE GAUGE Function.

Press the "Press" button to access the Pressure Gauge function with its **mmH₂O** scale;; When the instrument is switched on it positions itself on the **999 mmH₂O** scale
If the pressure measured is higher, the instrument automatically positions itself on the higher scale of **999 mmH₂O**.

If you want to use the **mbar** scale, press the "Press" button again.
The instrument positions itself on the **30.9 mbar** scale.
If the pressure measured is higher, the instrument automatically positions itself on the higher scale of **150 mbar**

SWITCH OFF. Press the OFF button for 5 seconds.

Checking pressure

The **pressure gauge** has two measuring inputs, one for the pressure (positive) and one for the depression (negative).

To measure the positive pressure, apply the supplied tube on the input on the left making sure to let opened the entrance to the depression.

To measure the negative pressure (depression), apply the tube on the input on the right making sure to let opened the input pressure.

To measure the difference of two pressures, apply the higher pressure on the positive input and the other on the negative input.

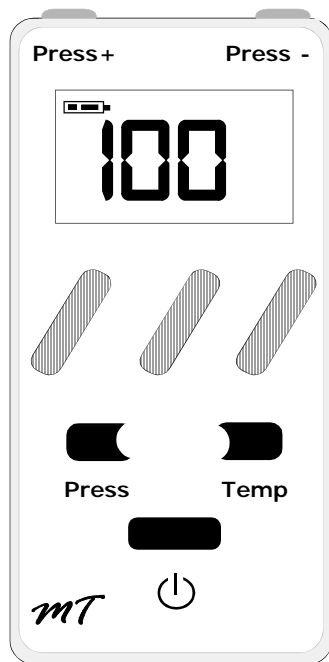
After the reading, appear on the display the pressure difference that the instrument will measure between an input and the other.

- 1) Turn on the instrument as above
- 2) Insert the tube in the "Press" input
- 3) Use the tube to connect the instrument to the pressure or depression source, for measurement; the instrument measures both positive and negative pressure.

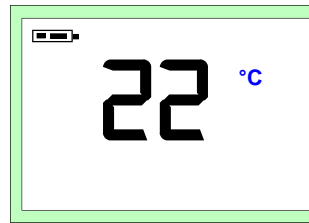
Readings and Measurements

These operations must be carried out in compliance with the methods described in this manual.

Remember, measurements taken with **batteries in need of recharge** can give **false measurements**.



Thermometer Display




Measurement display:
from -50 to + 100 °C

Battery charger status display

The display depicts a battery. When the battery is **charged** the figure is completely **black** and as it is used it **becomes white**. It flashes when it needs to be recharged..

THERMOMETER FUNCTION.

● Press the  button, followed by the "Temp" function button.

THERMOMETER Function.

Press the "**Temp**" button to access the thermometer function. When the instrument is turned on it starts to read the room temperature. Lift the probe up, by turning it, for maximum reading precision.

SWITCH OFF. Press the OFF button for 5 seconds.

Temperature

Measurement range	-50+100 °C
Precision	1% F.S
Resolution	0.5 °C

Temperature Readings

These operations must be carried out in compliance with the methods described in this manual. **Remember**, measurements taken with **batteries in need of recharge** can give **false measurements**

Problems and Solutions

If the appliance does not turn on.

Check the battery is charged. If not, recharge it.

The battery is not recharging.

Check voltage is arriving from the power supply.

In the event other problems arise, directly contact a specialist and/or authorised **technician** or your **BEINAT S.r.l. dealer**.

Calibration

The **MT** digital instrument leaves the factory with a testing and calibration certificate.

Such calibration corresponds to that declared by the test instrument, according to **international standards**. **N.B.** The test instrument is kept in the manufacturing plant.

Measurement uncertainty is assessed as **"category B"**

Ordinary and extraordinary maintenance of the digital pressure gauge and **CALIBRATION**, whose natural validity is **ONE YEAR**, must be carried out by authorised personnel with equipment in compliance with standards.

Information: Pressure and Temperature

Three macroscopic variables are necessary to define the state of static air, each subject to direct measurement. These variables are pressure, temperature and volume; the state of gas in the air with volume **V**, pressure **P** and temperature **T** is defined by Boyles Law:

$P \cdot V = n \cdot R \cdot T$. where **n** is the number of moles composing the gas and **R** is a universal constant.

The possible states of a gas with constant pressure and volume are expressed by the Gay-Lussac Law: **with constant pressure the volume of a gas increases as the temperature increases, or vice versa.**

Example:

Scale 99.9 mmH₂O at each °C variable, the pressure varies by +/- 0.7 mm H₂O

Scale 999 mmH₂O at each °C variable, the pressure varies by +/- 3.4 mm H₂O

Therefore, if the instrument is connected at variable temperatures, the pressure registered at the start will definitely differ from final pressure.

This is normal and is not due to malfunctioning.

Concepts and Battery Charging



Recharge from PC



Recharge from AC 230V

Rechargeable Battery

This device is equipped with a **3.7V** rechargeable LITHIUM POLYMER battery.

To recharge the battery it should be connected to the PC using a USB cable or you can purchase a 230V recharging cable separately.

When first turned on

On purchase the batteries are not fully charged.

Before using the instrument we recommend you charge the batteries for a **maximum of 10 hours**.

Charging.

1 Connect the battery charger connector to the micro USB socket on the lower part of the instrument, and connect this to the USB port of any PC.

2 Connect the battery charger connector with the power supply unit to the micro USB socket on the lower part of the instrument, and then connect the battery charger to a power socket.

3 Do not recharge the battery in an ATEX zone.

Use

Batteries should never be exposed to high temperatures, or rather exceed working temperatures of -20°C to +45°C.

To ensure an optimal service life, use at room temperature.

If used at both low and high temperatures its service life may be diminished.

Never dismantle the battery and never throw it on a fire as it may explode.

Never dispose of the battery as normal waste. Comply with local regulations on its disposal.

Voltage of charged battery **3.7V**.

Working time **Approximately 30 hours**

Technical specifications

Powered by Lithium Polymer battery	3.7 V.cc built-in
Consumption during the detection.....	30 mA
Consumption in standby	150uA
Battery autonomy according to functions	8 to 20 hour approx
Battery charging	Via USB port from PC
Battery charging	External from 5 V. cc 350mA
Recharge control	Controlled by micro-processor
Time to recharge exhausted batteries	7 hours
Battery charging and consumption control.....	On Display

Pressure Gauge

Pressures

1 st measurement range	from 0 to 999mmH ₂ O
2 nd measurement range.....	from 0 to 150mbar
Pressure overload	7000mmH ₂ O
Precision scale 99.9 mmH ₂ O	1% F.S
Precision scale 1000 mmH ₂ O	1% F.S

Thermometer

NTC temperature detector.....	from -50 to +100 °C
Scale precision	1% F.S
Display	LCD 3 digit
Operating temperature	-20° C ÷ + 45° C
Automatic switch off, based on explosive gas detection.....	After 10 minutes
Electromagnetic compatibility-EC reference standard.....	EN 50270
Dimensions and weight	60 * 140 *24mm 70g

Readings and Measurements

These operations must be carried out in compliance with the methods described in this manual.

Remember measurements taken with **batteries in need of recharge** can give **false measurements**.

CERTIFICATE OF CALIBRATION *pressure gauge* MT

Instrument: Digital pressure gauge MT
Version: V. 1.0
Digital pressure gauge +/- 200mmH₂O +/-1529,57mmH₂O

PRESSURE

Sample instrument	Serial number	Measurement range	Uncertainty	Resolution
DRUCK DPI 530 - 4bar	0745/99-09	0 ÷ 100 mbar	± 0.1% F.S.	1 mbar (100Pa)

Measurements in pressure

Type measurement	PRESURE	Reading instrument	Tolerance allowed
P1	250 mmH ₂ O	252 mmH ₂ O	± 1 % F.S.
P2	600 mmH ₂ O	580 mmH ₂ O	± 1 % F.S.
P3	990 mmH ₂ O	970 mmH ₂ O	± 1 % F.S.
P4	1529,57mmH ₂ O	1540,00mmH ₂ O	± 1 % F.S.

TEMPERATURE

Sample instrument	Serial number	Measurement range	Uncertainty	Resolution
VEMER VE 305 K	100764	-30°C ÷ 1300°	± 0.3% let.	+1°C 0.1°C

Type measurement	TEMPERATURE	Reading instrument	Tolerance
T1	20 °C	20,05 °C	± 2 % F.S.
T2	60 °C	61 °C	± 2 % F.S.
T3	100°C	100,05 °C	± 2 % F.S.

All other technical features are present in the manual attached to the instrument.
The tests described above were carried out with the following references:

Temperature: 20°C ± 2°C
Atmospheric Pressure: 100 kPa ± 0,1 kPa
Relative humidity: 50% ± 15%

This certificate is valid for one year and may not be reproduced without our permission, in any case, may not be reproduced in part.

The laboratory manager.

INSURANCE.This device is insured by the SOCIETÀ REALE MUTUA for the PRODUCT'S GENERAL LIABILITY up to a maximum of 1.500.000,00 EURO against damages caused by the device in case of failures in functioning.

WARRANTY.The warranty term is 3 years from manufacturing date, in agreement with the following conditions. The components acknowledged as faulty will be replaced free of charge, **excluding** the replacement of plastic or aluminium cases, bags, packing, batteries and technical reports.

The device must arrive free of shipment charges to **BEINAT S.r.L.** Defects caused by unauthorized personnel tampering, incorrect installation and negligence resulting from phenomena outside normal functioning shall be excluded from the warranty.

The **BEINAT S.r.L.** company is not liable for possible damage, direct or indirect, to people, animals, or things; from product faults and from its enforced suspension of use.



DISPOSAL OF OLD ELECTRICAL & ELECTRONIC EQUIPMENT.

This symbol on the product or its packaging to indicates that this product shall not be treated as household waste. Instead, it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment, such as for example:

- sales points, in case you buy a new and similar product
- local collection points (waste collection center, local recycling center, etc...).

By ensuring this product is disposed of correctly, you will help prevent potential negative consequence for the environment and human health, which could otherwise be caused by inappropriate waste handing of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

Attention: in some countries of the European Union, the product is not included in the field of application of the National Law that applies the European Directive 2002/96/EC and therefore these countries have no obligation to carry out a separate collection at the "end of life" of the product.



Portable Micromanometer <i>MT</i>		Lo styling è della <i>b & b design</i>	
Purchase Date	Stamp of the Dealer		
Registration Number			

In agreement with our continuous development policy, we reserve the right to modify our products without notice.

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