

Introduction

The Gaussmeter is a special instrument used for inspecting&checking flux density,which is also one of the most universally devices in the field of magnetic measurement.

Model HT201 digital Gaussmeter is controlled by the SCM,which is suitable for handle operation.It can be used to measure DC or AC magnetic field and flux density.The device can be carried on one's person. It is characterized by its wide measuring range,simple operation and clear display. It is still added with the function of maintenance such as holding Measure Value/Peak Value,As mT or Gs unit of display can be change over,Measuring range of 200mT or 2000mT can be choosed,and others that as reseting zero by key and so on. The power is one piece of battery 9V. It can be used continually about 20 hours.

Reality Working Domain:

- 1) Magnetic field distribution of material surface
- 2) Working magnetic field produced fro some instrument that as iron-removing device,magnet-selecting machine,magnet chuck,magnet spool and demagnetizing coil
- 3) Leakage Magnetic iron-surface

Working Principle

This series of instruments use sensors which are made according to Hall Effect.The circuit adopts precision constant current source,amplifier with low drift and high stability power supplu.It is contolled by the SCM.Finally,measured value is displayed by digital voltmeter with a $4\frac{1}{2}$ LED.

- 1) Principle of Hall EFFECT

Would you place a thin flat single crystal semiconductor in a magnetic field,when a beam of circuit flows through in it.There'll be an electromotive force whose direction is perpendicular to the direction

of the electrons and the magnetic field.

This phenomenon is called Hall Effect

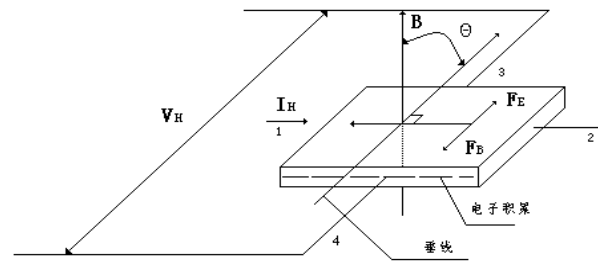
$$V_H = K_H I_H B$$

I_H ——work electric current

B ——magnetic flux density

K_H ——sensitivity of the organ

V_H ——Hall potential difference

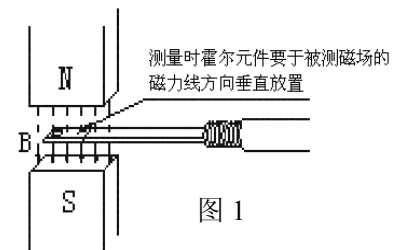


2) That Method of Operation of the Sensor

a) That is the axial sensor:

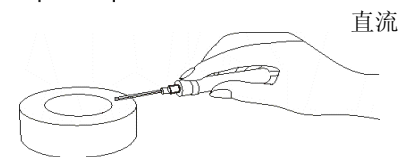
The measuring method of the sensor (that is air magnetic field)

The direction of measuring magnetic field should be perpendicular to the plane of the Hall organ(see right Fig).



b) Illustration of measuring field (see right fig.)

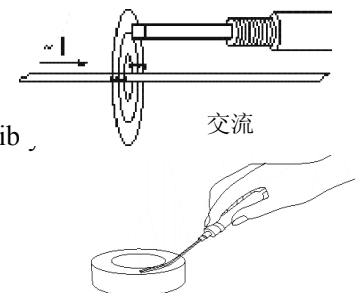
As holding the sensor,(no staff guage side)torch the surface of measuring object lightly.



c) The wrong method of holding the sensor:

No making the top of sensor to torch the surface of measuring object forcib

(As the right Fig) So that it'll damage the sensor easily.



Main Technical Parameters

Rang:0~200mT~2000mT

Accuracy:±2% ±3bits; ±5% ±3bits(over 1T)

Sensitivity:0.01mT,0.1mT

Measured Mag.field:200Hz

Temperature of environment: 5°C-40°C

Relative humidity: 20%-80% (no condensation)

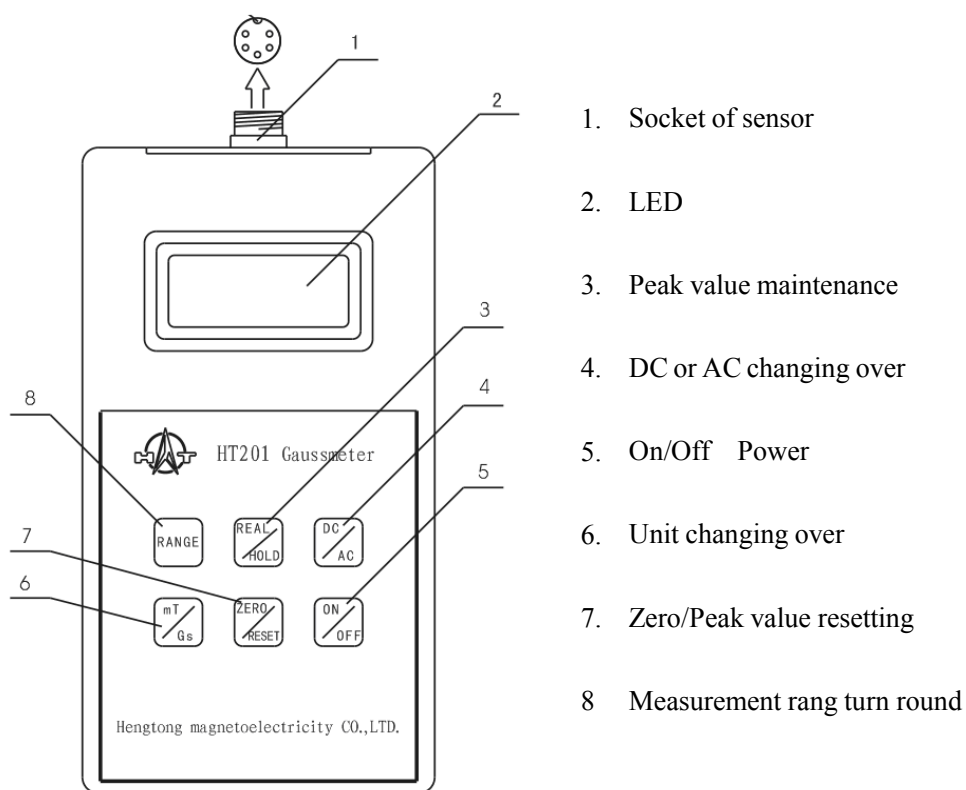
Supply power: Battery 9V, constant DC power

Dimension: 160×88×36mm

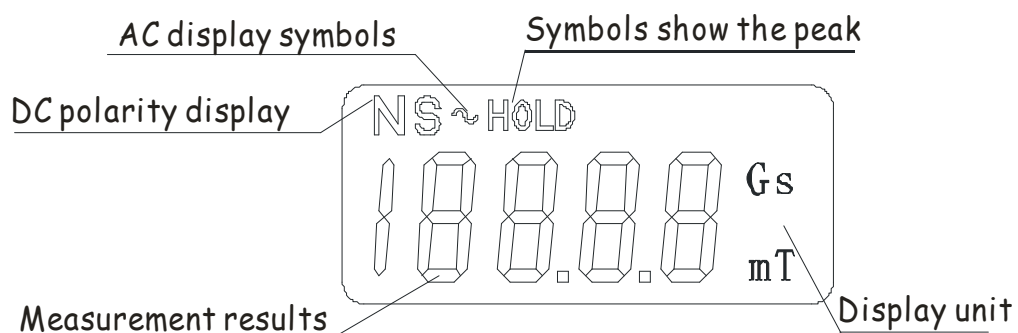
Weight: 300g

Display: 4½ LED

Shape of the device:

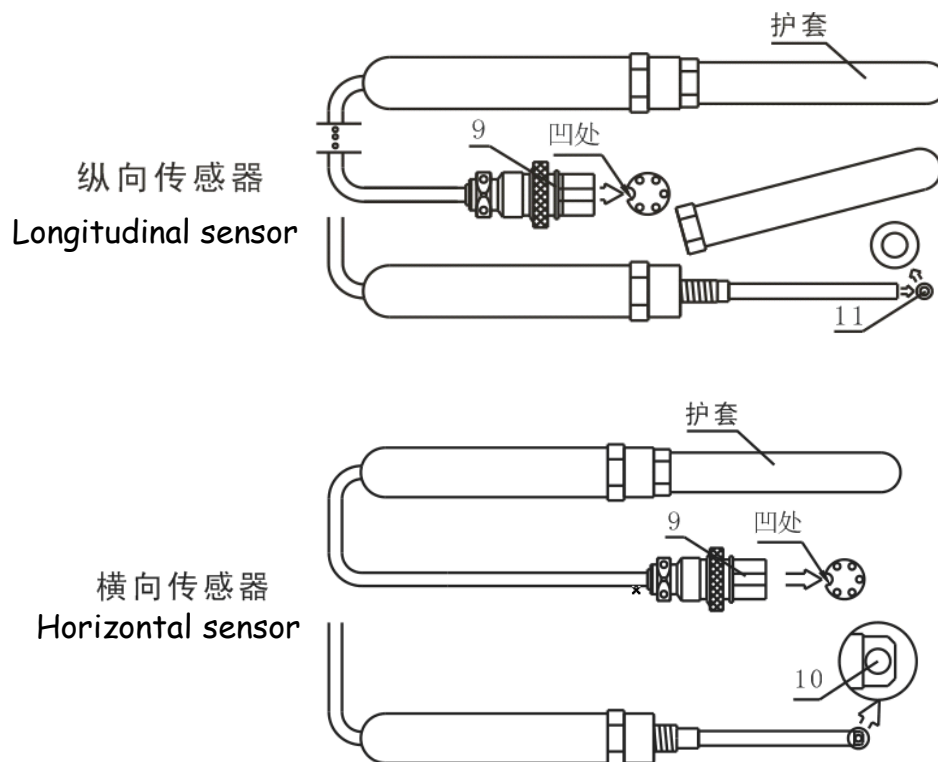


Screen of Display

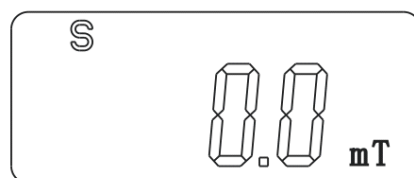


Manipulation Procedure

1. Put 9V battery to case which in the back of the instrument; If used the outer power, connect the terminal of the power to the socket which is in the side of the instrument and put another plug to electric supply.
2. Insert the Hall probe(9) into the socket(1) on the panel (according to the arrow marked the sensor).

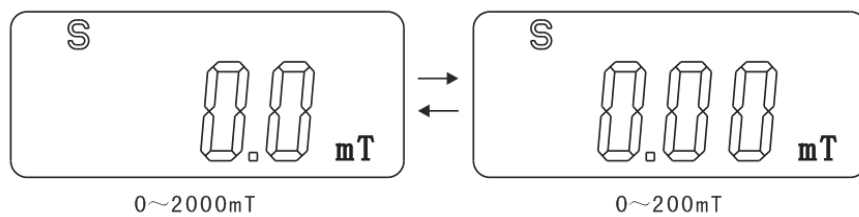


3. Press the key(5) of the power on the panel and the digital display screen(2) should display as follows:



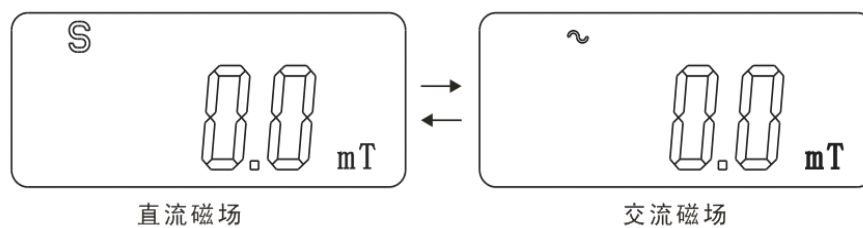
4. Select a suitable measurement range

Press the key(8) of switchover again and again , the measurement range would be transformed within 0-200 mT or 0-2000 mT.



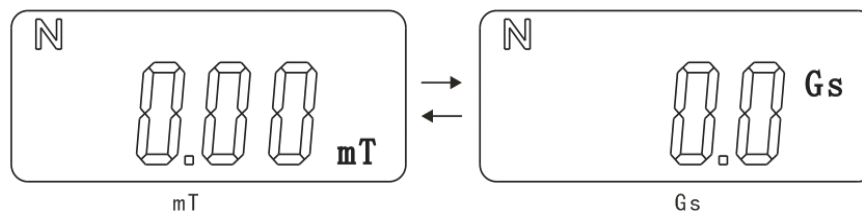
5. Select DC/AC mode

Press the key(5) of DC/AC switchover again and again , the DC/AC mode would be selected.



6. Select display unit

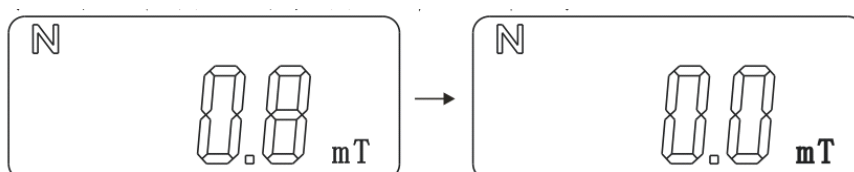
Press the key(6) of conversion , the display unit would be transformed from mT to Gs.

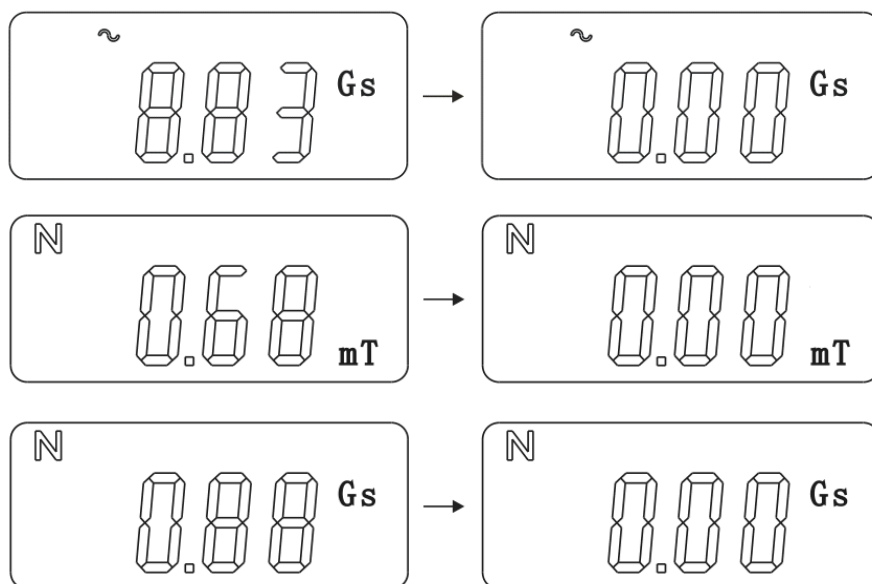


7. Reset zero

Keep the sensor far away from magnetic field as the state of holding .If the display screen should not show “000”.you must press the key(7) to adjust it to zero.

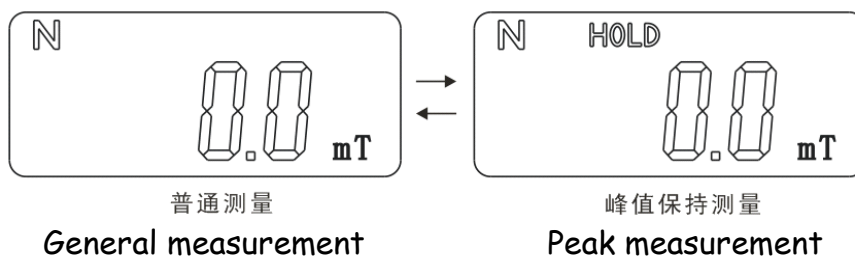
Note: After change over the measurement range or transform the AC/DC mode ,you all need to reset zero.





8. Measurement of Peak-value holding

Press the key(3) to change over normal measurement or Peak-value holding .



9. Loosen the cap of the Hall probe (see upper Fig).Place the effective position of Hall probe to touch on the surface of the resting material tightly (DC magnetic field) or at zone of measured magnetic field. The screen(2) will show the value of the magnetic field.

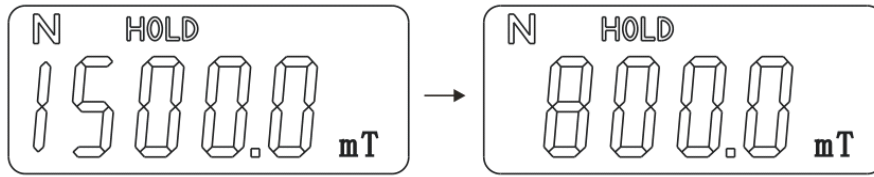
10. Reset Peak-value holding

When kept the Peak-value holding , but need to measure new peak value and the forecast value will be lower forecast. Thus you could press the Reset button(7) to make it showing new peak value.

11. If finished measurement, the cap should screwed up. It may be better remove the battery from the case to prolong its time of use.

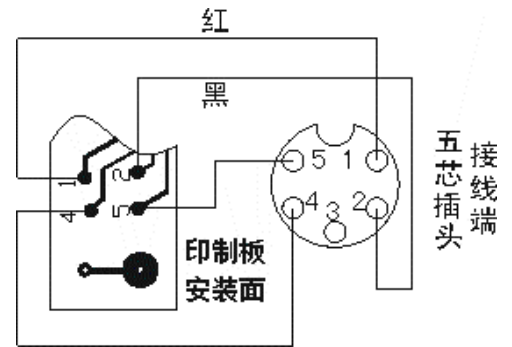
12. The Hall probe can be replacable .The difference from original probe to others is 2%.

Note: 0.1mT=1Gs 1T=10000Gs



Maintenance and Notes

1. As the status of measuring ,if the instrument could not be adjusted to the zero or no display value. You'll first check the power supply whether in the course of nature. Than check the probe whether normal or damaged. If the connecting wires were rupture you could connected it according to the right Fig. Such terminal 1,2 are current, No. 4 and No.5 are terminals of voltage.



If you don't find and damage in it , please send it to our company . It's maybe wrong within the circuits.

2. The probe can't burden force ,be cracked and squeezed.
3. While making the zero adjustment, the probe should be placed far away from the magnetic field for fear the measurement error.
4. The instrument is guaranteed to keep in good repair for 18 months except the porbe.
5. Do not use the instrument in inappropriate conditions.
6. If you find the value of testing were error in the status of measurement, you could loosened the handle of the probe to adjust the screw of the resistance tinily.If don't ensure that the instrument is operated correctly described below,there would be error or mistake.

Operation Notes

1. Don't attempt to repair,or disassemble,and any reconstruct this instrument.
2. Use onlu recommended power accessories.
3. Don't connect the terminals of the outer power supply reversely.the inner is plus,the outer is

minus. Don't drop this instrument or the probe down ground. It'll be damaged by strong vibration. Do not allow hands or other objects with dirt to touch the probe.

4. Avoid using, placing or storing the instrument in places subject to strong sunlight or high temperature, so as to humidity, water, oil, power, rust, air, vibration and others.
5. It would be used to temperature range or store up need to comply as appointment.
6. You should not moving the instrument rapidly between hot and cold temperature to avoid condensation.
7. Never place the instrument in close the machine generating strong magnetic field, such as magnet-charger, demagnet coil, microwave oven, electric welding equipment electric motor and etc.
8. In conclusion, we suggest you to calibrate the instrument in time.

Whole Set of the Instrument:

- | | |
|-----------------------------------|-------|
| 1. Model HT201 Digital GaussMeter | 1 pcs |
| 2. Instruction for using | 1 pcs |
| 3. Produce Certificate | 1 pcs |
| 4. probe | 1 pcs |
| 5. Battery | 1 pcs |

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