

# SJ700 Digital Gaussmeter

## Manual

Please keep manual properly.  
Before using our equipment  
please read the instruction  
manual seriously.

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## Introduction

The Telemeters 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 SJ700 digital Telemeters 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 chose, and others that as resetting 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
- 4) Magnetic field within the structure of the gap

avoid condensation.

- 15 Never place the instrument in close the machine generating strong magnetic field, such as magnet-charger, demagnetize coil, microwave oven, electric welding equipment electric motor and etc.
- 16 In conclusion, we suggest you to calibrate the instrument in time.

## Whole Set of the Instrument:

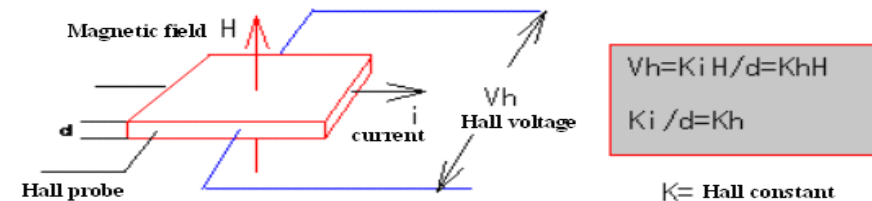
- |                                    |      |
|------------------------------------|------|
| 1. Model SJ700 Digital Gauss meter | 1pcs |
| 2. Instruction for use             | 1pcs |
| 3. Produce Certificate             | 1pcs |
| 4. Probe                           | 1pcs |
| 5. Battery                         | 1pcs |

4. The instrument is guaranteed to keep in good repair for 12 months except the probe.
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 loosen 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.
- 7 Don't attempt to repair, or disassemble, and any reconstruct this instrument.
- 8 Use only recommended power accessories.
- 9 Don't connect the terminals of the outer power supply reversely. the inner is plus, the outer is Minus.
- 10 Don't drop this instrument or the probe down ground. It'll be damaged by strong vibration.
- 11 Do not allow hands or other objects with dirt to touch the probe.
- 12 Avoid using, placing or storing the instrument in places subject to strong sunlight or high temperature, so as to humidity, water, oil, rust air, vibration and others.
- 13 It would be used to temperature range or store up need to comply as appointment.
- 14 You should not moving the instrument rapidly between hot and cold temperature to

## 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 supply. It is controlled by the SCM .Finally measured value is displayed by digital voltmeter with a 4½ LED.

### 1) Principle of Hall EFFECT



When placing the semiconductor carrying current in the magnetic field axial to the current direction, the semiconductor will generate transverse galvanomagnetic phenomenon, namely generate electromotive force in the direction axial to the magnetic field and current, which is Hall Effect. Hall Effect can be explained with classical galvanomagnetic theory. Generally, Hall voltage  $U_H$  is expressed as:

$$U_H = R_H I B_0 / d = R_H I B_0$$

Of which:  $d$ —the thickness of the Hall device

$R_H$ —Hall constant

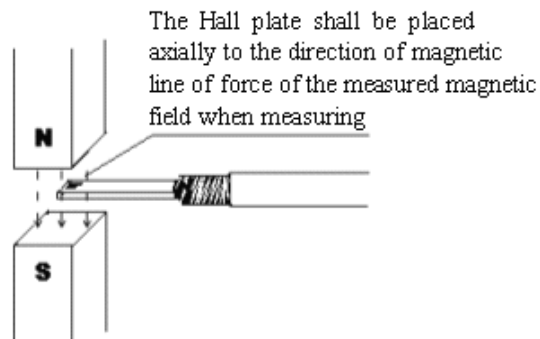
$R_H I = R_H / d$ —Constant of the Hall device

I—Current intensity passing through the Hall device

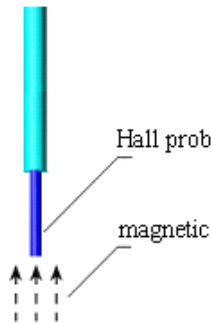
B<sub>0</sub>—The measured magnetic induction intensity

It can be seen from the formula: For a certain Hall device, the magnetic field B<sub>0</sub> can be indirectly measured through measuring the Hall device if only the passing current I is constant. Since it can count continuously and linearly with simple method and long service life when measuring the magnetic field with Hall Effect and can measure the magnetic field of small space and small gap, Hall Effect Method has become one important method among magnetic field measurements.

## 2) That Method of Operation of the Sensor



(Fig.1 Transverse probe)



(Fig.2 Axial probe)

**Note: The sensitive elements of the magnetic field are located at the front end of the probe. For surface magnetic field measurement, the side without scale of the transverse probe shall be used to contact the magnet surface and the front end side of the axial probe shall be used to contact the magnet**

new peak value and the forecast value will be lower forecast. Thus you could press the Reset button (4) to make it showing new peak value.

11. If finished measurement, the cap should be screwed up. It may be better to remove the battery from the case to prolong its time of use.
12. The Hall probe can be replaceable. The difference from original probe to others is 2%.

Note: 0.1mT=1Gs

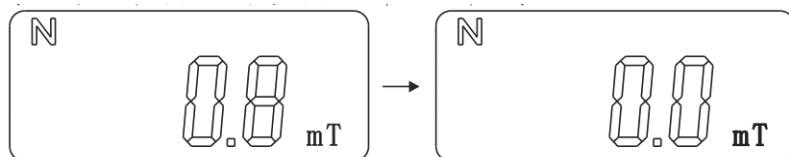
1T=10000Gs

## 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. Then check the probe whether normal or damaged. If the connecting wires were ruptured you could connect it according to the right Fig. Such terminal 1, 2 are current, No. 4 and No.5 are terminals of voltage.

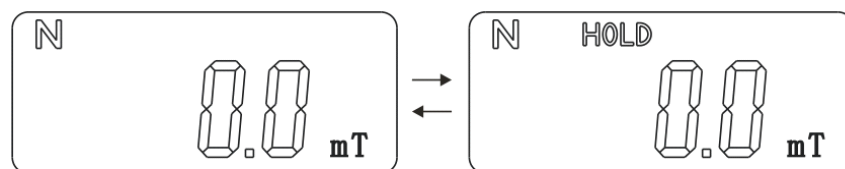
If you don't find and damage in it, please send it to our company. It's maybe wrong within the circuits.

2. The probe can't be burdened, cracked and squeezed.
3. While making the zero adjustment, the probe should be placed far away from the magnetic field for fear of measurement error.



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 (4) to change over normal measurement or Peak-value holding.



## Normal Measurement      Peakhold Measurement

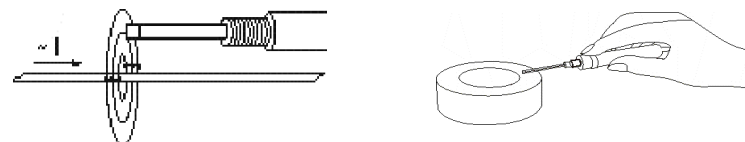
9. Loosen the cap of the Hall probe (see upper Fig). Place the effective position of Hall probe to touch on the surface of the resting material tightly (DC magnetic field) or at zone of measured magnetic field. The screen(1) will show the value of the magnetic field.
10. Reset Peak-value holding When kept the Peak-value holding , but need to measure

surface. Under such circumstances, the probe surface will suffer wear and tear.

The connecting cable of the probe shall not be kneaded or pulled forcibly, the probe bracket shall not be beaten or impacted and the probe lead wire and welding spot shall not be contacted with other conductor or in short circuit.

- a) Illustration of measuring field (see below fig.)

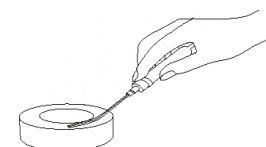
As holding the sensor, (no staff gauge side) touch the surface of measuring object lightly.



- b) The wrong method of holding the sensor:

No making the top of sensor to touch the surface of measuring object forcibly.

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

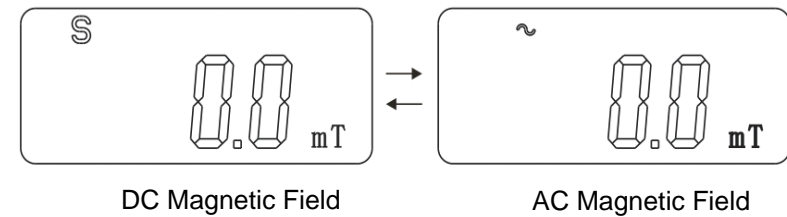


## Main Technical Parameters

Range	0~200mT~2000mT
Accuracy	$\pm 2\%$ , $\pm 3$ words; $\pm 5\%$ , $\pm 5$ words(1000mT)
Sensitivity	0.01mT, 0.1mT
Measured magnetic field	DC and AC
Application Examples	Magnet surface magnetic field, ferromagnetic material surface magnetic field, DC motor, speakers, magnetic separator, permanent magnetic separator of the surface magnetic field, the exchange frequency magnetic field, magnetic field induction cooker work
Frequency magnetic field	DC~200HZ

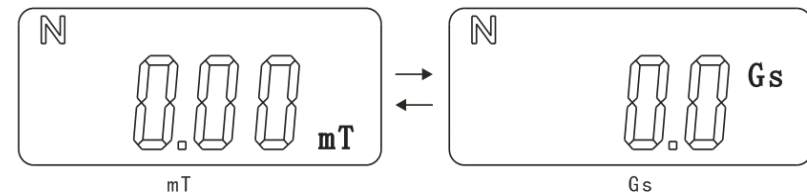
### 5. Select DC/AC mode

Press the key DC/AC switchover again and again , the DC/AC mode would

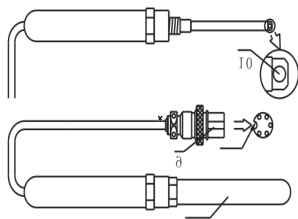


be selected.

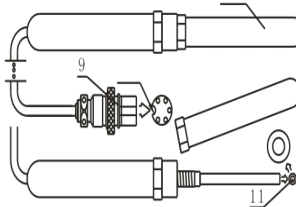
### 6. Select display unit. Press the key (7) of conversion, the display unit would be transformed from mT to Gs.



### 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(3) to adjust it to zero.

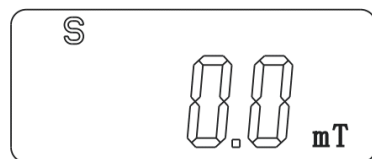


Horizontalsensor

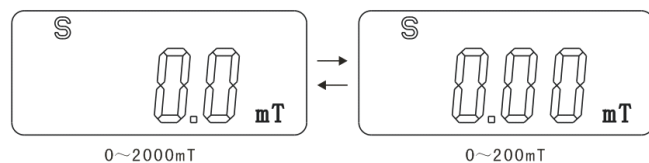


Verticalsensors

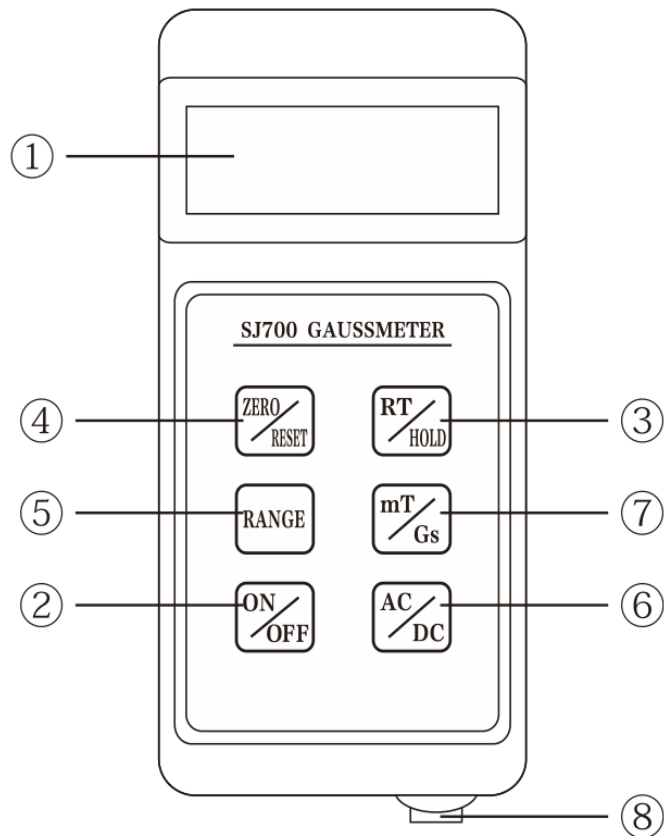
- Press the key of the Power On/OFF in the panel and the digital display screen should display zero.



- Select a suitable measurement range. Press the key RANGE switchover again and again, the measurement range would be transformed within 0~200 mT or 0~2000 mT.

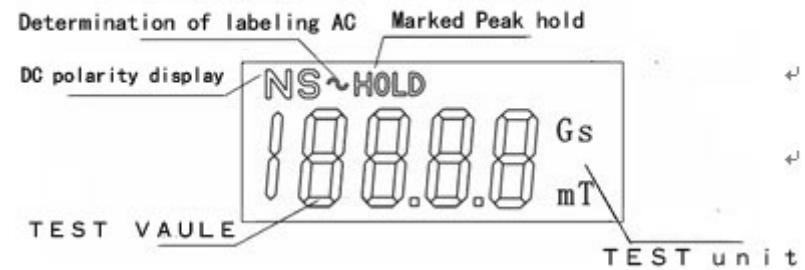


Temperature environment	of 5℃~40℃
Relative humidity	20%~80% (no condensation)
Power Supply	Battery 9V, Or 9V DC external power supply regulator
Dimension	150mm (L) *70mm (W) *25mm (H)
Weight	N. W 400g G. W 900g
Display	4½ LED



1.	LED Screen
2.	Power On/OFF
3.	Peak RT/HOLD value switch
4.	Zero/Rest reading
5.	Range Change
6.	DC/AC Switch
7.	mT/Gs unit change
8.	sensor connect

### Screen of Display



### Manipulation Procedure

1. Put the 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 into the socket on the panel (according to the arrow marked the sensor).