

Digital Gauss/Tesla Meter

CYHT201

User's Manual



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The Gaussmeter CYHT201 is a new generation of the Gaussmeter CYHT20. It can be used to measure DC/AC magnetic field strength of permanent magnet materials, motors, speakers, magnetic sensors/transducer and other machines and instruments etc. with high resolution.

1. Characteristics

- Wide measuring range and high resolution
- A low-cost measuring device, which is easy to operate, portable and convenient to handle and store.
- Ideal for quick quality checks and comparative measurements, with built-in polarity display.

2. Technical Data

Measuring ranges:	0~200mT and 0-2000mT
Basic accuracy:	DC: $\pm 2.0\%$, AC: $\pm 5.0\%$
Resolution:	DC x1: 0.00 ~ 200.00mT, 0.01mT DC x10: 0.0 ~ 2000.0mT, 0.1mT AC x1: 0.00 ~ 200.00mT, 0.01mT AC x10: 0.0 ~ 2000.0mT, 0.1mT
Measuring magnetic field:	DC/AC (static & dynamic 10Hz ~ 200Hz)
Functions:	Peak hold, Max hold, automatic range Gs/mT selection N/S pole display for DC measurement Automatic probe zero adjustment
Display:	4 ½ LCD
Display Unit:	mT/Gs (1mT=10Gs)
Ambient temperature:	+5°C ~ +50°C
Storage temperature:	-20°C ~ +70°C
Relative humidity:	20% ~ 80%
Power supply:	+9V alkaline, block battery
Dimensions:	160mm x 88mm x 36mm
Weight:	300g

3. Accessories

1. +9V DC power supply connecting to 220V AC, 1pc
2. +9V battery, 1pc

3. CYTP-T08A: transverse probe 0.8 x 3 x 40mm, 1pc



4. Special probes

CYTP-T15A: transverse probe 1.5x 4 x 40mm

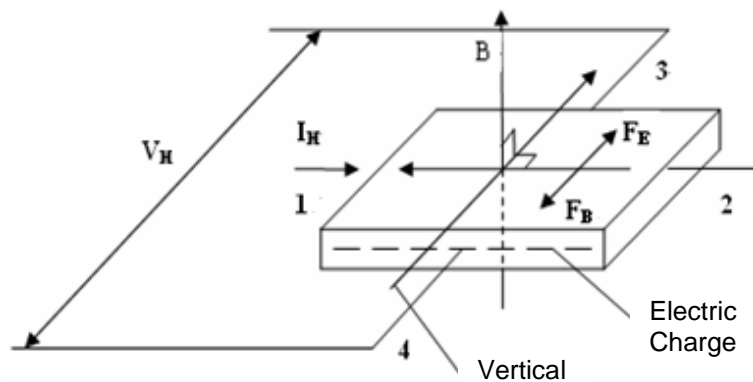


CYAP-D60A: axial probe Ø6 x 40mm



5. Measuring Principle

The Gauss/Tesla meter works with a Hall Effect sensor/probe. There are two kinds of Hall probes: transverse and axial probes, which are used for different magnetization directions.



Hall Effect and its Electrical Parameters

According to the Hall Effect, a voltage can be measured at right angle to the current path when a conductor or semiconductor with current flowing in one direction is introduced perpendicular to a magnetic field. The Hall voltage can be calculated from:

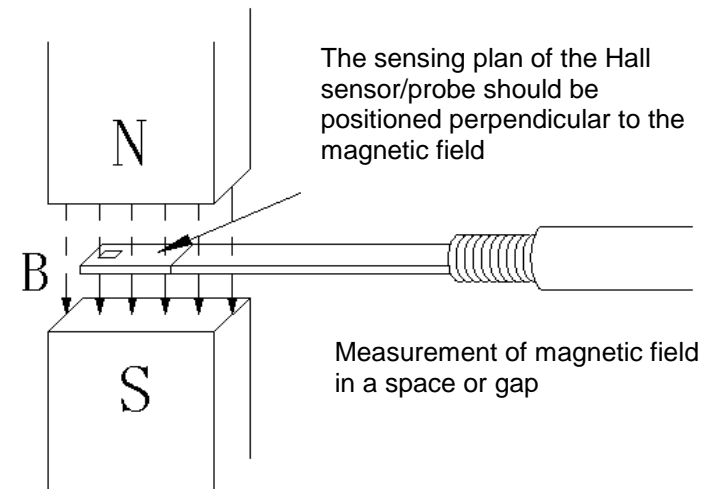
$$V_H = k_H I_H B$$

Where: V_H : Hall voltage in volts
 B : the applied field in Gauss
 k_H : sensitivity of the element in volts/Gauss
 I : bias working current in amperes

The initial use of this discovery was for the classification of chemical samples. The development of indium arsenide semiconductor compounds in the 1950's led to the first useful Hall Effect magnetic instruments. Hall Effect sensors allowed the measurement of DC or static magnetic fields with requiring motion of the sensor.

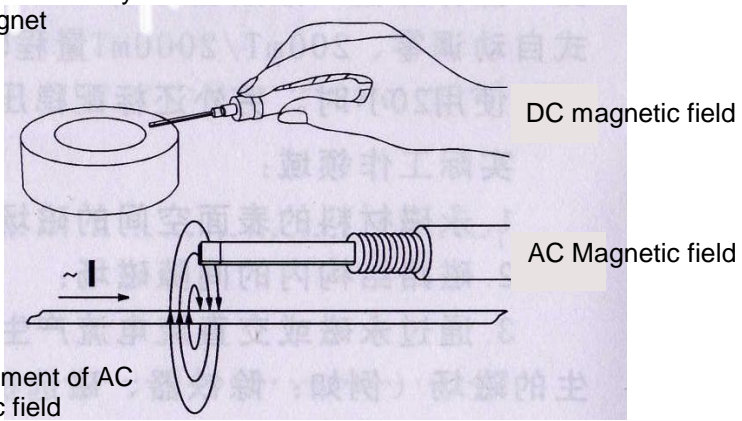
6. Measuring Method

The magnetic lines of the measured magnetic field should perpendicularly pass through the Hall Effect element of the Hall probe.

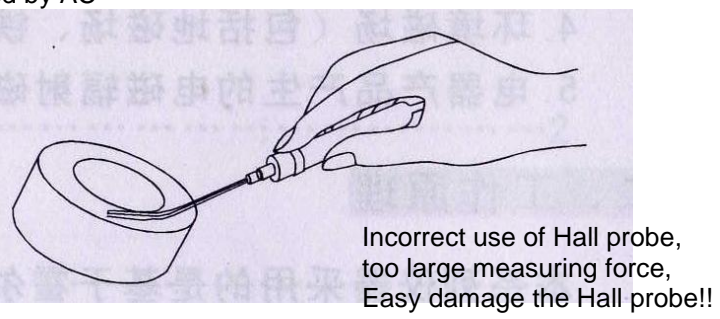


Put the concave side, i.e. the side with a small circle mark of the probe on the surface of the measured magnet or at the measuring point of a magnetic field carefully.

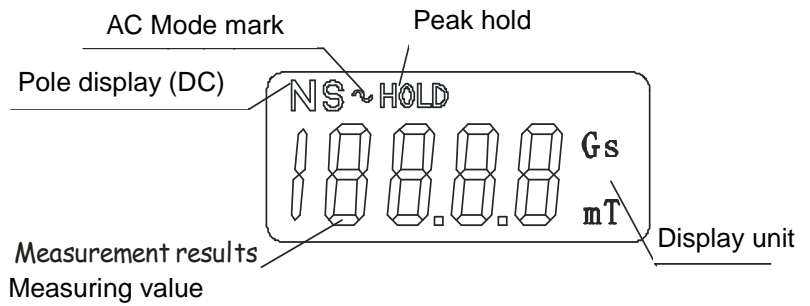
Measurement of surface flux density of a magnet



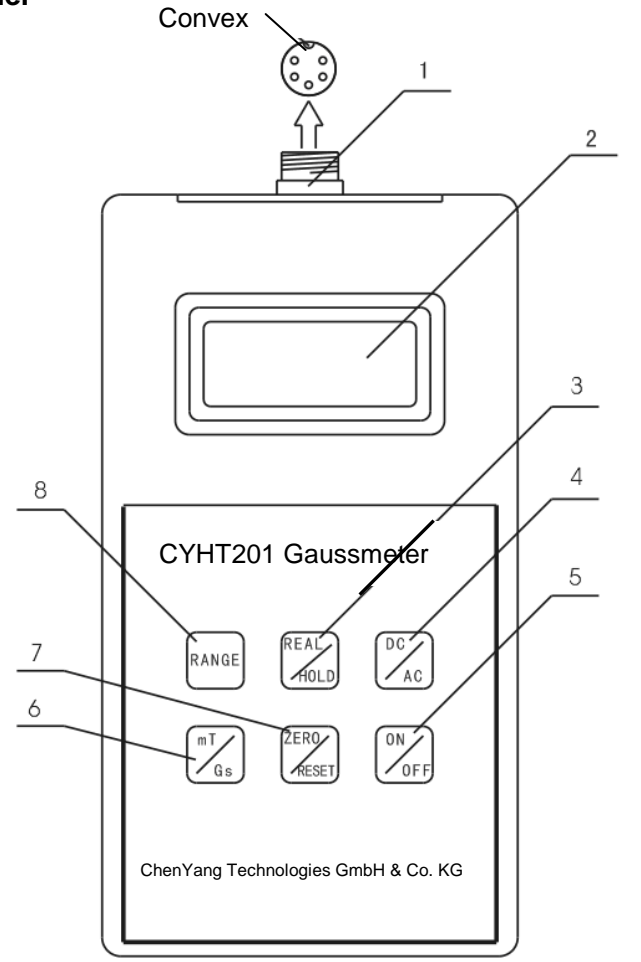
Measurement of AC magnetic field generated by AC current



7. Part and Functions

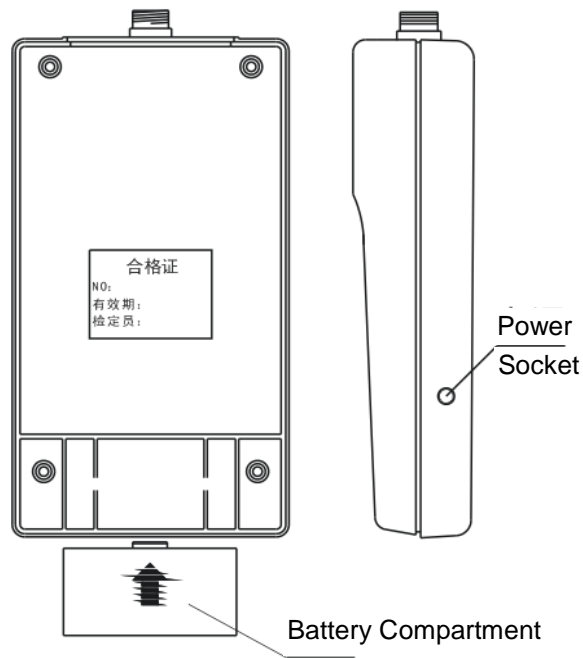


Front Panel



- 1: Socket-outlet with 5 pins
- 2: LED display
- 3: Peak max/min hold
- 4: AC/DC Mode
- 5: Power switch
- 6: Unit select
- 7: Zero/peak reset
- 8: measuring range

Back Panel

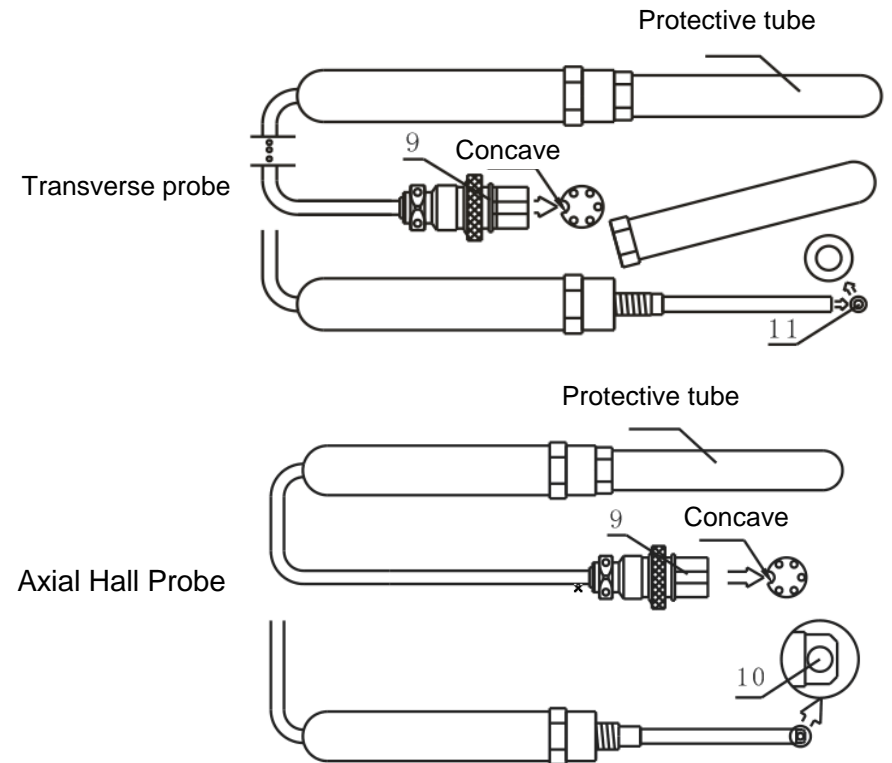


Functions:

- 1) **Socket-outlet:** to connect the Hall sensor/probe to the measuring instrument
- 2) **LCD display:** to display the field strength and pole direction ("N" north pole, "S" south pole) and ~ AC mode mark etc.
- 3) **Peak max hold:** to display and hold the peak/max value
- 4) **AC/DC Mode:** to select the measurement of AC or DC magnetic field
- 5) **Power switch:** to switch ON/OFF the measuring instrument
- 6) **Unit select:** to select the measuring and display unit (Gauss or mT)
- 7) **Zero/peak reset:** to reset the measuring value and peak mode.
- 8) **Range select:** to select the measuring range 0-200mT or 0-2000mT
- 9) **Plug of Hall probe:** to connect the Hall probe to the measuring instrument

- 10) **Measuring circle mark:** the side with this mark is the measuring side of the Hall sensor. You should use this side to measure the surface magnetic field of permanent magnet. This side should be positioned perpendicular to the magnetic field

Hall sensor/probes

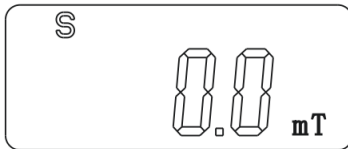


- 9: Plug of Hall probe
11: Measuring contact position

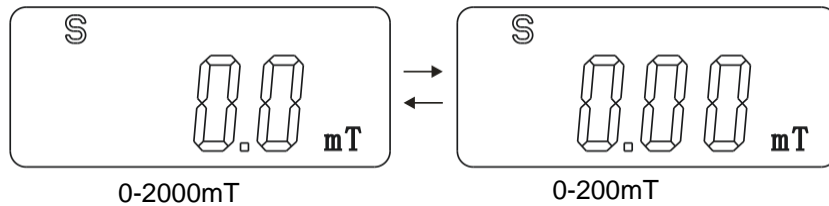
- 10: Measuring circle mark

8. Measuring Procedure

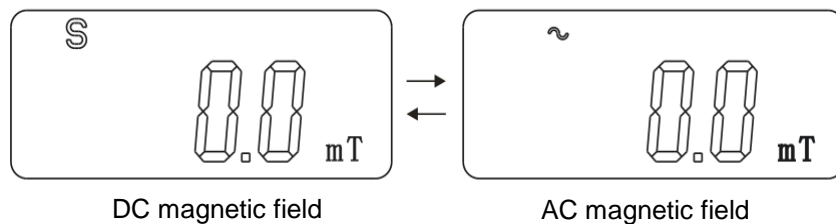
- 1) Install the +9V battery to the battery compartment or connect the +9V power supply to the measuring instrument
- 2) Connect the Hall sensor/probe to the measuring instrument
- 3) Switch on the power of measuring instrument by pressing button (5), LCD display shows 0.0mT



- 4) **Select measuring range** by pressing the button (8), the measuring range changes between 0-200mT and 0-2000mT as follows:

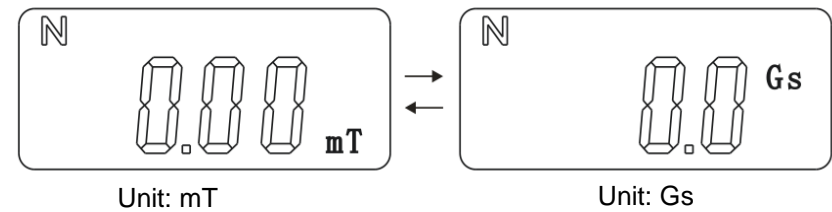


- 5) **Select AC/DC Mode** by using the button (4), the display shows the following DC or AC measuring mode:

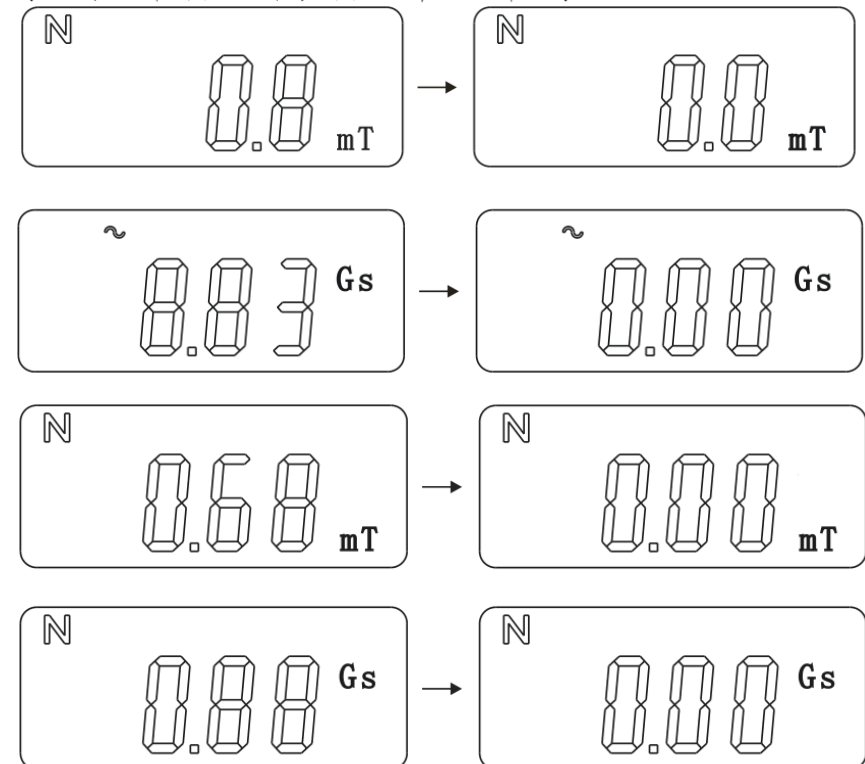


“N” north pole, “S” south pole for DC magnetic field

- 6) **Select unit** by pressing (6), unit changes between Gs and mT

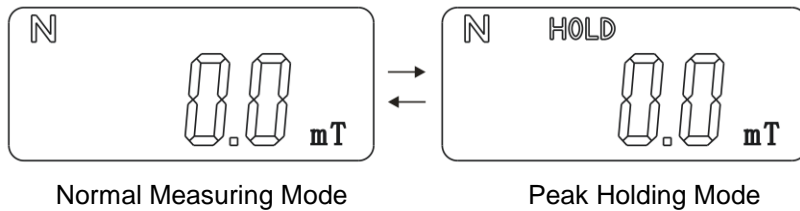


- 7) **Reset Gaussmeter.** Keep the Hall probe faraway from magnetic field, LCD display shows zero after pressing button (7) :



Note: You must reset the Gaussmeter before you start a new measurement after you have changed the measuring range (8) and AC/DC Mode (4).

- 8) **Select peak hold.** You can select peak holding mode or normal measuring mode by using button (3).

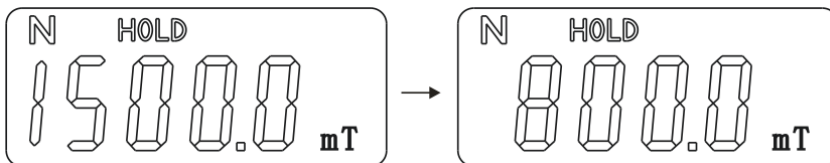


- 9) Take off the protective tube of the Hall sensor/probe, position the measuring circle mark (10) on the surface of the measuring object (such as permanent magnet), and read the display value (measuring value and pole display "N" or "S").

Note: the measuring circle mark (10) is measuring point of the Hall sensor. The pole is N pole if the display is "N" when this mark orients to the measuring object.

- 10) **Reset peak hold mode.** Under the peak holding mode the display changes only when the actual measuring value is larger than the last peak value (displayed). Therefore you must reset the peak holding mode by using button (7) if you need to measure smaller magnetic field than the peak value. The device works still in peak holding mode after resetting.

Sample: last peak value: 1500mT, actual peak value 800mT after reset the peak holding mode



- 11) After the measurement please put the protective tube on the Hall probe in order to protect the Hall element and switch off the power
- 12) The Hall probes delivered are compatible. The measuring accuracy under using other changed Hall probes is $\pm 2\%$.

9. Warranty

Measuring instrument:	12 months
Hall sensor/probe:	no guarantee. However we offer you Replacement for reduced price (10% discount)

10. Service

Please contact us for technical questions, repairing and replacement etc:

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