Digital Gauss/Tesla Meter

CYHT20

User's Manual

ChenYang Technologies GmbH & Co. KG

Markt Schwabener Str. 8
D-85464 Finsing
Tel. +49-(0)8121-2574100
Fax: +49-(0)8121-2574101
Email: info@chenyang-gmbh.com
http://www.chenyang-gmbh.com

This Gauss/Tesla Meter is used to measure the magnetic field strength of permanent magnets, DC coils and other DC magnetic fields and to indicate their polarity.

1. Characteristics

- 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
Measuring accuracy:	±2.0%
Resolution:	0.1mT, 1.0mT
Display:	3 ½ LCD
Display Unit:	mT (1mT=10Gs)
Ambient temperature:	0°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 (only instrument)

3. Accessories

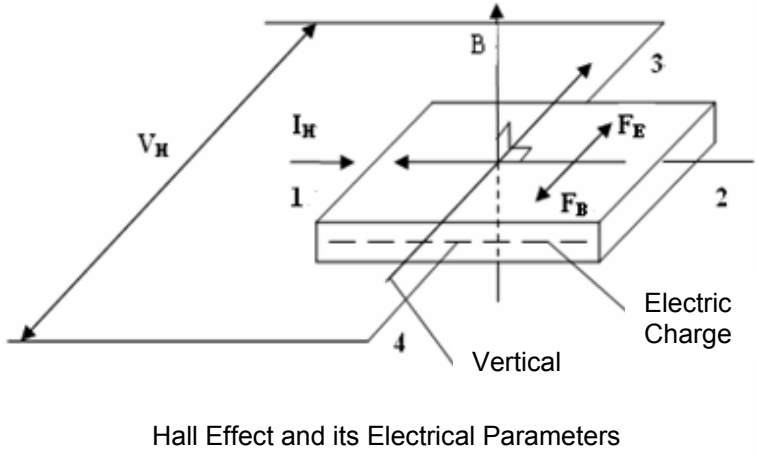
1. +9V DC power supply connecting to 220V AC, 1pc
2. +9V battery, 1pc
3. CYTP-T15: transverse probe 1.5x 4 x 40mm, 1pc

4. Special Hall Probe

CYAP-D60: axial Hall 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 the direction is introduced perpendicular to a magnetic field. The Hall voltage can be calculated from:

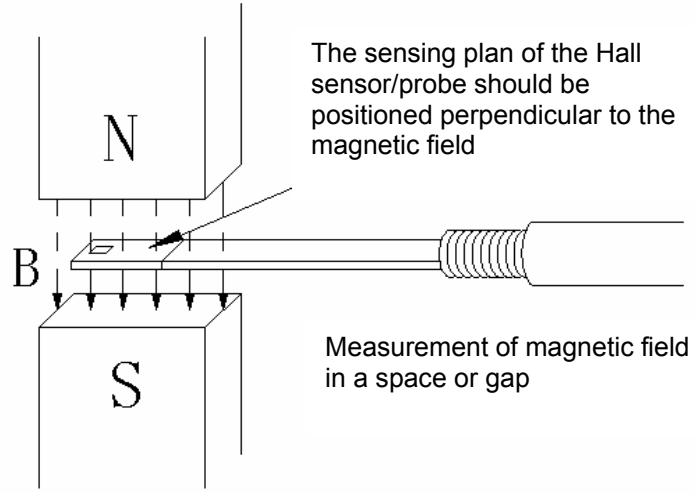
$$V_H = k_H I_H B$$

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

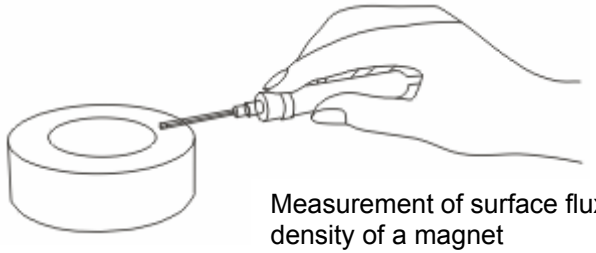
The initial use of this discovery was for the classification of chemical samples. The development of indium arsenide semiconductor compounds in the 1950's led to the first useful Hall Effect magnetic instruments. Hall Effect sensors allowed the measurement of DC or static magnetic fields with requiring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



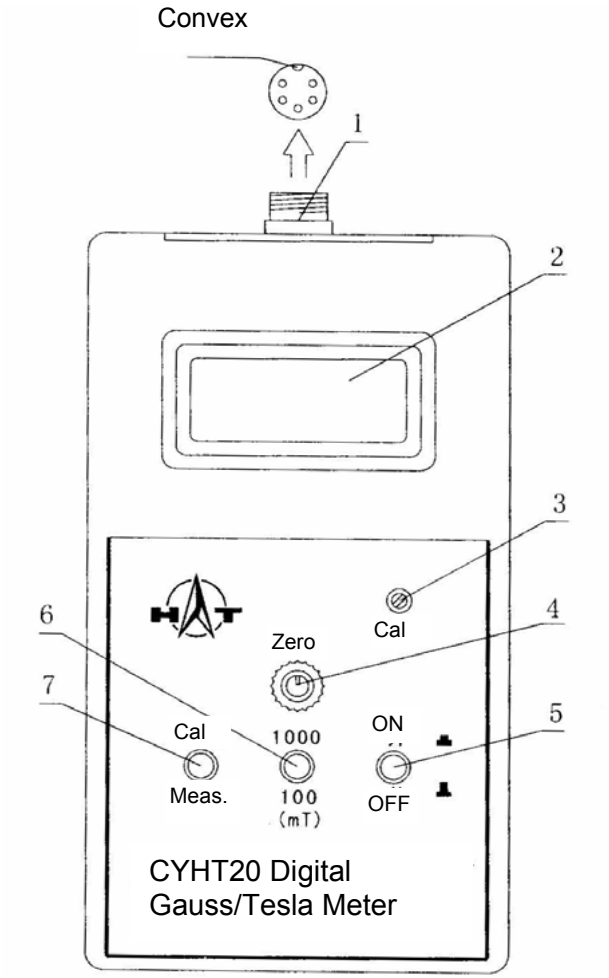
Put the concave side, i.e. the side with a small circle mark of the probe on the surface of the measured magnet or at the measuring point of a magnetic field carefully.



Measurement of surface flux density of a magnet

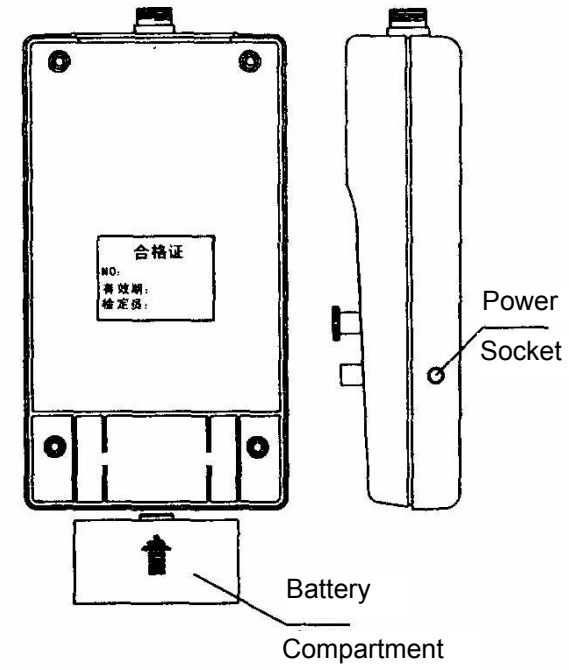
7. Part and Functions

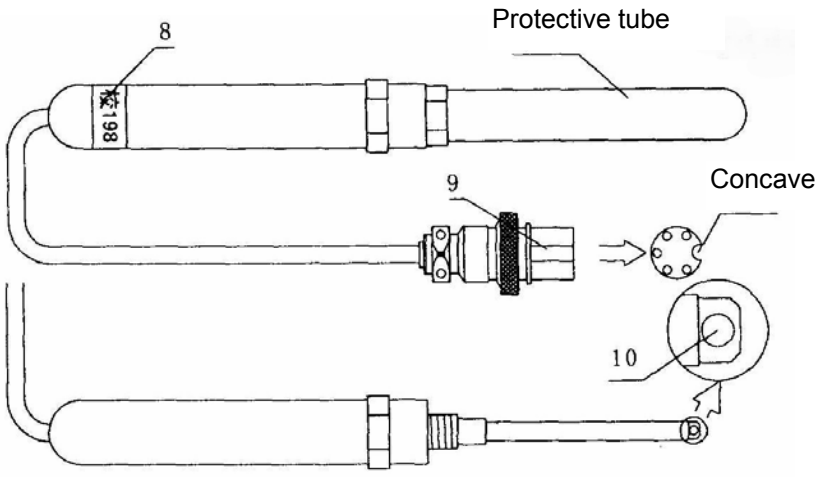
Front Panel



1:	Socket-outlet with 5 pins	2:	LED display
3:	Calibration rheostat	4:	Zero point adjustment
5:	Power switch	6:	Range select
7:	Calibration/Measurement	8:	Calibration value
9:	Plug of Hall probe	10:	Measuring circle mark

Back Panel





Hall sensor/probe

1) **Socket-outlet**: to connect the Hall sensor/probe to the measuring instrument
2) **LCD display**: to display the field strength (0-199.9mT or 0-1999mT) and pole direction ("+" north pole, "-" south pole)
3) **Calibration rheostat**: to adjust the current of the Hall sensor according to the calibration value (8) on the Hall probe
4) **Zero adjustment**: to adjust the zero point. Please keep the Hall sensor far away from magnetic field and adjust the zero rheostat until displaying "0"
5) **Power switch**: to switch ON/OFF the measuring instrument
6) **Range select**: to select the measuring range 0-200mT or 0-2000mT
7) **Calibration/Measurement**: to select sensor calibration and measurement
8) **Calibration value**: using for adjusting the current of Hall sensor and calibrating the sensor system (**note:** different Hall probe has different calibration value. You must calibrate your sensor system after you have changed the Hall probe)
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

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)
4) Select the calibration by pressing the button (7). Check the display and adjust the calibration rheostat until the display value is identical to the calibration value (8) on the Hall probe given by the manufacturer (the point should be not considered)
5) Select the measurement by releasing the button (7), check the zero point, and adjust the zero rheostat if the display is not zero when the Hall sensor is far away from magnetic field
6) Select the measuring range 0-200mT by releasing the button (6) or 0-2000mT by pressing the button (6)

7) 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 "+" or "-"). **Note:** the measuring circle mark (10) is measuring point of the Hall sensor. The pole is N pole if the display is "+" when this mark orients to the measuring object.
8) After the measurement please put the protective tube on the Hall probe in order to protect the Hall element and switch off the power
9) The Hall probes delivered are compatible. However, don't forget to calibrate the sensor system using the calibration value (8) after having changed the Hall probe.

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:

ChenYang Technologies GmbH & Co. KG

Markt Schwabener Str. 8
D-85464 Finsing
Tel. +49-(0)8121-2574100
Fax: +49-(0)8122-2574101
Email: info@chenyang-gmbh.com
http://www.chenyang-gmbh.com