

# User's Manual of Hall Probe CYHP881



The CYHP881 is a Hall probe, which can be used to measure magnetic field strength of permanent magnet materials, electromagnets, motors, loudspeakers, magnetic sensors/transducer and other machines and instruments etc.

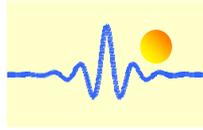
It needs a power supply voltage of +5VDC to give an output voltage of 0 - 4.5VDC in a magnetic measuring range of 0 - 500mT. The probe has a high linearity of  $\pm 0.5\%$  and a measuring accuracy of  $\pm 1.0\%$ .

## 1. Characteristics

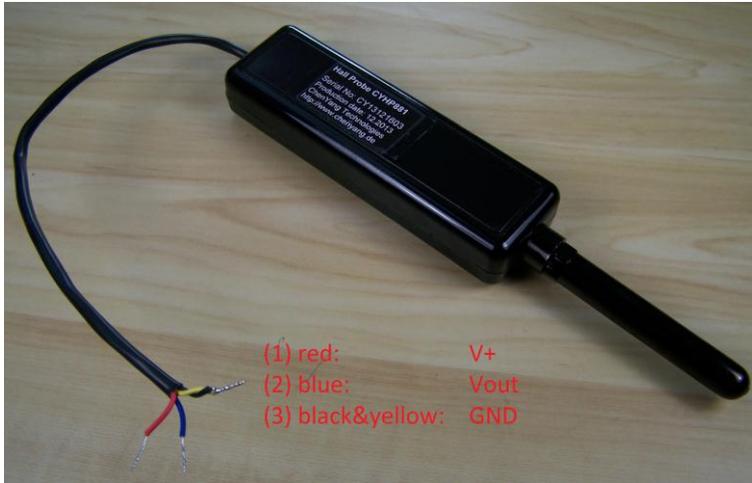
- The Hall probe gives an analog voltage output of 0 - 4.5VDC. It can be integrated in different measuring and controlling systems for magnetic field measurement.
- The Hall probe is powered with a single voltage source +5VDC that can be provided in the most microprocessor controlled systems.
- A low-cost measuring device, which is easy to operate and convenient to handle and store.
- Ideal for quick quality checks and comparative measurements

## 2. Technical Data

Measuring range:	0 - 500mT (for unipolar DC magnetic field, measuring range can be adjusted according to requirements of customer. Part number CYHP881-xxxmT, for instance, CYHP881-200mT for measuring range 0-200mT)
Voltage output:	0 - 4.5VDC
Power supply:	+5VDC ( $\pm 10\%$ )
Linearity:	$\pm 0.5\%$
Accuracy:	depending on the accuracy of calibration magnet field, normally $\pm 1.0\%$
Zero point offset:	0.2%
Operation temperature range:	-40°C ~ +85°C
Relative humidity:	20% ~ 80%
Dimensions (without cable):	220 x 40 x 26mm
Weight (without cable):	80g



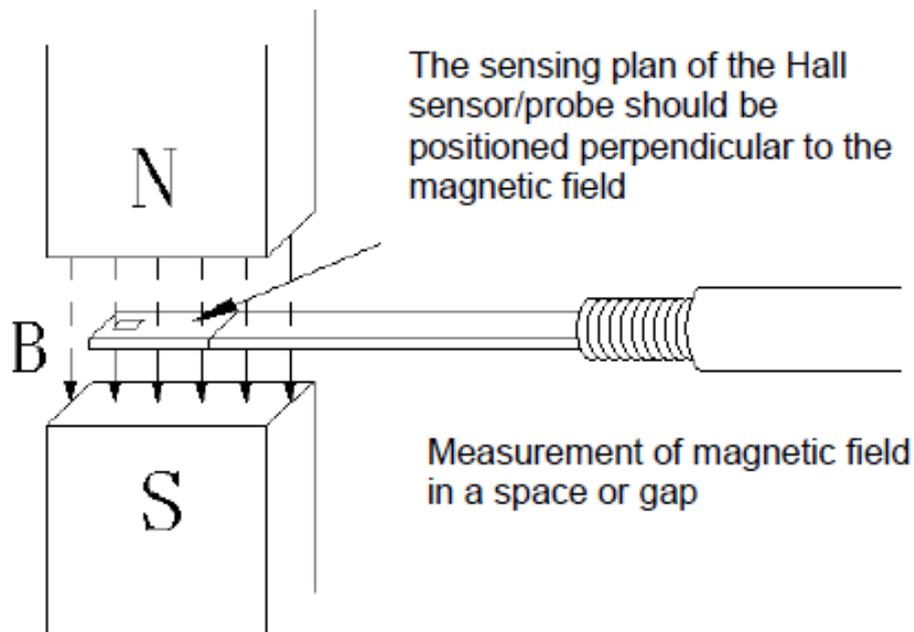
### 3. Connection



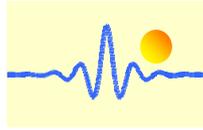
Red: Power supply 5VDC  
Blue: Voltage output  
Black & Yellow: Ground

### 4. Functions

The CYHP881 can be used to measure the magnetic field by putting the head of the Hall probe on the surface of the measured magnet or at the measuring point of a magnetic field. The magnetic lines of the measured magnetic field should perpendicularly pass through the Hall Effect element of the Hall probe.



By increasing the magnetic field, a linear behavior at the voltage output should be visible.



For measuring the magnetic field, please put the rear side of the Hall probe on the surface of the measured magnet or at the measuring point of a magnetic field carefully. The probe doesn't give any output signal if one places the front side to the surface of the measured magnet.

On the front side of the Hall probe, you can see the model number, the serial number, the production date and our company's name and web address.

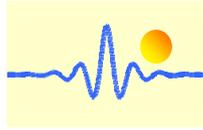
Moreover, the sensor head is smoother and there are no numbers or letters on the front side of the Hall chip.

On the rear side of the Hall probe, there are potentiometers for adjusting the zero offset and gain.



The zero offset can be adjusted by the potentiometer named with "Offset". It is recommended to set up a zero point at about 8mV, which means a zero point deviation of about 0.2%. By using this method, a dead zone, which causes decreasing sensitivity and nonlinear behavior, can be avoided effectively.

Sometimes it is necessary to adjust the output voltage for the proper usage at a certain magnetic field level. This can be done by setting up the correct gain factor with the "Gain" potentiometer.

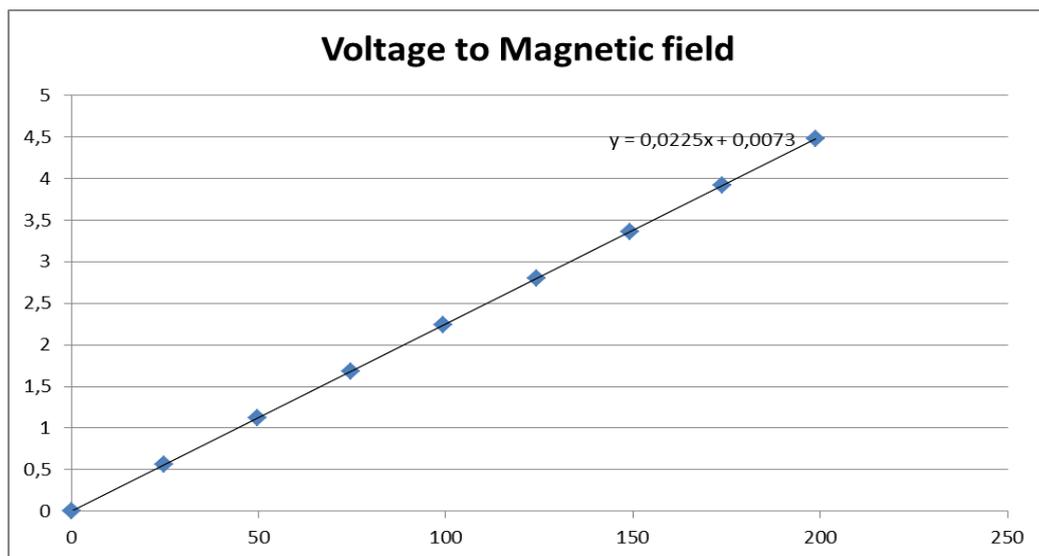


## 5. Calibration data

The calibration is processed with a Gaussmeter CYHT201 for measuring magnetic field strength generated from an electromagnet and an Agilent 34401a multimeter for measuring the output voltage of the probe CYHP881-200mT at the magnetic field.

- Calibration results by using magnetic field generated by an electromagnet

Magnetic field strength (mT)	Output voltage (V)	Linearity (%)
0.0	0.0085	0.189
24.8	0.5650	0.156
49.8	1.1235	0.067
74.6	1.6816	0.069
99.4	2.2403	0.084
124.2	2.7987	0.093
149.2	3.3582	0.027
173.9	3.9147	0.042
198.8	4.4719	-0.024

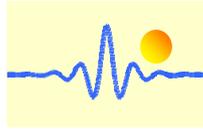


(theoretical voltage output at 198.8mT: 4.473V)

- Precise calibration points by using Alnico reference permanent magnet

Magnetic field strength (mT)	Output voltage (V)	Relative error (%)
0	0.0085	0.189
178	4.0056	0.013

(theoretical voltage output at 178mT: 4.005V)



## 6. Application

- Measuring magnetic field strength of permanent magnet materials, electromagnets, motors, loudspeakers, magnetic sensors/transducer and other machines and instruments etc.
- Magnetic field measurement by integrating in measuring instruments and controlling systems.
- Magnetic field measurement together with any digital voltmeters, ADC and other voltage measuring instruments etc.

## 7. Attention

- Please be careful with the head of the Hall probe. Use the protection cover for avoiding any damage of the sensor head after using the probe.
- The probe doesn't give any output signal if one puts the front side to the surface of the measured magnet.
- It is recommended to set up a zero point at about 8mV for avoiding any dead zone which decreases the sensitivity and shows nonlinear behavior.
- Please do not open the case in order to avoid any damage and malfunction on the Hall probe.

## 8. Warranty

ChenYang Technologies GmbH & Co. KG warrants its products against defects in workmanship and materials under normal use and service for a period of 12 months from the shipping date. All obligations and liabilities under this warranty are limited to repairing or replacing at our option.

The warranty is extended only to the original purchaser. The warranty shall not apply to any products or parts which have been damaged on account of improper installation, improper connections, misuse, neglect, accident or abnormal conditions of operation. Any attempt to tamper with the products as evidenced by disruption of warranty sticker and/or unauthorised repair/modification of the products shall render this warranty null and void.