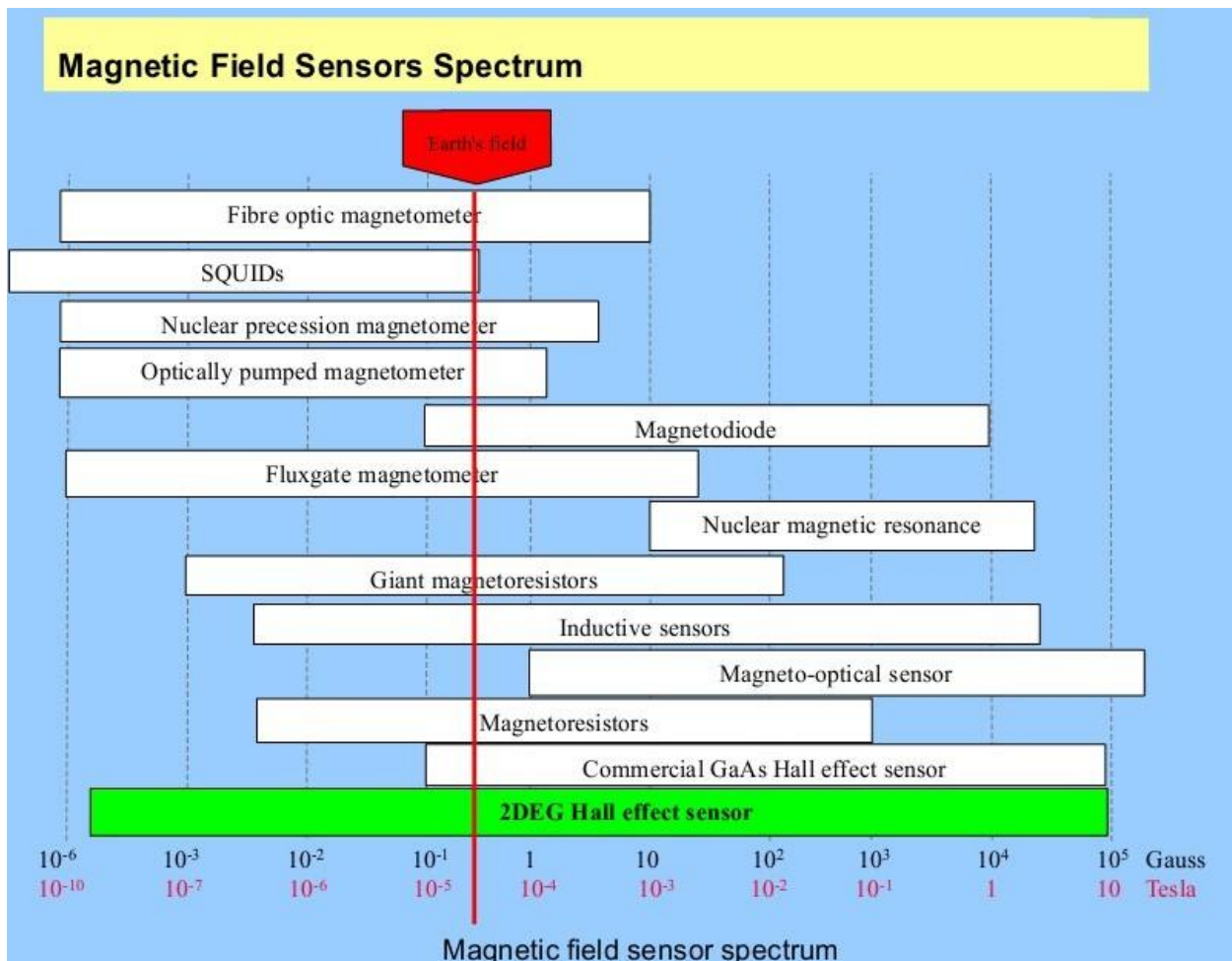


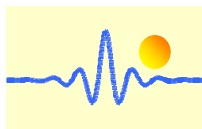
Characteristic Line of Hall Effect Linear Elements

The characteristic line of Hall Effect linear elements such as CYSJ106C, CYSJ166A, CYSJ302C, CYSJ362A, CYSJ902, CYSJ-15A, CYSJ-3A and CYSJ-2A is only given in the range of 0-300mT (max. 0-1900mT) in data sheets even if the measuring range of the sensors is 0-3T (GaAs Hall Effect has a measuring range of higher than 3T, see the following magnetic field sensors spectrum). The linearity 2% of the sensor is defined in the range of 100mT ~500mT.

Normally this characteristic line cannot be used as calibration line for the measuring system because the input and output relation of a measuring system depends also on the used electronic circuits. Therefore you should use reference magnet fields and Gaussmeter to get the calibration line for your own measuring system.



In the following we give some examples about the measuring range and linearity for your reference.



Characteristic Line of Hall Effect Element CYSJ902

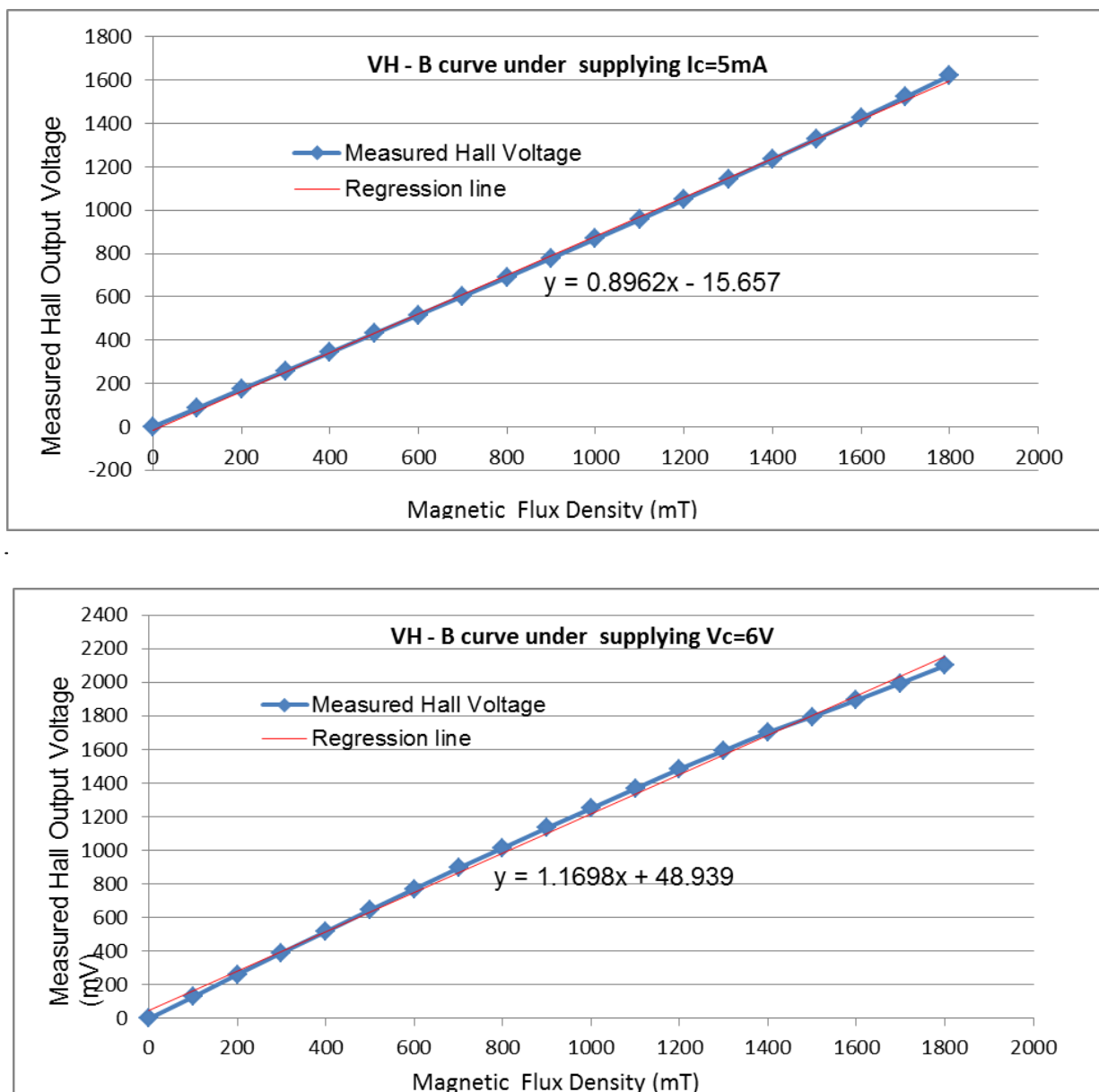
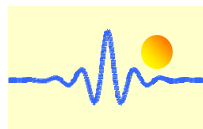


Figure 1. Hall voltage V_H as a function of magnetic flux density B (0 -1800mT) .

Table 1. Linearity of CYSJ902 in different ranges

Measuring range	0-500mT	0-1000mT	0-1500mT	0-1800mT
Under supplying 5mA	-0.18% ~ 0.08%	-0.25% ~0.40%	-0.60% ~ 1.10%	-0.85% ~ 1.5%
Under supplying 6V	-0.25% ~ 0.45%	-1.15% ~0.70%	-2.20% ~ 1.15%	-2.65% ~1,50%



Application to Hall Probe CYTP98 (CYSJ Hall Element series is used)

The calibration is processed with a reference Gaumeter type FH54 for measuring the magnetic field strength of an electromagnet and with an Agilent 34401A multimeter for measuring the output voltage of the Hall probe (e.B. CYTP98-2000mT). Here is the calibration characteristic in the measuring range -2000mT x 2000mT:

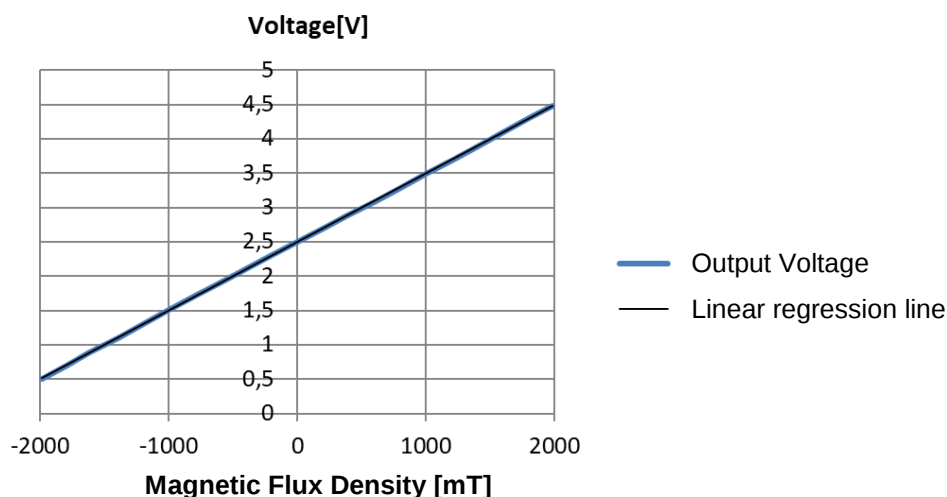


Fig. 2. Calibration line of Hall probe CYTP98-2000mT

Table 2 Calibration results of Hall probe CYTP98-2000mT by using magnetic field generated by an electromagnet

DC Magnetic flux density (mT)	Output voltage of the Hall probe (V)	Reference voltage (V)	Linearity of the Hall probe (%)
-1988	0,507	0,512	0,2
-1798	0,694	0,702	0,32
-1619	0,888	0,881	-0,28
-1389	1,114	1,111	-0,12
-1205	1,304	1,295	-0,36
-1001	1,509	1,499	-0,4
-795	1,716	1,705	-0,44
-602	1,909	1,898	-0,44
-404	2,105	2,096	-0,36
-205	2,302	2,295	-0,28
0	2,500	2,500	0
210	2,705	2,710	0,2
390	2,881	2,890	0,36
604	3,095	3,104	0,36
795	3,285	3,295	0,4
999	3,488	3,499	0,44
1211	3,703	3,711	0,32
1389	3,882	3,889	0,28
1587	4,079	4,087	0,32
1801	4,299	4,301	0,08
1985	4,486	4,485	-0,05