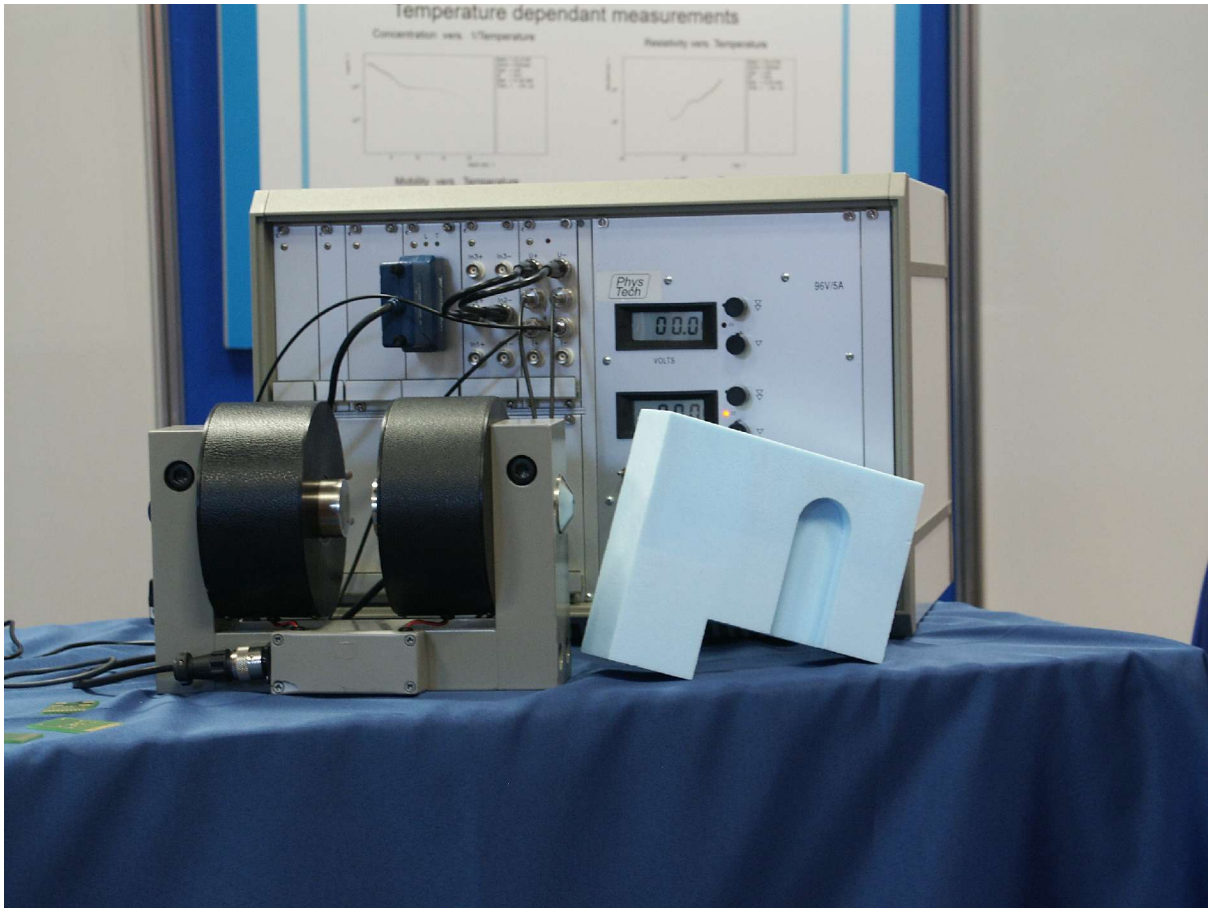
RH 2010 van der Pauw and Halleffect measurement system.



This system has been designed with respect to a very high flexibilty for the measurements and to cover a very wide range of materials and samples althought it is compact benchtop system. The system **specifications** are suitable for resistivity and Hall measurements of low resistivity and high resistivity material. The use of an **electrical magnet** allows measurements under variated magnetic field (e.g. magneto-resistivity) and enables all applications of highly sofisticated and much more expensive systems. The standard configuration includes also the **sampleholder** with **sample carriers** and the **2-temperature sample stage** for easy measurements at room- and LN2- temperatures.

Hall Measurement System RH 2010

Specifications and part list

1**. RH 2010 electronic case**

Bench top19" case (310x449x411mm), main power **240 Volt 600 Watts (3 A)**
Wight: 20Kg
including all electronic parts as:
current source and relais matrix (1 baord),
voltage measurement facility (1 board),
IEEE interface (1 board),
magnet power supply,
magnet polarity switch (1 board)

Specifications:

current source:

usable current range : 100pA - 10 mA
output voltage : +/- 10V (+/-20V)
output resistance : typical 10^{13} Ohms
max. current resolution : 2.5 pA
7 current ranges in factors of 10 (10nA - 10mA) each with 12 Bit resolution are used for controlling the output current.
The output voltage can be limited to a maximum voltage or power value.

voltage measurement facility:

usable voltage range : 10 µV - 10V
resolution : < 1 µV (typical 500nV)
input resistace: : < 10^{15} Ohms
automatic range selection
misalignement Voltage compensation (selectable by software)

magnet power supply:

maximum output voltage : 95 V
maximum current : 5 A

2. Magnet (see product description from Oxford N38 Magnet)

dimensions: 250x182x140 mm
wight: 25 Kg
poletip diameter 38 mm
max. field @ app.1cm poletip gap (air): 1 T
2 temperature sample stage

3. Software

1 CD with our Hall measurement software. 2 security hardlock keys
Keithly IEEE board
Requires a computersystem with CD-drive, printer and WIN NT or WIN 95 or WIN 98 or WIN 2000 or Win XPoperating system. **The computer system can be included on request.**

4. Spare part box

including all necessary cables and spare parts.

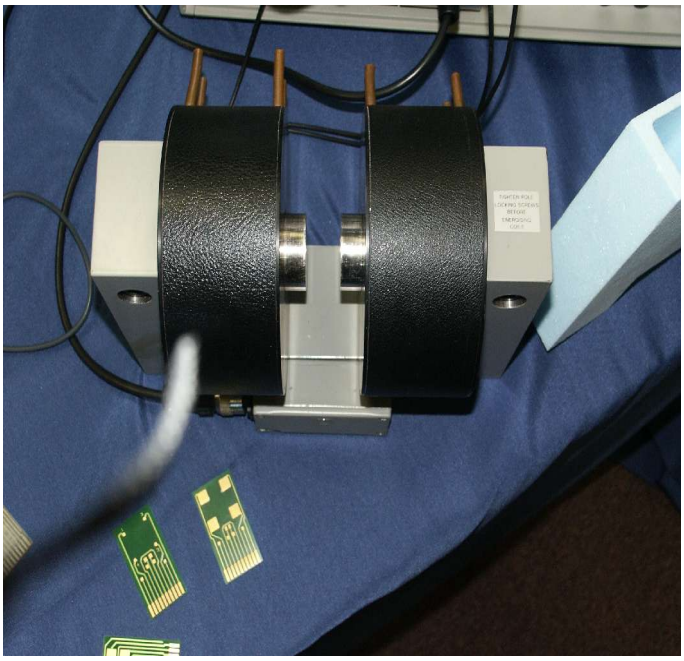
Typical Performance:
(theoretical limits of the electronic facilties)

Resistance : $1x10^{-4}$ Ohm - $1x10^{9}$ Ohm

with 1 micrometer layer thickness:
Resistivity : $1\ x10^{-6}$ Ohm*cm - $1x10^{7}$ Ohm*cm
Concentration : 10^{7} cm^{-3} - 10^{21} cm^{-3}

Magnet

Oxford N38 Magnet



Poletips:
plane: 38mm diameter
conical: 10mm diameter
variable gap 0 - 40 mm

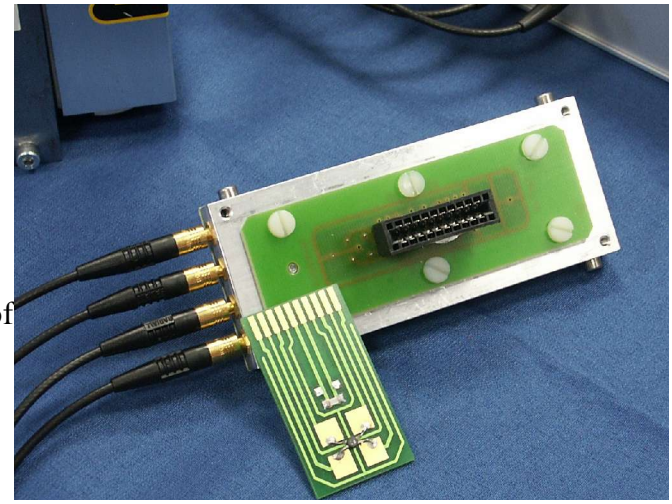
coil resistance: app. 50Ohm each

Maximum usable magnetic fields:
0.8 T at 10mm gap and plane poletips
1.5 T at 5 mm gap and conical poletips (room temperature only)
0.5 T using the 2-temperature stage (poletip gap app. 20 mm, plane poletips)

Power supply
96 V with 5 A max. and polarity switch. Working in constant current mode with current values controlled via the electronics by the software for magnetic field settings from 0 to +/- max. field.

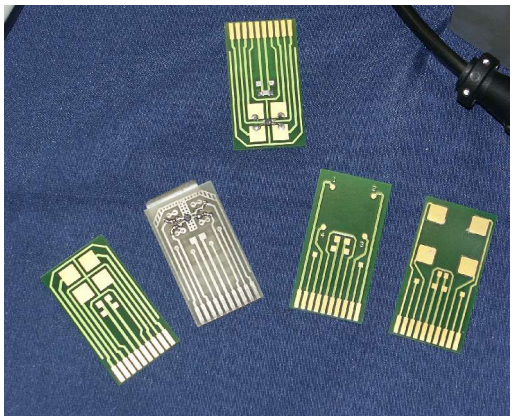
(new magnet version with the same specifications now available)

Sampleholder



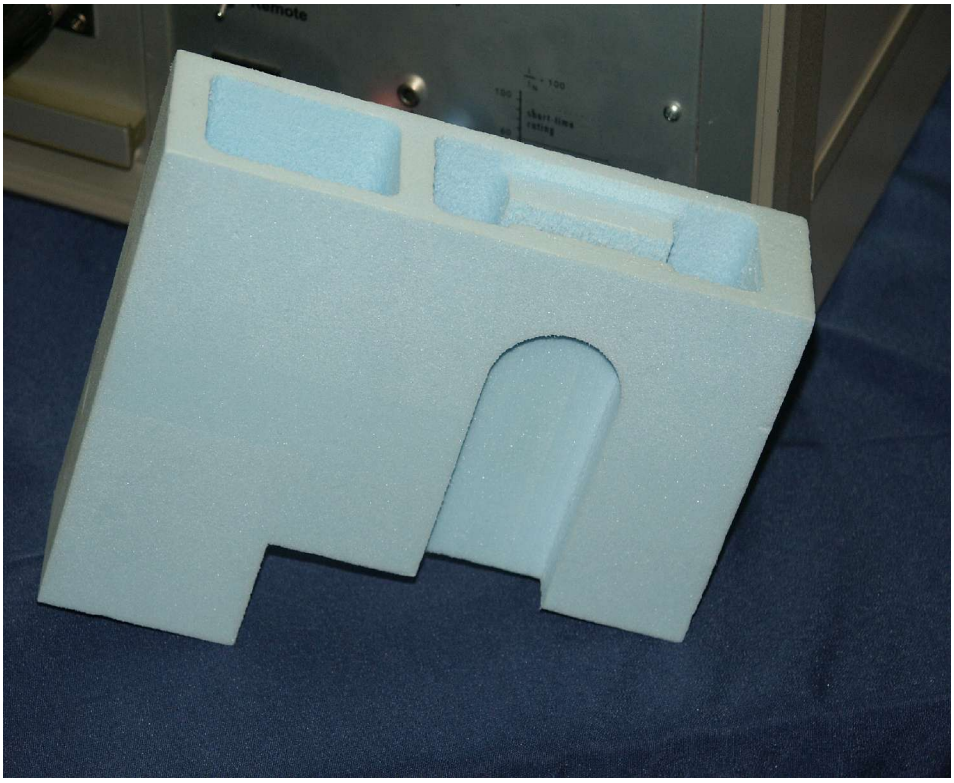
Sample holder bottom view with one sample carrier with a reference sample. This sampleholder can be used eigther with the electrical magnet with or without the 2-temperature stage as well as with the parmanent magnet (RH 3035) and its 2-temperature stage. It´s designed for an easy and quick change of the samples using the sample carriers.

Sample carriers



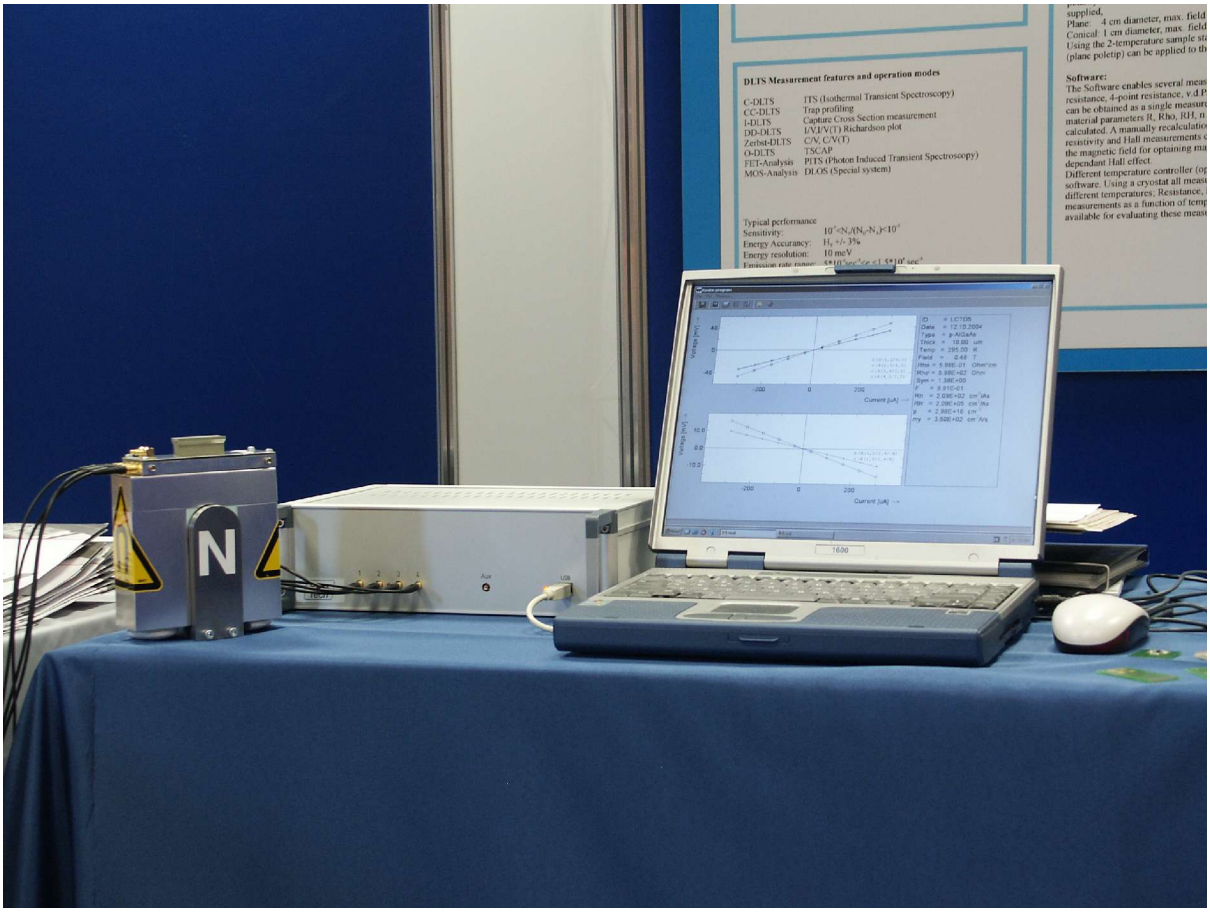
Different sample carriers are available for an easy and flexible contacting the Ohmic contacts of the samples to the measurement system. Once fixed, the samples can easily be carried and plugged into the sampleholder. Several samples can be contacted and afterwards measured in a row. This enables quite fast routine controll measurements as well as longer in detail measurements or measurements at different temperatures with a very good fixed sample and therefore with reliable contacts during several measurements or longer measurement times. The contacts might also not change after longer times so the sample can be stored and measured from time to time for detecting long term changes or for use as a reference sample.
As the sample holder, these samle carriers can be used with our RH 2010, RH 2030 and RH2035 Hall and v.d. Pauw measurement systems.

2-Temperature stage



For use at room temperature and with LN2 at 77 K. The sample is in the LN2. This stage is meant to be used with the sample holder and sample carriers. The LN2 is filled into the samplechamber from an outside second chamber without moving the sampleholder.

RH 2035 van der Pauw and Halleffect measurement system



This system has been designed with respect to a very high flexibilty for the measurements and to cover a very wide range of materials and samples althought it is compact benchtop system. The system **specifications** are suitable for resistivity and Hall measurements of low resistivity and high resistivity material. The use of a **permanet magnet** makes the system quite easy to use. The standard configuration includes also the **sampleholder** with **sample carriers** and the **2-temperature sample stage** for easy measurements at room- and LN2- temperatures.

Hall Measurement System RH 2035

Specifications and part list

1**. RH 2035 electronic case**

Bench top case (310x205x90mm), main power **240 Volt**
Wight: 1Kg
including all electronic parts as:
current source and relais matrix,
voltage measurement facility,

USB interface

Specifications:

current source:

usable current range	:	1nA - 10 mA
output voltage	:	+/- 10V (+/-20V)
output resistance	:	typical 10^{13} Ohms
max. current resolution	:	25 pA

6 current ranges in factors of 10 (100nA - 10mA) each with 12 Bit resolution are used for controlling the output current.
The output voltage can be limited to a maximum voltage or power value.

voltage measurement facility:

usable voltage range	: 10 µV - 10V
resolution	: < 1 µV (typical 500nV)
input resistance:	: > 10^{13} Ohms

automatic range selection

2. Magnet :

permanent Magnet	
wight:	**2 Kg**
poletip diameter:	**20 mm**
field @ 1cm poletip gap (air):	**0,45 T**
field polarity selection:	**manual**
2 temperature sample stage	

3. Software
1 CD with our Hall measurement software. 2 security hardlock keys
Requires a computersystem with CD-drive, printer and WIN NT or WIN 95 or WIN 98 or WIN 2000 or Win XPoperating system. **The computer system can be included on request.**

4. Spare part box
including all necessary cables and spare parts.

Typical Performance:
(theoretical limits of the electronic facilties)

Resistance : $1x10^{-3}$ Ohm - $1x10^{8}$ Ohm

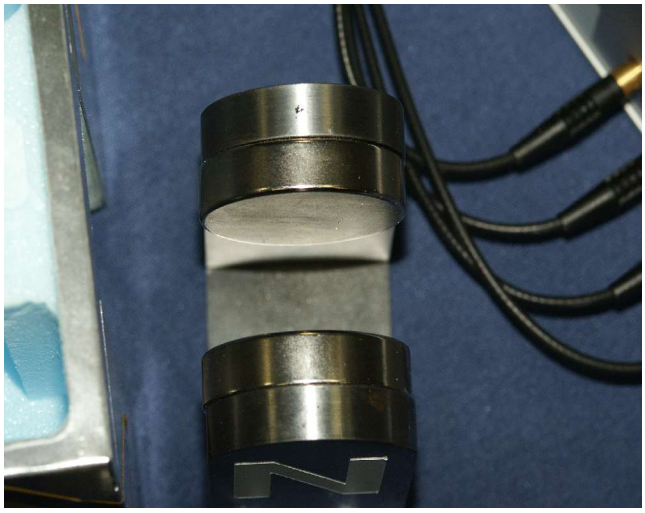
with 1 micrometer layer thickness:
Resistivity : $1 x10^{-5}$ Ohm*cm - $1x10^{7}$ Ohm*cm
Concentration : 10^{7} cm^{-3} - 10^{20} cm^{-3}

Permanent magnet

For use with the RH 2035 van der Pauw and Hall measurement system.

plane poletips 40mm diameter
fixed gap of 20 mm

magnetic field: app. 0.45 T



With a special 2-temperature stage and our sampleholder the Hall system using this magnet is an easy and nonexpensive system for quick and reliable van der Pauw and Hall measurements.