



www.magnet-physik.de Page 1/2



• Description

Magnet-Physik USB Hall probes allow reading the magnetic field strength or flux density directly into a computer, without need of an additional measuring instrument. They are connected to a USB port. Easy-to-use data acquisition and display software is included. It allows acquiring single data readings or logging multiple readings into lists or data files. The user can also integrate the probes into own software projects. Programming examples are available.

Key features:

- Automatic or manual range selection
- Linearity correction
- Temperature correction ("professional" probes only)
- Adjustable filter function (moving average)
- Adjustable sampling rate
- Automatic probe zeroing
- No driver installation required

• Applications

USB Hall probes can for example be applied in the following areas:

- Quality control of permanent magnets
- Quality control of soft magnetic components
- Quality control of magnet systems (motors, loudspeakers, magnetic clamps, couplings etc.)
- Materials research

- Development of magnet systems
- Magnet testing
- Magnet sorting
- Material analysis
- Automated testing
- Process control

Gauss-/Teslameter Software



- Units: T, G, A/m, A/cm, Oe
- Data acquisition timer
- Set ranges or auto range
- Collect data in a table
- Save data to text files
- Copy and paste data
- Log data to files
- Capture max. and min.
- Zero probe
- Set filter
- Set sampling rate





Designs

The probes are offered in two designs: "standard" and "professional". Please refer to the following table for the specific features.

Technical Data

ModelHU-ST1-184605HU-SA1-264605HU-PT1-164005HU-PA1-4805OrientationtransverseaxialtransverseaxialThickness1.8 mm max.2.6 mm1.6 mm maxDiameter4.8 mmWidth4.6 mm4.6 mm4.0 mm-Length4.6 mm4.0 mm-Cable length-5 mm-Probe surfaceHeat-shrimk tubingFibergasUnitsT (Tesla), G (Gauss), A/m, A/cm, Oe (Oersted)Usable resolution.0.0 mT / 0.1 G / 0.01 k/m / 0.1 A/cm / 0.1 Oc- without filter, approx0.01 mT / 0.1 G / 0.001 k/m / 0.1 A/cm / 0.01 OcAccuracy2 T / 20 kG / 1.6 MA/m / 16 kA/cm / 20 kOe5 T / 50 kG / 4 MA/m / 40 kA/cm / 50 kOeAccuracy2 T / 20 kG / 1.6 MA/m / 16 kA/cm / 20 kOe5 T / 50 kG / 4 MA/m / 40 kA/cm / 50 kOeAccuracy2 N0.5 % up to 1.5 T1.5 % up to 3 TTemperature correction and temperature displayapprox0.04 %/°C ± 0.02 %/ C max.Temperature coefficient of sensitivityapprox0.04 %/°C ± 0.02 %/ C max.Active area0.4 mm nominut suble, approx. 4 to approx. 242 readings per sublePrequency range0 °C t 75 °CSupported operating systemsMicrosoft Windcswist, 7, 8, 10Power supply5 from USB	Design	Standard		Professional	
$ \begin{array}{c c c c c c } \hline Orientation & transverse & axial & transverse & axial \\ \hline transverse & axial & transverse & axial \\ \hline Thickness & 1.8 mm max. & 2.6 mm & 1.6 mm max. & - \\ \hline Diameter & - & - & - & 4.8 mm \\ \hline Width & 4.6 mm & 4.0 mm & - \\ \hline Length & 55 m \\ \hline Cable length & 3 pprox. 2 m (7 ft) \\ \hline Probe surface & Heat-shrink tubing & Fiberglass \\ \hline Units & T (Tesla), G (Gauss), A/m, A/cm, Oe (Oersted) \\ \hline Usable resolution & 0.01 mT / 0.1 G / 0.01 kA/m / 0.1 A/cm / 0.1 Oe \\ - without filter, approx. & 0.01 mT / 0.1 G / 0.001 kA/m / 0.01 A/cm / 0.01 OE \\ \hline Maximum reading & 2 T / 20 kG / 1.6 MA/m / 16 kA/cm / 20 kOe \\ Accuracy & 2 \% & 0.5 \% up to 1.5 T \\ \hline Temperature correction and temperature display \\ Temperature coefficient of sensitivity & approx 0.04 \%^{\circ}C \\ \hline Temperature coefficient of sensitivity & 0.4 mn nominal diameter \\ \hline Data acquisition rate & adjustable, approx. 4 to approx. 242 readings per second \\ \hline Frequency range & O ^{\circ}C to 75 ^{\circ}C \\ \hline Supported operating systems \\ \hline Power supply & True \\ \hline USAB \\ \hline Temperature Supply \\ \hline \end{tabular}$	Model	HU-ST1-184605	HU-SA1-264605	HU-PT1-164005	HU-PA1-4805
$\begin{array}{c c c c c c } \hline Thickness & 1.8 mm max. & 2.6 mm & 1.6 mm max. & -\\ \hline Diameter & - & - & 4.8 mm \\ \hline Diameter & - & - & - & 4.8 mm \\ \hline Width & 4.6 mm & 4.0 mm & - & - & - & - & - & - & - & - & - $	Orientation	transverse	axial	transverse	axial
Diameter4.8 mmWidth4.6 mm4.6 mm4.0 mm-Length55 mmCable lengthapprox. 2 m (7 ft)Probe surfaceHeat-shrink tubingFiberglassUnitsT (Tesla), G (Gauss), A/m, A/cm, Oe (Oersted)Usable resolution with filter, approx.0.01 mT / 0.1 G / 0.01 kA/m / 0.1 A/cm / 0.1 O- with filter, approx.0.01 mT / 0.1 G / 0.01 kA/m / 0.01 A/cm / 0.01 OMaximum reading2 T / 20 kG / 1.6 MA/m / 16 kA/cm / 20 kOe5 T / 50 kG / 4 MA/m / 40 kA/cm / 50 kOeAccuracy2 %0.5 % up to 1.5 T 1 % up to 3 T0.5 % up to 1.5 T 1.5 % up to 3 TTemperature correction and temperature displaynoyesTemperature coefficient of sensitivity0.4 mm nominal diameterData acquisition rate0.4 mm nominal diameterData acquisition rateDCOperating temperature range0 °C to 75 °CSupported operating systemsMicrosoft Windows® Vista, 7, 8, 10Power supplyForm USB	Thickness	1.8 mm max.	2.6 mm	1.6 mm max.	-
Width4.6 mm4.6 mm4.0 mm-Length 55 m 57 m 57 m 57 m Cable length $1000000000000000000000000000000000000$	Diameter	-	-	-	4.8 mm
Length 55 mm Cable lengthapprox. 2 m (7 ft)Probe surfaceHeat-shrink tubingFiberglassUnitsT (Tesla), G (Gauss), A/m, A/cm, Oe (Oersted)Usable resolution $0.01 \text{ mT / } 0.1 \text{ G / } 0.01 \text{ k/m / } 0.1 \text{ A/cm / } 0.1 \text{ Oe}$ - with out filter, approx. $0.01 \text{ mT / } 0.1 \text{ G / } 0.001 \text{ k/m / } 0.01 \text{ A/cm / } 0.01 \text{ Oe}$ - with filter, approx. $0.01 \text{ mT / } 0.1 \text{ G / } 0.001 \text{ k/m / } 0.01 \text{ A/cm / } 0.01 \text{ Oe}$ - with filter, approx. $0.01 \text{ mT / } 0.01 \text{ G / } 0.001 \text{ k/m / } 0.01 \text{ A/cm / } 0.01 \text{ Oe}$ Maximum reading $2 \text{ T / } 20 \text{ kG / } 1.6 \text{ MA/m / } 16 \text{ kA/cm / } 20 \text{ kOe}$ Accuracy $2 \text{ T / } 20 \text{ kG / } 1.6 \text{ MA/m / } 16 \text{ kA/cm / } 20 \text{ kOe}$ $5 \text{ T / } 50 \text{ kG / } 4 \text{ MA/m / } 40 \text{ kA/cm / } 50 \text{ kOe}$ Accuracy $2 \text{ S / } 0.5 \%$ up to 1.5 T 1% up to 3 T 1.5% up to 3 T Temperature correction and temperature displaynono $y = s$ Temperature coefficient of sensitivityapprox. -0.04% /°C 4 cup area $0.4 \text{ mm nominal diameter}$ Data acquisition rateadjustable, approx. $4 \text{ to } approx. 242 \text{ readings per second}$ Frequency range $0 \text{ °C to } 75 \text{ °C}$ Supported operating systemsMicrosoft Windows® Vista, 7, 8, 10Power supplyfrom USB	Width	4.6 mm	4.6 mm	4.0 mm	-
Cable lengthapprox. 2 m (7 ft)Probe surfaceHeat-shrink tubingFiberglassUnitsT (Tesla), G (Gauss), A/m, A/cm, Oe (Oersted)Usable resolution.0.01 mT / 0.1 G / 0.01 kA/m / 0.1 A/cm / 0.1 Oe- with out filter, approx0.01 mT / 0.1 G / 0.001 kA/m / 0.1 A/cm / 0.01 OeMaximum reading2 T / 20 kG / 1.6 MA/m / 16 kA/cm / 20 kOe5 T / 50 kG / 4 MA/m / 40 kA/cm / 50 kOeAccuracy2 %0.5 % up to 1.5 T 1 % up to 3 T0.5 % up to 1.5 T 1.5 % up to 3 TTemperature correction and temperature displaynoyesTemperature coefficient of sensitivityapprox0.04 %/°C± 0.02 %/°C max.Active area0.4 mm nominal diameterData acquisition rateadjustable, approx. 4 to approx. 242 readings per secondFrequency rangeDCOperating temperature range0 °C to 75 °CSupported operating systemsMicrosoft Windows® Vista, 7, 8, 10Power supplyfrom USB	Length	55 mm			
Probe surfaceHeat-shrink tubingFiberglassUnitsT (Tesla), G (Gauss), A/m, A/cm, Oe (Oersted)Usable resolution $0.01 \text{ mT} / 0.1 \text{ G} / 0.01 \text{ kA/m} / 0.1 \text{ A/cm} / 0.1 \text{ O} - 0.01 \text{ mT} / 0.1 \text{ G} / 0.001 \text{ mT} / 0.01 \text{ O} - 0.01 \text{ mT} / 0.01 \text{ A/cm} / 0.01 \text{ O} - 0.01 \text{ mT} / 0.01 \text{ G} / 0.001 \text{ kA/m} / 0.01 \text{ A/cm} / 0.01 \text{ O} - 0.01 \text{ mT} / 0.01 \text{ G} / 0.001 \text{ kA/m} / 0.01 \text{ A/cm} / 0.01 \text{ O} - 0.01 \text{ Maximum reading}}$ $2 \text{ T} / 20 \text{ kG} / 1.6 \text{ MA/m} / 16 \text{ kA/cm} / 20 \text{ kOe}$ $5 \text{ T} / 50 \text{ kG} / 4 \text{ MA/m} / 40 \text{ kA/cm} / 50 \text{ kOe}$ Accuracy $2 \text{ T} / 20 \text{ kG} / 1.6 \text{ MA/m} / 16 \text{ kA/cm} / 20 \text{ kOe}$ $5 \text{ T} / 50 \text{ kG} / 4 \text{ MA/m} / 40 \text{ kA/cm} / 50 \text{ kOe}$ Accuracy 2 M $0.5 \% \text{ up to } 1.5 \text{ T}$ $0.5 \% \text{ up to } 1.5 \text{ T}$ Temperature correction and temperature displayno yes $1.5 \% \text{ up to } 3 \text{ T}$ Temperature coefficient of sensitivityapprox. $-0.04 \%^{\circ}\text{C}$ $\pm 0.02 \%^{\circ}\text{C} \text{ max}$.Active area $0.4 \text{ mm nominal diameter}$ Data acquisition rateadjustable, approx. 4 to approx. 242 readings per secondFrequency range $0 \degree \text{C} \text{ to } 75 \degree \text{C}$ Supported operating systemsMicrosoft Windows [®] Vista, 7, 8, 10Power supplyfrom USB	Cable length	approx. 2 m (7 ft)			
Units T (Tesla), G (Gauss), A/m, A/cm, Oe (Oersted) Usable resolution 0.01 mT / 0.1 G / 0.01 k/m / 0.1 A/cm / 0.1 Oe - without filter, approx. 0.001 mT / 0.01 G / 0.001 k/m / 0.01 A/cm / 0.01 OE Maximum reading 2 T / 20 kG / 1.6 MA/m / 16 kA/cm / 20 kOe 5 T / 50 kG / 4 MA/m / 40 kA/cm / 50 kOe Accuracy 2 % 0.5 % up to 1.5 T 0.5 % up to 1.5 T Temperature correction and temperature display no yes 1.5 % up to 3 T Temperature coefficient of sensitivity approx0.04 %/°C ± 0.02 %/°C max. 2400 max Active area 0.4 mm nominal diameter 5 C 5 C Data acquisition rate adjustable, approx. 4 to approx. 242 readings per second 5 C Frequency range 0 °C to 75 °C Supported operating sersitivity 5 °C max. Supported operating sersitivity 0 °C to 75 °C Supported operating sersitivity 5 °C max. Power supply for USB Microsoft Windows® Vista, 7, 8, 10 5 °C °C	Probe surface	Heat-shrink tubing		Fiberglass	
Usable resolution 0.01 mT / 0.1 G / 0.01 kA/m / 0.1 A/cm / 0.1 Oe - with ut filter, approx. 0.001 mT / 0.01 G / 0.001 kA/m / 0.01 A/cm / 0.01 Oe Maximum reading 2 T / 20 kG / 1.6 MA/m / 16 kA/cm / 20 kOe 5 T / 50 kG / 4 MA/m / 40 kA/cm / 50 kOe Accuracy 2 % 0.5 % up to 1.5 T 0.5 % up to 1.5 T Temperature correction and temperature display no yes 1.5 % up to 3 T Temperature coefficient of sensitivity approx0.04 %/°C ± 0.02 %/°C max. 1.5 % up to 3 T Active area 0.4 mm nominal diameter Data acquisition rate Adjustable, approx. 4 to approx. 242 readings per second Frequency range 0 °C to 75 °C Supported operating systems 0 °C to 75 °C Supported operating systems Microsoft Windows® Vista, 7, 8, 10 Power supply	Units	T (Tesla), G (Gauss), A/m, A/cm, Oe (Oersted)			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Usable resolution				
- with filter, approx.0.001 mT / 0.01 G / 0.001 kA/m / 0.01 A/cm / 0.01 OeMaximum reading2 T / 20 kG / 1.6 MA/m / 16 kA/cm / 20 kOe5 T / 50 kG / 4 MA/m / 40 kA/cm / 50 kOeAccuracy2 %0.5 % up to 1.5 T 1 % up to 3 T0.5 % up to 1.5 T 1.5 % up to 3 TTemperature correction and temperature displaynoyesTemperature coefficient of sensitivityapprox0.04 %/°C± 0.02 %/°C max.Active area0.4 mm nominal diameterData acquisition rateadjustable, approx. 4 to approx. 242 readings per secondFrequency rangeDCOperating temperature range0 °C to 75 °CSupported operating systemsMicrosoft Windows® Vista, 7, 8, 10Power supplyfrom USB	 without filter, approx. 	0.01 mT / 0.1 G / 0.01 kA/m / 0.1 A/cm / 0.1 Oe			
Maximum reading 2 T / 20 kG / 1.6 MA/m / 16 kA/cm / 20 kOe 5 T / 50 kG / 4 MA/m / 40 kA/cm / 50 kOe Accuracy 2 % 0.5 % up to 1.5 T 0.5 % up to 1.5 T 1 % up to 3 T 1.5 % up to 3 T 1.5 % up to 3 T Temperature correction and temperature display no yes Temperature coefficient of sensitivity approx0.04 %/°C ± 0.02 %/°C max. Active area 0.4 mm nominal diameter Data acquisition rate adjustable, approx. 4 to approx. 242 readings per second Frequency range DC Operating temperature range 0 °C to 75 °C Supported operating systems Microsoft Windows® Vista, 7, 8, 10 Power supply from USB	 with filter, approx. 	0.001 mT / 0.01 G / 0.001 kA/m / 0.01 A/cm / 0.01 Oe			
Accuracy2 %0.5 % up to 1.5 T 1 % up to 3 T0.5 % up to 1.5 T 1.5 % up to 3 TTemperature correction and temperature displaynoyesTemperature coefficient of sensitivityapprox0.04 %/°C± 0.02 %/°C max.Active area0.4 mm nominal diameterData acquisition rateadjustable, approx. 4 to approx. 242 readings per secondFrequency rangeDCOperating temperature range0 °C to 75 °CSupported operating systemsMicrosoft Windows® Vista, 7, 8, 10Power supplyfrom USB	Maximum reading	2 T / 20 kG / 1.6 MA/m / 16 kA/cm / 20 kOe		5 T / 50 kG / 4 MA/m / 40 kA/cm / 50 kOe	
Temperature correction and temperature display no yes Temperature coefficient of sensitivity approx0.04 %/°C ± 0.02 %/°C max. Active area 0.4 mm nominal diameter Data acquisition rate adjustable, approx. 4 to approx. 242 readings per second Frequency range DC Operating temperature range 0 °C to 75 °C Supported operating systems Microsoft Windows® Vista, 7, 8, 10 Power supply from USB	Accuracy	2 %		0.5 % up to 1.5 T	0.5 % up to 1.5 T
Temperature coefficient of sensitivityapprox0.04 %/°C ± 0.02 %/°C max.Active area0.4 mm nominal diameterData acquisition rateadjustable, approx. 4 to approx. 242 readings per secondFrequency rangeDCOperating temperature range0 °C to 75 °CSupported operating systemsMicrosoft Windows® Vista, 7, 8, 10Power supplyfrom USB	Temperature correction and temperature display	no		yes	
Active area0.4 mm nominal diameterData acquisition rateadjustable, approx. 4 to approx. 242 readings per secondFrequency rangeDCOperating temperature range0 °C to 75 °CSupported operating systemsMicrosoft Windows® Vista, 7, 8, 10Power supplyfrom USB	Temperature coefficient of sensitivity	approx0.04 %/°C		± 0.02 %/°C max.	
Data acquisition rate adjustable, approx. 4 to approx. 242 readings per second Frequency range DC Operating temperature range 0 °C to 75 °C Supported operating systems Microsoft Windows® Vista, 7, 8, 10 Power supply from USB	Active area	0.4 mm nominal diameter			
Frequency range DC Operating temperature range 0 °C to 75 °C Supported operating systems Microsoft Windows® Vista, 7, 8, 10 Power supply from USB	Data acquisition rate	adjustable, approx. 4 to approx. 242 readings per second			
Operating temperature range 0 °C to 75 °C Supported operating systems Microsoft Windows® Vista, 7, 8, 10 Power supply from USB	Frequency range	DC			
Supported operating systems Microsoft Windows® Vista, 7, 8, 10 Power supply from USB	Operating temperature range	0 °C to 75 °C			
Power supply from USB	Supported operating systems	Microsoft Windows [®] Vista, 7, 8, 10			
	Power supply	from USB			

Package Content

The probes are supplied in a storage case. The data acquisition program USB Teslameter, operating instructions and help in English, German and French languages, as well as programming examples in Microsoft Visual C# and Visual Basic.NET and a description for using the probes with National Instruments LabVIEW are available for download from www.magnet-physik.de.

Standard probes (S) are supplied with a calibration confirmation without measured values. A full proprietary calibration certificate or a calibration in our ISO/IEC 17025 accredited calibration laboratories in Germany or in the USA is available for an extra charge.

Professional probes (P) are supplied with a proprietary calibration certificate. A calibration in our ISO/IEC 17025 accredited calibration laboratories in Germany or in the USA is available for an extra charge.

Accessory (not included in package)

Magnetic shielding chambers: see datasheet NK Shielding Chambers

MAGNET-PHYSIK Dr. Steingroever GmbH

Emil-Hoffmann-Straße 3, 50996 Köln, Germany Phone: +49 2236 3919-0 • Fax: +49 2236 3919-19 info@magnet-physik.de www.magnet-physik.de