

Measuring static magnetic fields

ranging from low fields
up to 20 Tesla

- ▲ **Non-directional measurement using an isotropic 3-axis HALL probe**
- ▲ **Small sized field sensitive point for accurate measurements in high gradient fields**
- ▲ **Frequency range from DC to 1 kHz**
- ▲ **Easy operation by PDA touch screen or MS-Windows based PC software (all included)**
- ▲ **USB probe interface, bus-powered**



DESCRIPTION

The THM1176-PDA is a complete measurement set in a small transport case including a full featured PDA computer. The Three-axis Hall Magnetometer is used to measure the magnetic field (flux density). Its unique, extraordinarily compact design allows it to be used as a portable instrument or directly connected to a PC.

APPLICATIONS

The probe is designed for measuring static magnetic fields up to frequencies of 1 kHz. Measurements on medical equipment (magnetic resonance imaging, MRI), metal production equipment and railway systems are typical applications.

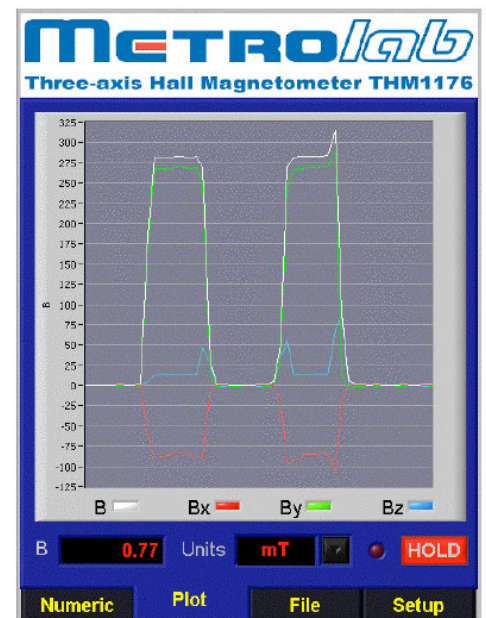
FEATURES

The THM1176-PDA provides the total field no matter the orientation of the probe, which greatly facilitates many measurement tasks such as field mapping. Outstanding features are as follows:

- Three axes:**
 Simultaneous measurement of all three axes of the magnetic field provides the total field, no matter the orientation of the probe.
- Microscopic field sensitive volume:**
 A sensor size of only $150 \times 150 \times 10 \mu\text{m}^3$ provides excellent localization and a self-consistent measurement of the three axes even in highly inhomogeneous fields.
- Magnetic fields up to 20 T:**
 Four measurement ranges – 100 mT, 500 mT, 3 T and 20 T – allow measuring even very strong fields. The standard calibration covers the range up to 3 T. Automatic or manual range setting is provided.
- Bandwidth of DC to 1 kHz:**
 The 1 kHz bandwidth allows measuring AC fields generated, for example, by transformers and motors.
- Graphical results display:**
 Magnetic flux density vs. time can be displayed as a graph. Measurement data can also be recorded to file.



Example for a numerical results display



Example for a graphical results display

SPECIFICATIONS

THM1176-PDA				
MEASUREMENT MODES				
Software functions:	<ul style="list-style-type: none"> - Numerical and graphical display of data (including total field) - Range and units selection - Hold and Maximum - Record to file and recall file 			
Record file format:	ASCII tab delimited; compatible with Handheld file format			
MEASUREMENTS				
Ranges:	100 mT, 500 mT, 3T, 20T (automatic or manual ranging)			
Data output:	<ul style="list-style-type: none"> - B_x, B_y, B_z (ASCII or binary, single point or array, calibrated or not) - Temperature (uncalibrated) - Time stamp (10ms resolution) 			
Units:	Magnetic flux density in T, mT, G, kG, MHz p (NMR frequency of proton)			
Sample rate:	<ul style="list-style-type: none"> - Immediate trigger (default) Approx. 12 kHz (free-running, until internal buffer is full) - Timed trigger 0.36 Hz to 2.048 kHz (timer resolution of at least 0.24 %; continuous read-out in blocks of 2048 samples) - Bus trigger (via USB) Up to approx. 400 Hz (until internal buffer is full) <p><i>Notes: 1 sample = (B_x, B_y, B_z); Internal buffer size = 2048 samples</i></p>			
Bandwidth:	DC to 1 kHz			
Resolution:	100 mT range	500 mT range	3 T range	20 T range
- No averaging	300 μT	500 μT	3 mT	15 mT
- Averaging 100 samples	30 μT	50 μT	300 μT	1.5 mT
Accuracy:	The greater of ±1% of reading or specified resolution 20 T range specified up to 3 T			
User offset correction:	To be performed before each series of measurements, in Zero Gauss Chamber supplied			
INTERFACE				
Interface:	USB 2.0, full speed (12 Mbps)			
Class / USB driver:	USBTMC (USB Test & Measurement Class) / USB488 DFU (Device Firmware Upgrade)			
Protocol:	IEEE 488.2, SCPI (Standard Commands for Programmable Instruments)			
Connector:	USB Type A			
Power:	USB bus-powered, 4.3V to 5.25V 35 mA min (idle, power-saver on), 90 mA max			
Wake-up time from power-saver:	100 ms			

PDA SPECIFICATIONS	
PDA type:	Windows Mobile® 5.0 with USB host interface
PDA size:	(127 x 75 x 21) mm
PDA weight:	230 g with 2600 mAh battery, stylus and USB adaptor cable
Display:	64K colour TFT LCD, 3.5", 240 x 320 pixels
Input Device:	Stylus or fingertip
Connectors:	<ul style="list-style-type: none"> - Power jack - 2.5mm audio headset jack - 26 pin connector for ActiveSync, USB 1.1 host and USB 2.0 client - CompactFlash and SDIO expansion slots
Audio:	Built-in microphone and speaker
Memory:	128 MB SDRAM, 256 MB NAND Flash
Wireless LAN:	IEEE 802.11 b/g; internal antenna
Bluetooth:	V2.0 + EDR class 1
Battery life:	6 hours min.
Record file format:	ASCII tab delimited; compatible with Desktop file format
Pre-loaded software:	<ul style="list-style-type: none"> - Acquisition software (same functionality as desktop software) - Word Mobile, Excel Mobile, PowerPoint Mobile - Outlook Mobile, IE Mobile, MSN Messenger Client - Windows Media Player 10.2 Mobile - ActiveSync Client - Socket Mobile Wi-Fi Companion - Programmable Home Screen, Calculator, Utility programs
OPERATING CONDITIONS	
Probe	
Operating temperature	0°C to +40°C
Storage temperature	-20°C to +60°C
Operating magnetic field	3 T max. for the instrument electronics (located within the probe cable at 2m distance from the sensor)
PDA	
Operating temperature	0°C to +50°C
Operating magnetic field	1 T max. The PDA may experience forces as high as 50 N. Note: The touch screen of the PDA will cease to function. The power of the PDA must be cycled to restore full operation.
GENERAL SPECIFICATIONS	
Warranty	2 years
Recommended calibration interval:	18 months (3-Axis Hall Probe only)
Certification	CE approved
Maintenance	Firmware upgradable by end user
Accessories (included)	See ordering information

PROBE HEAD – MECHANICAL DETAILS	
Size:	
- Instrument electronics	76 x 22.5 x 14 mm ³
- Probe with housing	113 x 16 x 10 mm ³
- Probe without housing	see figure 1
Stationary mounting point:	For M2.5 screw (not included). Note: to avoid breaking the mounting point, use a spacer and do not over-tighten the screw.
Weight:	150 g
Size of field sensitive point:	150 μm x 150 μm x 10 μm
Sensor dimensions and location of field sensitive point:	see figure 2

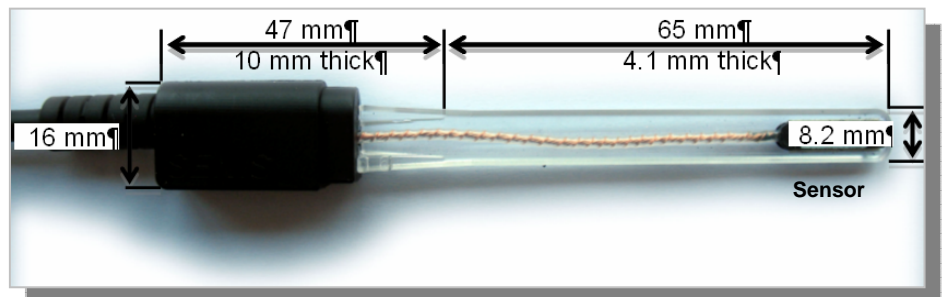
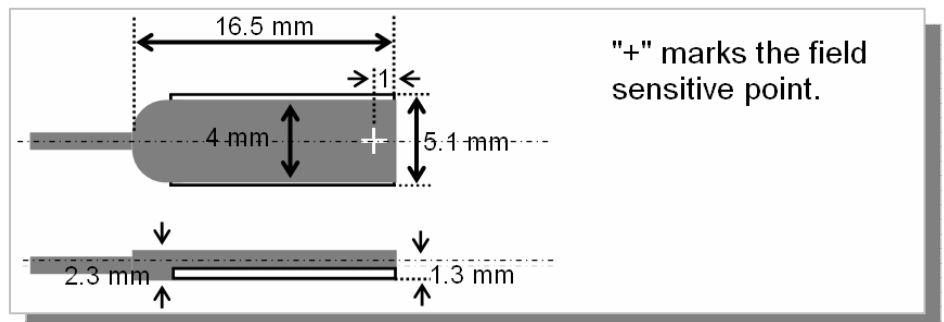


Figure 1: Size of the probe head with removed housing



"+" marks the field sensitive point.

Figure 2: Sensor dimensions and location of the field sensitive point

ORDERING INFORMATION

THM1176-PDA	Part Number (P/N)
<p>THM1176-PDA, 3-Axis HALL Magnetometer with PDA Handheld Computer included</p> <p>Includes:</p> <ul style="list-style-type: none"> - 3-Axis Hall Probe with 3 meter cable - Industrial-quality PDA (pre-installed software, ready to use) - Heavy duty Li-Ion battery (2600 mAh), plus spare (1200 mAh) - AC adaptor/charger (100-240 VAC 50/60 Hz) with wall socket adaptor plugs for Europe, UK, USA, Australia - USB-Host adaptor cable to connect PDA to THM1176 - USB-Device adaptor cable to connect PDA to PC - CD with acquisition software for PC (Windows XP/Vista) and PDA (Windows Mobile), LabVIEW source code for all PC and PDA software and user's manual (PDF) - Zero Gauss Chamber - Carrying Case - Certificate of calibration ¹⁾ <p>¹⁾ (Full-range calibration on 0.1, 0.5 and 3 T ranges; 20 T range to 3 T)</p>	<p>2901/101</p>

Narda Safety Test Solutions GmbH

Sandwiesenstrasse 7
72793 Pfullingen, Germany
Phone: +49 (0) 7121-97 32-777
Fax: +49 (0) 7121-97 32-790
E-Mail: support@narda-sts.de
www.narda-sts.de

Narda Safety Test Solutions

435 Moreland Road
Hauppauge, NY 11788, USA
Phone: +1 631 231-1700
Fax: +1 631 231-1711
E-Mail: NardaSTS@L-3COM.com
www.narda-sts.com

Narda Safety Test Solutions Srl

Via Leonardo da Vinci, 21/23
20090 Segrate (Milano), Italy
Phone: +39 02 2699871
Fax: +39 02 26998700
E-mail: support@narda-sts.it
www.narda-sts.it