

Electric and Magnetic Field Measurement



EHP-50C Electric Field and Magnetic Flux Density Analyzer

- ◆ Electric Field and Magnetic Flux Density Analysis from 5 Hz to 100 kHz
- ◆ Isotropic Measurements with a Dynamic Range of 140 dB
- ◆ Small Size and Optical Fiber Connection for Accurate, Repeatable Measurements
- ◆ Built-in FFT Spectrum Analysis
- ◆ Three (Narrowband, Broadband and Marker) Detection Modes
- ◆ Internal Memory for Stand Alone Measurements
- ◆ Interfaces to PC and Pocket PC

Measurements of ELF/VLF (Extremely Low Frequency and Very Low Frequency) fields, in an accurate and repeatable manner, have long been a difficult proposition. Interference caused by the proximity of the surveyor has made E-field measurements especially difficult, and most devices have offered only single axis sensors rather than isotropic arrays that only served to further reduce repeatability. With new standards and recommendations (like IEEE C95.6) being introduced and the increase of implanted medical devices, there is an increased need to know what the field levels are in our workplaces and/or around the products we manufacture no matter what their direction or orientation.

The Narda EHP-50C is a new and innovative system that has been designed to offer the highest performance, capabilities and functions, for measurements of low frequency electric and magnetic fields. The EHP-50C performs E and β field measurements in the 5 Hz to 100 kHz range with an unsurpassed dynamic range of > 140 dB and built-in spectrum analyzer function. The EHP-50C, along with a display device (PC or Pocket PC), allows the user to select among three measurement modes: **Wideband**, which measures the contribution of all the frequency components in the selected frequency span; **Highest**, which measures only the highest level found within the Span; and **Spectrum**, with marker functions.

Narrowband spectrum analysis capability of the EHP-50C makes it possible to measure only the contribution from the selected source – e.g. a high voltage line – excluding other nearby additional frequencies.





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The EHP-50C's small cubic housing (approx. 4 in.) accommodates everything: three magnetic loops and three plate capacitors orthogonally positioned for sensing fields from any direction. Encased inside the housing is also an A to D converter followed by a powerful DSP (Digital Signal Processor) that performs signal analysis; and the CPU module that controls all the functions; an EEPROM, that stores the calibration data; an optical interface to allow easy connection to external displays via optical fiber link; a high capacity data logger for stand alone continuous acquisition; the control panel with the connections and the ON/OFF switch.

The innovative sensor design, along with the supplied software allows the user to setup measurement parameters beforehand on a PC. During or after a measurement, the software allows displaying, recording and analyzing their values on a PC.

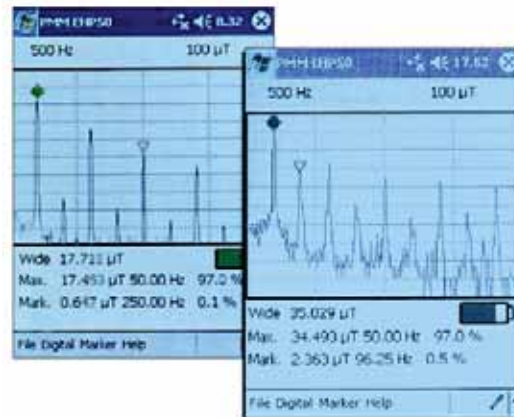
OPERATION WITH POCKET PC

To further improve the flexibility and the portability of the solution provided, the EHP-50C also has dedicated software running on specifically selected Pocket PC's (HP iPAQ Model hx2190 or HP equivalent). Data is received from the EHP-50C through the optical cable and can be easily displayed, analyzed and stored.

The Pocket PC software features digital and analogue reading, span, range and E or β settings, Marker Peak and Delta Peak. It is delivered on a standard 32 MB Secure Digital memory card that can also be used to save the spectra measurements as well as the corresponding numeric values.

STAND-ALONE CONTINUOUS ACQUISITION WITH INTERNAL DATA LOGGER FOR 24 HOURS

If a long monitoring campaign is a must – e.g. when monitoring magnetic fields that might cause interference with implanted medical devices or next to high, medium and low voltage transformers; measuring close to power lines or to machinery, air conditioning systems, large home appliances, etc. the EHP-50C can be used in stand-alone mode without needing a PC, or a Pocket PC connected to it. Once the measurement parameters have been programmed by means of the PC software (supplied), the EHP-50C analyzer can start its acquisition by storing the data over 24 hours in stand-alone mode with a sampling rate of 30 or 60 seconds. After 24 hours the EHP-50C will stop automatically. The data can then be downloaded to the PC. The PC software allows the user to select the measurement field (electric or magnetic), the full scale, the mode (Highest or Wideband), the frequency span and the sampling interval (one minute or 30 seconds).



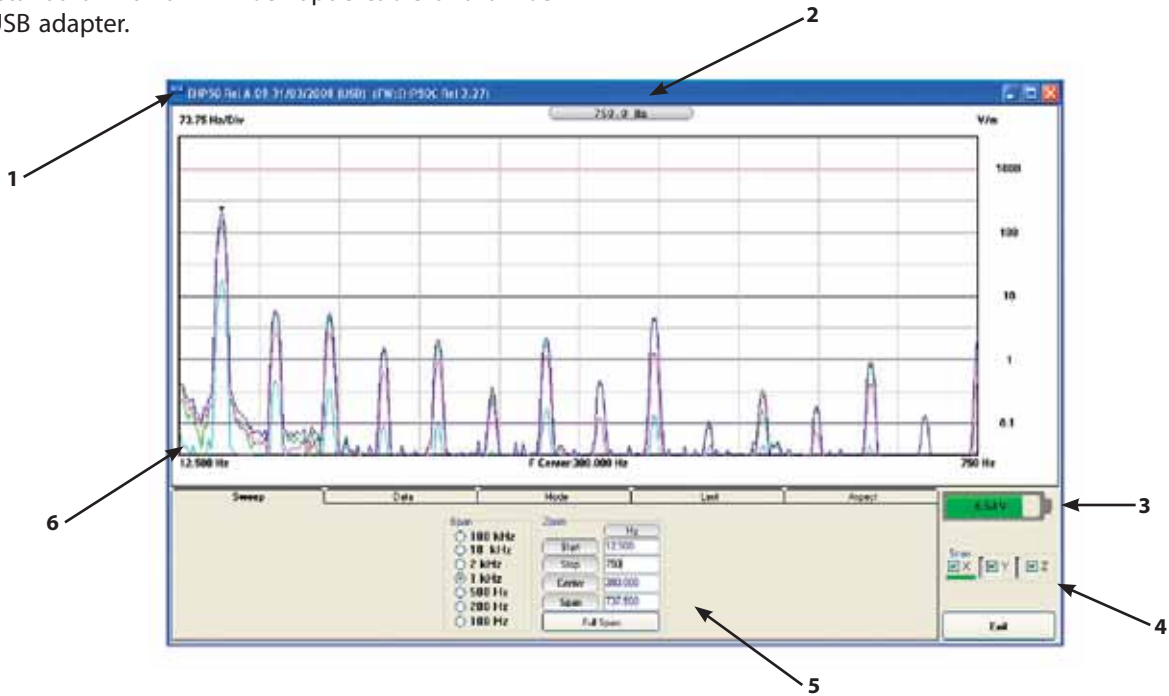
EHP-50C with Pocket PC



EHP-50C Electric Field and Magnetic Flux Density Measurement

PC Software

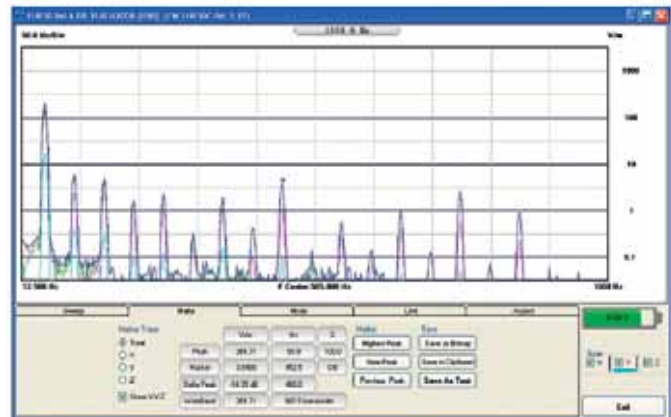
The supplied software is compatible with Windows™ and allows fast analysis of detected fields in real-time or readings previously stored by the EHP-50C. The EHP-50C is supplied standard with a 2m fiber optic cable and a fiber optic to USB adapter.



DESCRIPTION:

- 1 – EHP50 software release and firmware of connected analyzer.
- 2 – Displays frequency while scanning
- 3 – EHP-50C battery status
- 4 – Scan activation for each axis (default setting: all axis activated)
- 5 – Control panel
- 6 – Spectrum analysis display

The Control Panel allows you to select the Sweep Span and to Zoom into that span, evaluate Data with automatic peak detection and marker display – and to save plots as graphics or text, Mode selects either E or H fields, instantaneous or "Maximum Hold", Limit allows you to set and save limits, Aspect allows setting of trace colors and label text.





Specifications

EHP-50C E and β Field Analyzer		
FUNCTIONAL SPECIFICATIONS	Electric Field	Magnetic Field
Frequency range	5 Hz to 100 kHz	
Measuring Ranges	1 kV/m to 100 kV/m	0.1 mT to 10 mT
Overload	200 kV/m @ 60 Hz	20 mT @ 60 Hz
Resolution	0.1 V/m	10 nT
Sensitivity	0.01 V/m	1 nT
Absolute Error	± 0.5 dB @ 60 Hz and 1 kV/m	± 0.5 dB @ 60 Hz and 0.1 mT
Flatness (40 Hz – 10 kHz)	± 0.5 dB	± 0.5 dB
Isotropy	± 1 dB	
Linearity @ 60 Hz	± 0.2 dB (1 V/m to 100 kV/m)	± 0.2 dB (200 nT to 10 mT)
SPAN	100 Hz, 200 Hz, 500 Hz, 1 kHz, 2 kHz, 10 kHz, 100 kHz	
Starting Frequency	1.2 % of the SPAN	
Stop Frequency	Equal to the SPAN	
E-Field Rejection	—	> 20 dB
H-Field Rejection	> 20 dB	—
FFT	Real Time FFT Analysis	
Internal Data Logger	1 measurement every 30 or 60 seconds	
Internal memory	1440 data with 1 minute storing, 2880 data with 30 second storing. The data can only be transferred to a PC	
GENERAL SPECIFICATIONS		
Calibration	Internal EEPROM	
Temperature Error (referred to 23°C)	± 0.05 dB/°C between -10 and +23°C @ 40% RH ± 0.01 dB/°C between +23 and +50°C @ 40% RH	
Humidity Error (referred to 40%)	± 0.05 dB between 20% and 50% @ +23°C ± 0.05 dB between 50% and 80% @ +23°C	
Internal Battery	Rechargeable NiMH batteries (5 x 1.2 V)	
Operating Time	> 10 hours in normal mode > 150 hours in low power mode 24 hours with internal data logger (SPAN > 200 Hz) in stand alone mode	
Recharging Time	< 4 hours	
External DC supply	10 / 15 V, 200 mA	
Optical Fiber Link and operating Distance	Up to 80 meters	
Firmware Update	Via USB port	
Operational and Storage Temperature	-10°C / 50°C – Storage -20°C / 70°C	
Size and Weight	92 x 92 x 109 mm – 25 g	
Tripod Support	Threaded insert π	
ORDERING INFORMATION		
Part Number	EHP-50C	
Accessories Supplied	0.5m Tripod, Optical Shorting Loop, EHP Software, Operating Manual and Calibration Certificate	