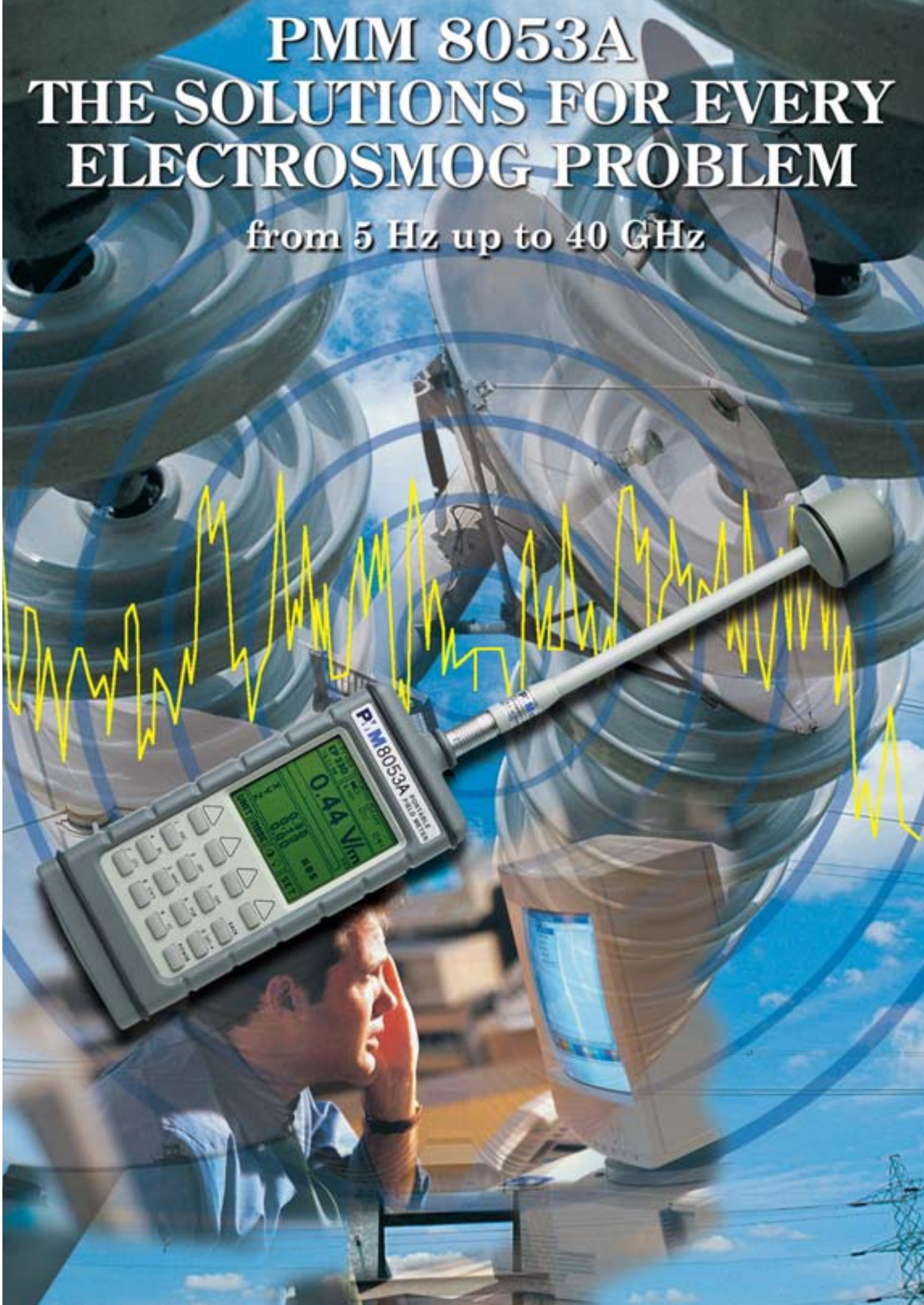


PMM 8053A

THE SOLUTIONS FOR EVERY ELECTROSMOG PROBLEM

from 5 Hz up to 40 GHz



PMM 8053A: THE ANSWER FOR ALL ENVIRONMENTAL

WHAT IS IT ?

Elettrosmog is a popular term used to describe any phenomena or problem associated with artificially generated electric and magnetic pollution. Any electric or electronic device may cause an environmental risk.

All motors, electronic workstations, AM or FM broadcasting transmitters, ovens, production machinery, TV or cellular stations and even an electrical wiring can generate potentially dangerous electric or magnetic fields.

RISK CONSIDERATION

Anybody, as an employee or population, could be exposed to fields high enough to be a danger to health. Several studies confirm the risk of being radiated by high magnetic or electric fields, many papers have been written and doctors confirm their findings.

In fact, IEC, ICNIRP, WHO, CENELEC and individual national agencies are now taking such problems into account, implementing new standards to protect workers and citizens world-wide.

PMM EXPERIENCE

PMM, with almost 10 years of experience in this field, is active in several committees related to EM pollution. Thousands of PMM field sensors have been installed everywhere world-wide, measuring any kind of fields from 10 Hz to 40 GHz.

RAILWAYS

All trains, metros and similar means of transport use high power devices and a lot of regulating electronic circuitry. Eventually, high electrical and magnetic fields are generated inside the passenger compartments, in the locomotive and along the railways when the train passes.

The PMM 8053A offers a simple and portable measurement system to collect data and enter associated report text, to describe the location where the data has been gathered. Back in the office, the information can be easily downloaded into any PC to produce a nice and complete test report. Thanks to the Spectrum analysis capability offered by EHP-50A sensor, you can discriminate the 16,66 Hz of the train or 50/60 Hz generated by the mains power line.

WHILE TRAVELLING

While driving along the roads it is possible to pass under power distribution lines, close to broadcasting towers or through tunnels where RF repeaters operate. All these sources can generate very high electromagnetic fields at levels which could be unsafe for the body or potentially interfering with the on board electronic.

POWER DISTRIBUTION



All high voltage power distribution systems have the potential to produce hazardous electric and magnetic fields. With the unique PMM 8053A electric sensor the measure of these fields - doesn't matter if they are very low or very high - becomes easy, fast and precise.

IN THE FACTORY



Many types of production (industrial ovens, RF dryers, so equipment, induction furnaces, etc.) frequency to operate. All these are potential sources of electric or magnetic fields that could be dangerous for health. High fields must be monitored whenever possible, reduced and controlled to provide a working environment.



MENTAL ELECTROMAGNETIC MEASUREMENTS

PMM SOLUTION

The PMM 8053A is the perfect solution for monitoring electric and magnetic fields everywhere: outdoors, at the workplace or at home.

BROADCAST AND TELECOM TRANSMITTERS



Nowadays, public and private broadcasting

and telecom stations cover virtually every single piece of land over all territories. Unless they are protected, all these transmitting stations

can be a potential danger for those leaving nearby or who are involved with their service and maintenance. Thanks to its light weight and acoustic alarm feature the PMM 8053A can be used to monitor these electromagnetic fields against exceeding safety thresholds.



POWER LINE MAGNETIC FIELDS

Whenever a current flows, a magnetic field is generated. For

instance, electric appliances, tools, machineries and power line transformers produce magnetic fields at power line frequency (50 or 60 Hz). With the unique PMM 8053A magnetic sensor the measure of these fields - doesn't matter if they are very low or very high - becomes easy, fast and precise.

PMM GLOBAL PARTNER

ISO 9001 certification and SIT calibrations offer a reliable, easy to use and accurate instruments.

equipment
oldering
) use RF
ntial sour-
be quite
d and,
de a safe

CELLULAR PHONES



Communications using cellular phones is becoming more and more popular. The ability to be reached everywhere at any time is highly convenient but not without some risks.

Measurements are quick and easy with the new PMM 8053A.

HOSPITALS



Hospitals and surgeries are a very delicate environment for our care and health and need to be carefully protected. The latest electronic medical devices are highly sensitive to electromagnetic fields and patients need to be defended against any accidental electromagnetic risk. The PMM 8053A provides a continuous monitoring system and alarm for your peace of mind.

PMM 8053A - POWERFUL,

PMM is an official certified calibration lab (SIT 08) within the Italian Calibration Scheme (SIT)

The PMM laboratory, traceable to Italian Metrological Institute, features high performance equipment to deliver test certificates with the highest confidence in the results of the calibrations.

The use of automatic calibration procedures allows PMM to calibrate the field sensors in a minimum time, giving precise and low calibration cost with a fast turnaround time.

The PMM 8053A is a state of the art instrument. Thanks to its powerful microprocessor and large graphic display

it achieves high performances combined with small dimensions and simplicity of use.

The internal architecture uses three high density circuit boards which are easy to replace and repair. The internal firmware is loaded through a PC and can be easily updated by downloading the newest release via Internet from the PMM WebSite.



Convenient alphanumeric keyboard

Tripod connection

Battery charger input.
Any DC from 10 to 15 VDC

Fiber optic input/output for additional sensor probes

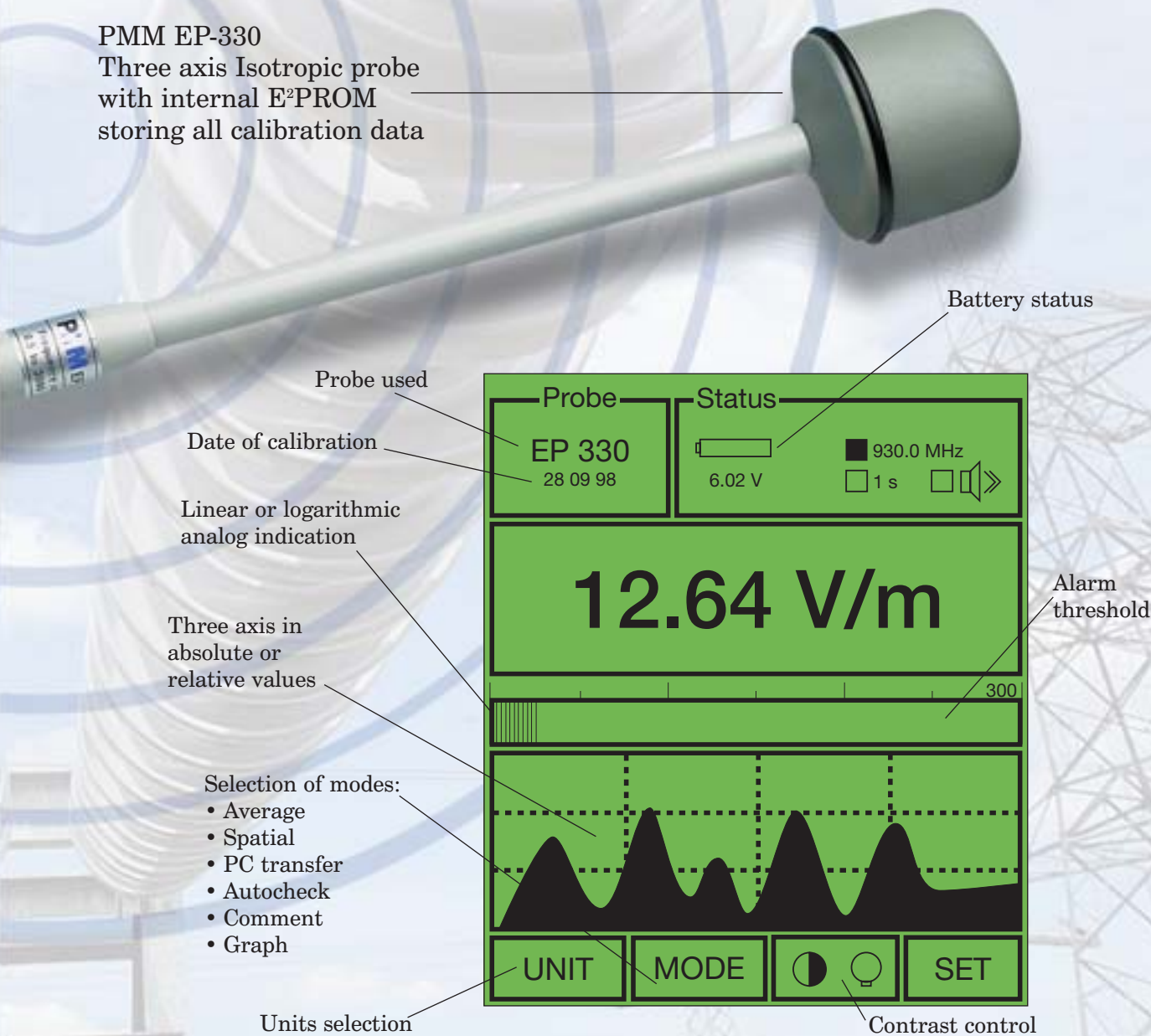
Two RS232 interfaces
(wire and optical)



LIGHT AND EASY TO USE

PMM 8053A MAIN FEATURES	BENEFITS
• Three axis probes	• Precise measurements
• Automatic antenna diodes checking	• High confidence of correct operation
• Internal Calibration data	• Greatest accuracy
• Low frequency filters	• Highly reliable measurements
• Large graphic LCD display (7x7 cm)	• Plenty of data available simultaneously
• Dynamic range > 140 dB	• High resolution
• Arithmetic, Quadratic and Spatial averaging (30s, 1, 2, 3, 6, 10, 12, 30 min. etc.)	• Field data can be evaluated by different types of user for different applications
• Analog indication (lin & log scale)	• Accurate perception of fluctuating field levels
• Alphanumeric keyboard	• Entering of information about data and location report
• Fiber optic output	• Operations interference free and with higher user safety
• Acoustic and display blinking alarm	• Personal safety operation
• Labelled and partitioned internal memory (32.700 readings)	• Easy to save different data with comments and setups according to location where data are gathered
• Acquisition software	• Easy way to manipulate data and generate reports
• Battery status	• Minimum troubles with battery
• Optical repeater	• Long data acquisition
• Programmable auto-off	• Battery saving
• Two years warranty Two years recalibration cycle	• Low maintenance cost

PMM EP-330
Three axis Isotropic probe
with internal E²PROM
storing all calibration data

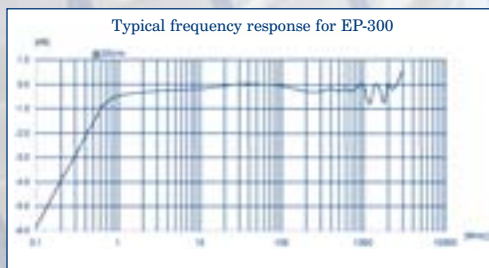
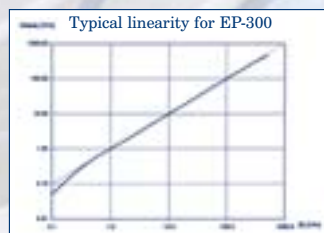
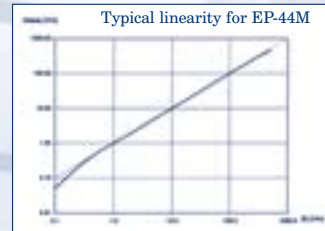
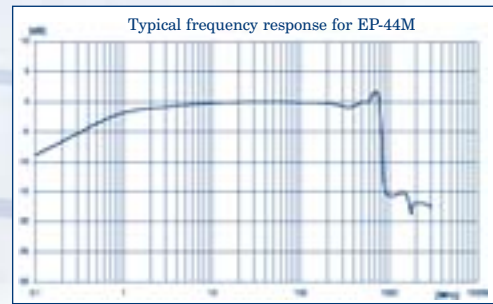




PMM EP-44M ELECTRIC FIELD PROBE

Technical specifications

Frequency range	100 kHz - 800 MHz
Level range	0,25 - 250 V/m
Overload	> 500 V/m
Dynamic range	> 60 dB
Resolution	0,01 V/m
Sensitivity	0,25 V/m
Absolute error @ 50 MHz and 6 V/m	$\pm 0,8$ dB
Flatness (10 MHz - 200 MHz)	$\pm 1,5$ dB (Typical $\pm 0,8$ dB)
(200 MHz - 800 MHz)	$\pm 2,0$ dB (Typical $\pm 1,5$ dB)
Isotropy	$\pm 0,8$ dB (Typical $\pm 0,5$ dB @ 740 MHz)
Out band attenuation respect to 50 MHz - 900 MHz - 3 GHz	> 12 dB (Typical > 15 dB)
Temperature error	0,02 dB/°C
H-field rejection	> 20 dB
Calibration	internal into E ² PROM
Size	317 mm length, 58 mm \varnothing
Weight	100 g



PMM EP-300 ELECTRIC FIELD PROBE

Technical specifications

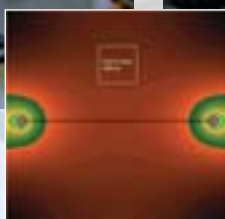
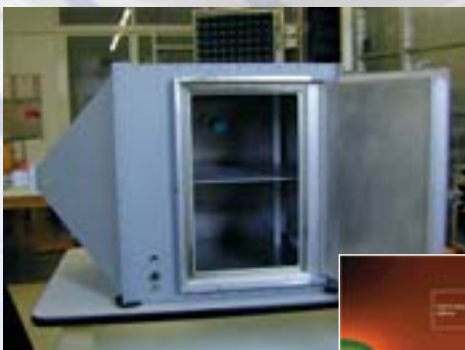
Frequency range	100 kHz - 3 GHz
Level range	0,1 - 300 V/m
Overload	> 600 V/m
Dynamic range	> 66 dB (Typical > 70 dB)
Resolution	0,01 V/m
Sensitivity	0,15 V/m (Typical > 0,1 V/m)
Absolute error @ 50 MHz	$\pm 0,8$ dB
Flatness (10 - 300 MHz)	$\pm 0,5$ dB
(3 MHz - 3 GHz)	$\pm 1,5$ dB
Isotropy	$\pm 0,8$ dB (Typical $\pm 0,5$ dB @ 930 and 1800 MHz)
H-field rejection	> 20 dB
Temperature error	20°C ÷ 60°C = $\pm 0,1$ dB 0°C ÷ 20°C = -0,05 dB/°C -20°C ÷ 0°C = -0,15 dB/°C
Calibration	internal into E ² PROM
Size	317 mm length, 58 mm \varnothing
Weight	100 g



ACCREDITED CALIBRATION CENTER SIT 08

Calibration of field strength sensors

In the frequency range 5 Hz to 400 MHz four Transverse Electromagnetic (TEM) cells are used to produce calculable electric and magnetic field strengths. In the frequency range 400 MHz to 40 GHz measurements are carried out inside an anechoic chamber



(5,5 m x 4 m x 3,5 m). The electromagnetic field is obtained by using synthesised signal generators opportunely amplified. The output signal is transferred into adequate aperture antennas ("Open Ended Guide" and "Pyramidal Standard Gain Horn").

PMM OR-03 PROGRAMMABLE OPTICAL REPEATER

The PMM OR-03 is a programmable optical repeater which enables the connection of every 8053A probe (electric and magnetic fields) to the user's Personal Computer via an optical fiber cable.

The OR-03 is an easy programmable device mainly designed for EMC applications together with the SW-03 or WIN-OR-03 software or with a software developed directly by the user.

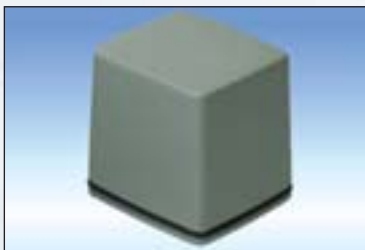
Technical specifications

Output	connector for optic fiber (maximum length of optic fiber, 80 m)
Input	Fischer connector for PMM probes
Data output	X, Y, Z axis and total field; probe model and calibration date; frequency correction value; battery voltage and filter used
Compatibility	with all PMM 8053A probes, SB-04 and SB-10
Programmability	all functions are programmable
Internal battery	rechargeable NiMH batteries (5 x 1,2 V)
Operating time	> 48 - 72 hours (depends on the filter selected) 10 Hz filter > 72 hours 20 Hz filter > 61 hours 40 Hz filter > 53 hours 80 Hz filter > 48 hours
Recharging time	< 4 hours
External power supply	DC, 10 - 15 V, I = around 300 mA
Self testing	automatic function checks during switch-on; automatic con- nection check of the instrument; automatic check of each individual sensor diode

Operating temperature	from -10 to +40°C
Storing temperature	from -20 to +70°C
Dimensions	130 mm x 55 mm ø
Weight	270 g

Standard accessories included

Battery charger	8053-BC
Plug international adapter	
Optical converter RS232	8053-OC
Optical fiber cable (10 m)	FO-8053/10
Conical Tripod support	
Software diskette	WINOR03



PMM 8053-GPS AUTOMATIC GLOBAL POSITIONING SYSTEM

PMM 8053-GPS is an Optional Accessory for the PMM 8053A system or SB-04 that enables the co-ordinates of the positions where measurements are taken to be shown on the display of the PMM 8053A meter or acquired by SB-04 into the PC.

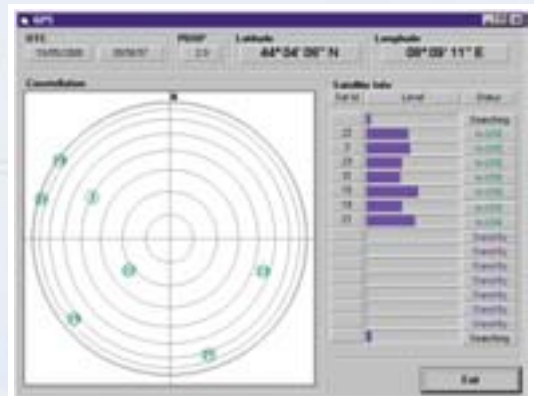
It is especially useful in mapping a field over an area as the user can accurately assign the position of each measurement taken. When the system is mobile, at a speed exceeding 3 km an hour, the speed of movement and the direction in degrees (compass function) are also available. PMM 8053-GPS can be used with the PMM SW02 Data Acquisition Software and with the SB-04 Switching Control Box, in which case the program displays further accessory data relating to the satellites of the GPS system, useful for verifying the location of antennas.

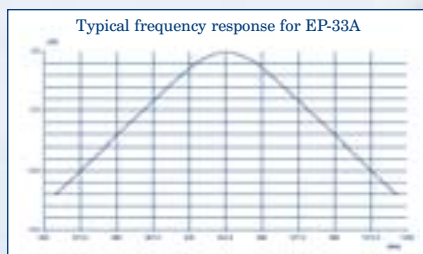
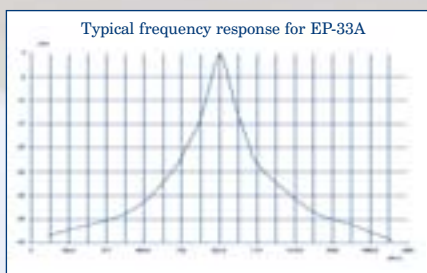
PMM 8053-GPS General specifications

Control Software	Internal within the PMM 8053A (from Version 2.08) or the PMM SW02 (from Version 1.40)	
	SA On, PDOP = 2.5	SA Off, PDOP < 2.5
Precision of Horizontal indication	100 m	< 23 m
Precision of Vertical indication	56 m	< 23 m
Precision of Time indication	340 ns	< 340 ns
Simultaneously managed satellites	8 in view	
Resolution	1" time and 0.01" of ° lat/long (corresp. to abt 0.3 m/lat and 0.2 m/lon)	
Internal battery	rechargeable NiMH batteries (5 x 1.2 V)	
Operating time	> 12 hours	
Recharging time	< 4 hours	
External DC supply	DC, 10 - 15 V, I = about 400 mA	
Fiber optic connection	up to 40 meters	
Firmware update	update available through the serial port	
Autocheck	automatically when switched on	
Operational temperature	-10 to +40°C	
Storage temperature	-20 to +70°C	
Size (WxHxD)	100 mm x 100 mm x 115 mm	
Weight	700 g	
Differential GPS	DARC BTA R003 Standard RTCM SC 104 Ver. 2.1	
Geodetic System	WGS-84	

Standard Accessories included

- FO-8053/10 Fiber optic cable (10m)
- 8053-BC Battery charger
- International power supply adapter



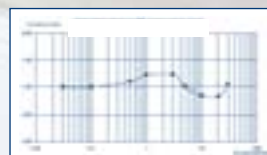


ELECTRIC FIELD PROBE EP-33A

Technical specifications

Frequency range	925 MHz - 960 MHz
Level range	0,03 – 30 V/m
Overload	> 120 V/m
Dynamic range	> 60 dB
Resolution	0,001 V/m
Sensitivity	0,03 V/m
Absolute error @ 942.5 MHz	± 1 dB
2 V/m	+ 0,2 dB / -1,8 dB
Flatness (925 - 960 MHz)	
OFF Band attenuation	
respect to 942.5 MHz:	
860 MHz	> 10 dB
1025 MHz	> 10 dB
Isotropy	± 0,8 dB (Typical ± 0,5 dB)
H-field rejection	> 20 dB
Temperature error	0°C ÷ 60°C = ± 0,2 dB -20°C ÷ 0°C = -0,1 dB/°C
Drift Frequency Vs Temperature	40°C ÷ 60°C = ± 100 kHz -20°C ÷ 40°C = -100 kHz/°C
Calibration	E ² PROM internal
Size	317 mm length
	58 mm ø
Weight	100 g

This test is carried out with a signal currently used in laboratory for maximise the reading error to make a comparison of the performances of the probe with a common base. Actually the radiobase station use eight time slot of each channel so the effective error of the measurement is negligible.

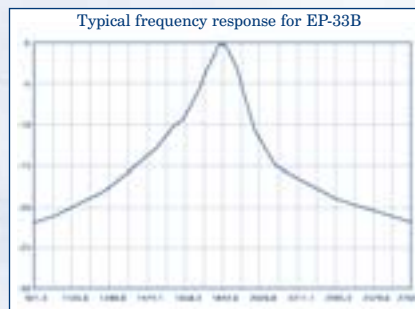


Typical amplitude response for a GSM 1 frequency channel, 1 time slot EP-33A

ELECTRIC FIELD PROBE EP-33B

Technical specifications

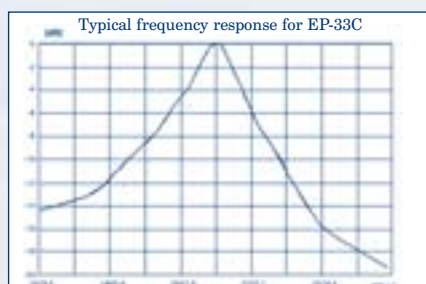
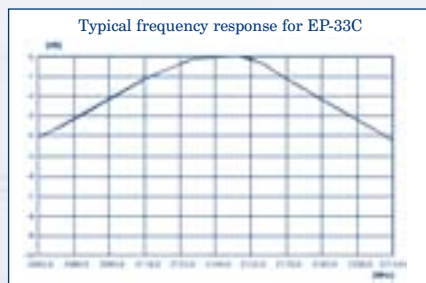
Frequency range	1805 MHz – 1880 MHz
Level range	0,03 – 30 V/m
Overload	> 120 V/m
Dynamic range	> 60 dB
Resolution	0,001 V/m
Sensitivity	0,03 V/m
Absolute error @ 1842,5 MHz	± 1 dB
2 V/m	+ 0,2 dB / -1,8 dB
Flatness (1805 - 1880 MHz)	
OFF Band attenuation respect to 1842.5 MHz:	
1580 MHz	> 10 dB
2010 MHz	> 10 dB
Isotropy	± 0,8 dB (Typical ± 0,5 dB)
H-field rejection	> 20 dB
Temperature error	0°C ÷ 60°C = ± 0,2 dB -20°C ÷ 0°C = -0,1 dB/°C
Drift Frequency Vs Temperature	40°C ÷ 60°C = ± 100 kHz -20°C ÷ 40°C = -100 kHz/°C
Calibration	E ² PROM internal
Size	317 mm length, 58 mm ø
Weight	100 g



ELECTRIC FIELD PROBE EP-33C

Technical specifications

Frequency range	2110 MHz – 2170 MHz
Level range	0,03 – 30 V/m
Overload	> 120 V/m
Dynamic range	> 60 dB
Resolution	0,001 V/m
Sensitivity	0,03 V/m
Absolute error @ 2140 MHz	± 1 dB
2 V/m	+ 0,2 dB / -1,8 dB
Flatness (2110 - 2170 MHz)	
OFF Band attenuation	
respect to 2140 MHz:	
1880 MHz	> 10 dB
2320 MHz	> 10 dB
Isotropy	± 0,8 dB (Typical ± 0,5 dB)
H-field rejection	> 20 dB
Temperature error	0°C ÷ 60°C = ± 0,2 dB -20°C ÷ 0°C = -0,1 dB/°C
Drift Frequency Vs Temperature	40°C ÷ 60°C = ± 100 kHz -20°C ÷ 40°C = -100 kHz/°C
Calibration	E ² PROM internal
Size	317 mm length, 58 mm ø
Weight	100 g



PMM EP-330 ELECTRIC FIELD PROBE

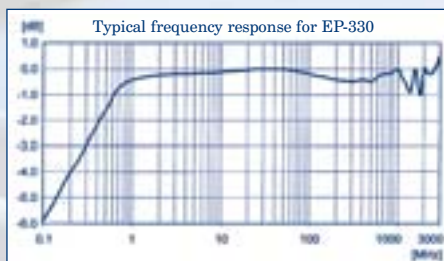
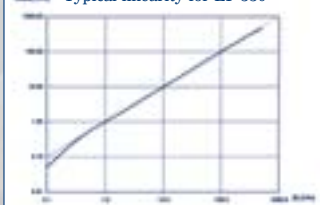
Technical specifications

Frequency range	100 kHz - 3 GHz
Level range	0,3 - 300 V/m
Overload	> 600 V/m
Dynamic range	> 60 dB
Resolution	0,01 V/m
Sensitivity	0,3 V/m
Absolute error @ 50 MHz and 20 V/m	± 0,8 dB
Flatness (10 to 300 MHz)	± 0,5 dB
Flatness (3 MHz to 3 GHz)	± 1,5 dB
Isotropy	± 0,8 dB (Typical ± 0,5 dB)
H-field rejection	> 20 dB
Temperature error	20°C ÷ 60°C = ± 0,1 dB 0°C ÷ 20°C = -0,05 dB/°C -20°C ÷ 0°C = -0,15 dB/°C
Calibration	internal into E ² PROM
Size	317 mm length, 58 mm ø
Weight	100 g

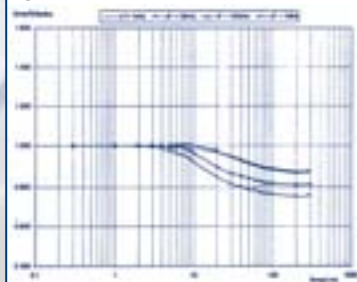
Typical isotropic response for EP-330



Typical linearity for EP-330



EP-330-Typical amplitude response for two CW signal of same level

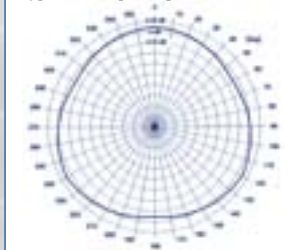


PMM HP-102 MAGNETIC FIELD PROBE

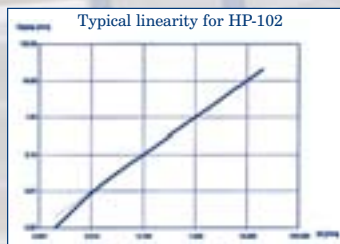
Technical specifications

Frequency range	30 - 1000 MHz
Level range	0,01 - 20 A/m
Overload	> 40 A/m
Dynamic range	> 60 dB
Resolution	1 mA/m
Sensitivity	0,01 A/m
Absolute error @ 50 MHz and 2 A/m	± 1 dB
Flatness (50 - 900 MHz)	± 1 dB
Isotropy	± 0,8 dB (Typical ± 0,5 dB @ 930 MHz)
E-field rejection	> 20 dB
Calibration	internal into E ² PROM
Temperature error	0,05 dB/°C
Size	317 mm length, 58 mm ø
Weight	110 g

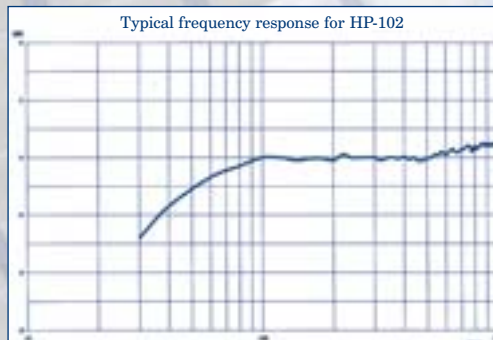
Typical isotropic response for HP-102



Typical linearity for HP-102



Typical frequency response for HP-102

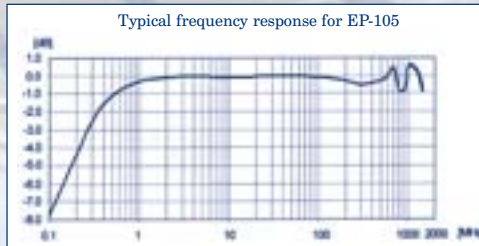


PMM EP-105 ELECTRIC FIELD PROBE

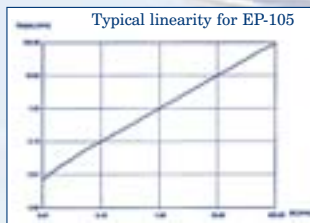
Technical specifications

Frequency range	100 kHz - 1000 MHz
Level range	0,05 - 50 V/m
Overload	> 100 V/m
Dynamic range	> 60 dB
Resolution	0,01 V/m
Sensitivity	0,05 V/m
Absolute error @ 50 MHz and 6 V/m	± 0,8 dB
Flatness (10 - 300 MHz)	± 0,5 dB
Flatness (300 kHz - 1 GHz)	± 1 dB
Isotropy	± 0,8 dB (Typical ± 0,5 dB @ 930 MHz)
H-field rejection	> 20 dB
Calibration	internal into E ² PROM
Temperature error	0,05 dB/°C
Size	350 mm length, 133 mm ø
Weight	290 g

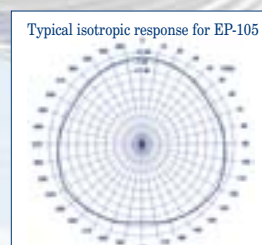
Typical frequency response for EP-105

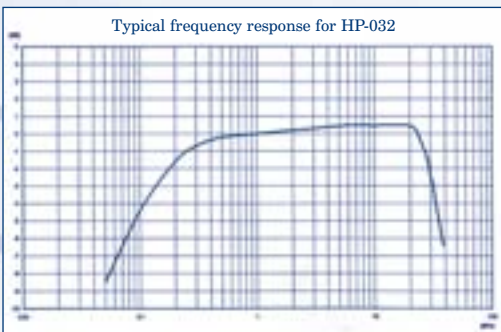


Typical linearity for EP-105



Typical isotropic response for EP-105





PMM HP-032 MAGNETIC FIELD PROBE

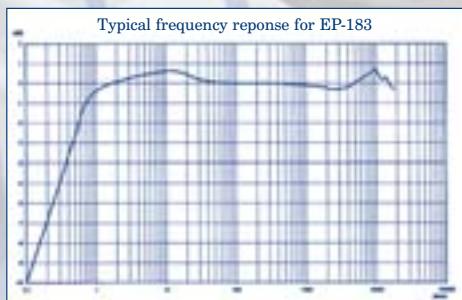
Technical specifications

Frequency range	0,1 - 30 MHz
Level range	0,01 - 20 A/m
Overload	> 40 A/m
Dynamic range	> 60 dB
Resolution	1 mA/m
Sensitivity	0,01 A/m
Absolute error @ 1 MHz and 2 A/m	± 1 dB
Flatness (1 - 25 MHz)	± 1 dB
Isotropy	$\pm 0,8$ dB (Typical $\pm 0,5$ dB @ 1 MHz)
E-field rejection	> 20 dB
Calibration	internal into E ² PROM
Temperature error	0,05 dB/°C
Size	350 mm length, 133 mm ϕ
Weight	400 g

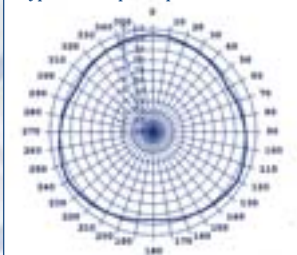
PMM EP-183 MICROWAVE ELECTRIC PROBE

Technical specifications

Frequency range	1 MHz - 18 GHz
Level range	0,8 - 800 V/m
Overload	> 1200 V/m
Dynamic range	60 dB
Resolution	0,01 V/m
Sensitivity	0,8 V/m
Absolute error @ 200 MHz and 6 V/m	$\pm 0,8$ dB
Flatness (1 MHz - 1 GHz)	$\pm 1,5$ dB
(1 GHz - 3 GHz)	$\pm 2,0$ dB
(3 GHz - 18 GHz)	$\pm 2,5$ dB
Isotropy at 200 MHz	$\pm 0,8$ dB (Typical $\pm 0,5$ dB @ 930 and 1800 MHz)
Temperature error	0,02 dB/°C
H-field rejection	> 20 dB
Calibration	internal into E ² PROM
Size	317 mm length, 50 mm ϕ
Weight	90 g

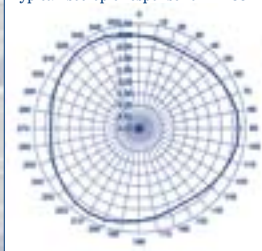


Typical isotropic response for EP-183

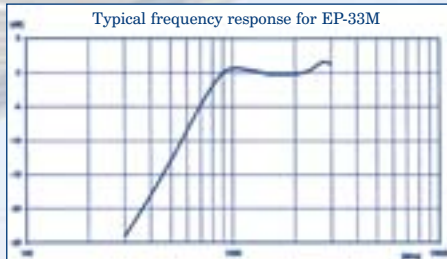


All probes can be mounted directly to PMM 8053A or via fiber optic using the optical repeater OR-03

Typical isotropic response for EP-33M



Typical frequency response for EP-33M

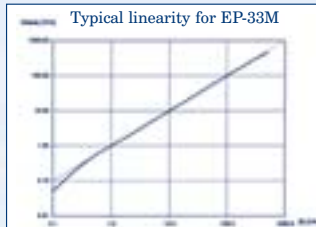


PMM EP-33M ELECTRIC FIELD PROBE

Technical specifications

Frequency range	700 MHz - 3 GHz
Level range	0,3 - 300 V/m
Overload	> 600 V/m
Dynamic range	> 60 dB
Resolution	0,01 V/m
Sensitivity	0,3 V/m
Absolute error @ 930 MHz and 20 V/m	± 1 dB
Flatness (900 MHz - 3 GHz)	$\pm 1,5$ dB
Isotropy @ 930 MHz	$\pm 0,8$ dB (Typical $\pm 0,5$ dB)
Temperature error	0,05 dB/°C
H-field rejection	> 20 dB
Calibration	internal into E ² PROM
Size	317 mm length, 58 mm ϕ
Weight	100 g

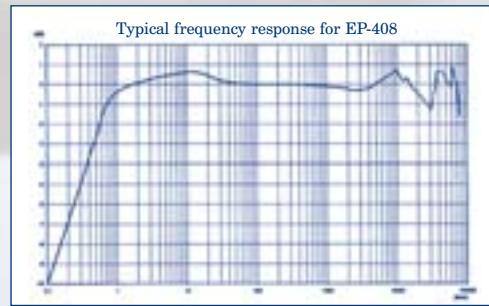
Typical linearity for EP-33M



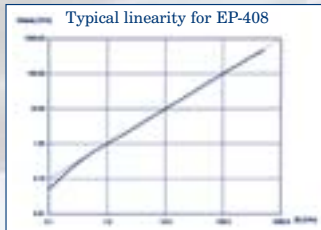
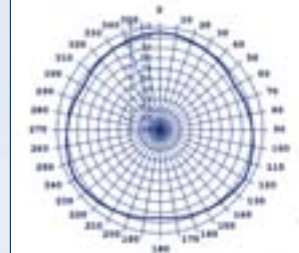
PMM EP-408 ELECTRIC FIELD PROBE

Technical Specifications

Frequency range	1 MHz - 40 GHz
Level range	0,8 - 800 V/m
Overload	> 1000 V/m
Dynamic range	> 60 dB
Resolution	0,01 V/m
Sensitivity	0,8 V/m
Absolute error @ 200 MHz and 6 V/m	± 0,8 dB
Flatness (1 MHz - 1 GHz)	± 1,5 dB
(1 GHz - 3 GHz)	± 2,0 dB
(3 GHz - 18 GHz)	± 2,5 dB
(18 - 26,5 GHz)	± 3 dB
(26,5 - 40 GHz)	± 4 dB
Isotropy @ 200 MHz	± 0,8 dB (Typical ± 0,5 dB)
Temperature error	0,02 dB/°C
H-field rejection	> 20 dB
Calibration	internal into E ² PROM
Size	317 mm length, 52 mm ø
Weight	90 g



Typical isotropic response for EP-408

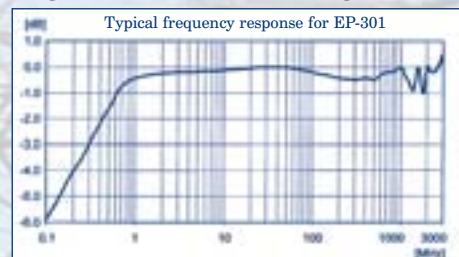
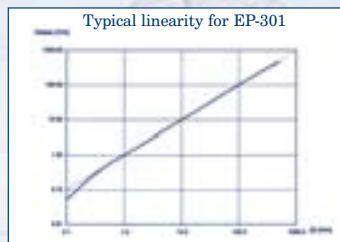


PMM EP-301 ELECTRIC FIELD PROBE

Technical Specifications

Frequency range	100 kHz - 3 GHz
Level range	1 - 1000 V/m
Overload	> 1200 V/m
Dynamic range	> 60 dB
Resolution	0,1 V/m
Sensitivity	1 V/m
Absolute error @ 50 MHz and 20 V/m	± 0,8 dB
Flatness (10 - 300 MHz)	± 0,5 dB
Flatness (3 MHz - 3 GHz)	± 1,5 dB
Isotropy @ 930 - 1800 MHz	± 0,8 dB (Typical ± 0,5 dB)
Temperature error	0,05 dB/°C
H-field rejection	> 20 dB
Calibration	internal into E ² PROM
Size	317 mm length, 58 mm ø
Weight	100 g

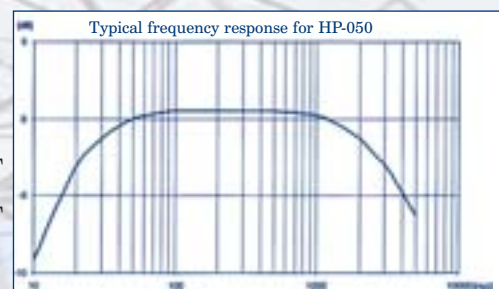
Typical isotropic response for EP-301



PMM HP-050 & HP-051 MAGNETIC FIELD PROBE

Technical specifications

	HP-050	HP-051
Frequency range	10 Hz - 5 kHz	10 Hz - 5 kHz
Level range	10 nT - 40 μT	50 nT - 200 μT
Overload	400 μT	400 μT
Dynamic range	> 72 dB	> 72 dB
Resolution	1 nT	1 nT
Sensitivity	10 nT	50 nT
Absolute error @ 50 Hz 25 °C	± 0,4 dB @ 200 nT	± 0,4 dB @ 3 μT
Flatness (40 Hz - 1 kHz)	± 1 dB	± 1 dB
Isotropy @ 50 Hz	± 0,3 dB @ 200 nT	± 0,3 dB @ 3 μT
Temperature error	0,015 dB/°C	0,015 dB/°C
E-field rejection	> 20 dB	> 20 dB
Calibration	internal into E ² PROM	
Size	350 mm length, 133 mm ø	
Weight	400 g	

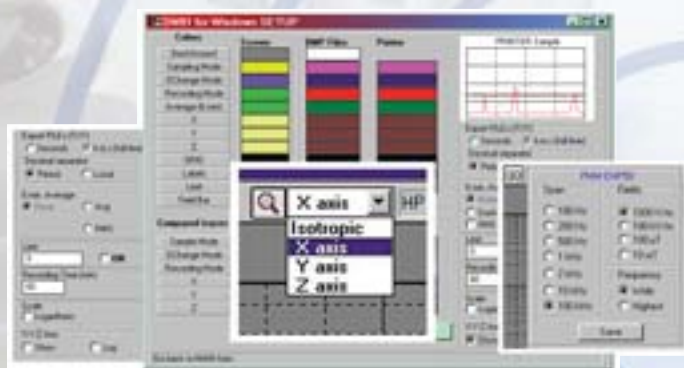


PMM 8053-SW02 - DATA ACQUISITION SOFTWARE

PMM SW02 Software is a computer tool that enhances 8053A performances. By means of a simple interface between the meter and the PC, SW02 software broadens the flexibility of use of 8053A by facilitating the acquisition, storage, and graphic and numeric display of the data collected.

Basic functions

- It acquires the readings taken with PMM 8053A or with SB-04 and records the data at sampling intervals of one second for the time duration defined by the user.
- It permits the readings that have been taken to be saved, at the same time, as both an envelope and as an individual data and, later on, to be retrieved and analysed.
- It permits the data of the measurements stored in the Logger of PMM 8053A to be downloaded and saved in files and be displayed graphically.
- It makes a graphic representation of the envelope of the stored and/or saved readings, permitting moment by moment analysis of values with the aid of a marker.
- It permits the measured values to be compared with the limits imposed by the user.
- It permits the readings in progress to be graphically and numerically displayed in real time.
- The files saved on disk, relating to the measurements taken, are recorded with the date and time of measurement and any other useful reference information added by the user, enabling a measurement database to be created very easily. Furthermore, they lend themselves to additional processing with other external programs or spreadsheets, such as Excel™ etc.
- A simple user interface based on the Windows™ Operating System makes its use intuitive and user-friendly.
- The connection between the field meter and the computer via serial cable (used for the connection with 8053A or SB-04) or via fiber optics (only when using 8053A or OR03), guarantees maximum security and flexibility in link-up in all operating conditions.



E (V/m)	H (A/m)	S (W/m ²)	S (mW/cm ²)
1	0,0027	0,0027	0,00027
2	0,0053	0,0106	0,00106
5	0,0133	0,0663	0,00663
6	0,0159	0,0955	0,00955
10	0,0265	0,2653	0,02653
20	0,0531	1,0610	0,10610
30	0,0796	2,3873	0,23873
50	0,1326	6,6313	0,66313
100	0,2653	26,5252	2,65252
200	0,5305	106,1008	10,61008
300	0,7958	238,7268	23,87268
500	1,3263	663,1300	66,31300
1000	2,6525	2652,5199	265,25199

Conversion Tables

Depending on the norm or standard adopted, there is the need to frequently change from using one measuring unit to another. PMM 8053 can automatically perform the conversion. The following table offers a convenient way to calculate equivalent values in far-field conditions.

The relationships are:

$$H \text{ (A/m)} = E \text{ (V/m)} / 377$$

$$S \text{ (W/m}^2\text{)} = E \text{ (V/m)} \times H \text{ (A/m)}$$

PMM SB-04 - SWITCHING CONTROL BOX

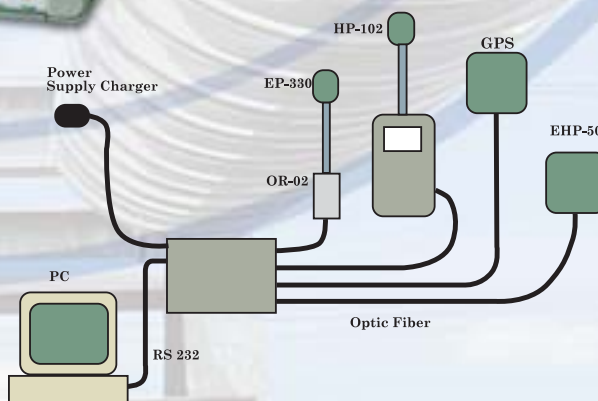
Technical Specifications

Compatibility	With all 8053A sensors via OR-02/OR-03 optical repeater or directly (when sensor has its own internal optical repeater)
Input Interfaces	4 fiber optical connector RS232 for PC connection and one expansion connection
Internal battery	Rechargeable NiMH batteries (5x1,2 V)
Operating time	> 10 hours
Recharging time	< 12 hours
External DC supply	DC, 10 - 15 V, I = about 200 mA
Optic Fiber connection	Up to 80 m long
Internal Firmware update	Customer upgrade available via serial connection
Self test	Automatic during switching-on operation
Conformity	To directive 89/336 and 72/23 and amendments
Operating temperature	-10 to +40°C
Storage temperature	-20 to +70°C
Size	25 x 148 x 220 mm
Weight	900 g
Software	included



The PMM SB-04 Switching Control Box is a versatile and expandable accessory to monitor, simultaneously, electric and magnetic fields from 5 Hz up to 40 GHz. Thanks to GPS option, you can also measure the position of your system. Either PMM 8053A or all its field probes equipped with the optical repeater OR-02/03, and EHP-50A/B/C analyzers are supported.

Here you can find some example of SB-04 interconnections:



PMM EHP-50C
ELECTRIC AND MAGNETIC
FIELD ANALYZER FROM 5 Hz UP TO 100 kHz

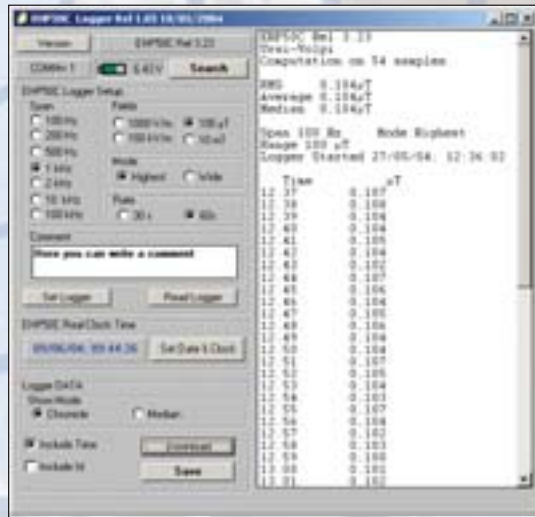
Technical specifications

	Electric field	Magnetic field
Frequency range	5 Hz – 100 kHz	5 Hz – 100 kHz
Level range	0,01 V/m – 100 kV/m	1 nT – 10 mT
Overload	200 kV/m @ 50Hz	20 mT @ 50Hz
Resolution	0,001 V/m (on 8053 display)	1 nT (on 8053 display 8053 or EHP-50C internal data logger)
Resolution	0,1 V/m (with 8053 data logger)	10 nT (with 8053 data logger)
Sensitivity	0,01 V/m	1 nT
Absolute error	± 0,5 dB (@ 50 Hz and 1 kV/m)	± 0,5 dB (@ 50 Hz and 0,1 mT)
Linearity @ 50 Hz	± 0,2 dB (1 V/m - 100 kV/m)	± 0,2 dB (200 nT - 10 mT)
Magnetic field rejection	> 20 dB	
Electric field rejection		>20 dB

General specifications

Internal memory (with span higher than 200 Hz)	1440 data with 1 minute storing; 2880 data with 30 sec storing; the data can be transferred only to PC 1 measurement every 30 or 60 seconds
Internal data logger	> 140 dB
Dynamic	FFT Spectral analysis
FFT Spectral analysis	1,2% of the SPAN
Start frequency	same of the SPAN
Stop frequency	100, 200, 500 Hz;
SPAN	1 2 10 100 kHz
Flatness (40 Hz - 10 kHz)	± 0,5 dB
Isotropy	± 1 dB
Calibration	Internal on E ² PROM
Temperature error	0,05 dB/°C
Size	96 x 96 x 115 mm
Weight	about 525 g
Internal battery	rechargeable NiMH (5 x 1,2V)
Maximum connection distance via fiber optic	80 m
Operating temperature	-10 / +40 °C

New



PMM EHP-50C offers a powerful and low cost solution to continuous monitoring of the electric and magnetic fields.

The EHP-50C analyzer has 3 modes of operations:

- Stand alone mode without any external apparatus connection
- Connected to 8053A via fiber optic
- Connected to a Pocket PC via fiber optic

Once the measurement parameters have been programmed thru a PC, the EHP-50C analyzer can start its acquisition by storing the data over 24 hours in stand alone mode. It is necessary to set it over the TR-02A tripod and to activate the start. After 24 hours it will automatically stop

and later it would be possible to download all data to the PC. From PC it is possible to select if to measure the electric or magnetic field, to select the full scale, the Highest or Wideband mode, the SPAN wished and the sampling intervals 1 per minute or 1 per 30 seconds.

Some typical applications are:

- Magnetic fields near high, medium and low voltage transformers
- Measurements in proximity of power line towers
- Safety measurement at worker's site
- Measurements close to machinery, air conditioning systems, home appliances, etc.
- Development of new products

EHP-50C analyzer connected to 8053A has two modes for storing data. The normal mode will store the highest value included between the sampling interval; in Low Power (Def LP) mode EHP-50C will store the instantaneous value during the turn on process.

SPAN	Typical operation time in Normal mode (hours)	Time that EHP-50C is ON (sec.)	Battery operation time in Low Power mode with Data logger set at 60 sec (hours)	Battery operation time in Low Power mode with Data logger set at 300 sec (hours)
100 Hz	>11	25	>24	>72
200 Hz	>11	15	>36	>110
500 Hz	>10	8	>48	>130
1 kHz	>10	5	>72	>150
2 kHz	>9	5	>65	>150
10 kHz	>6	5	>60	>130
100 kHz	>9	4.5	>72	>150

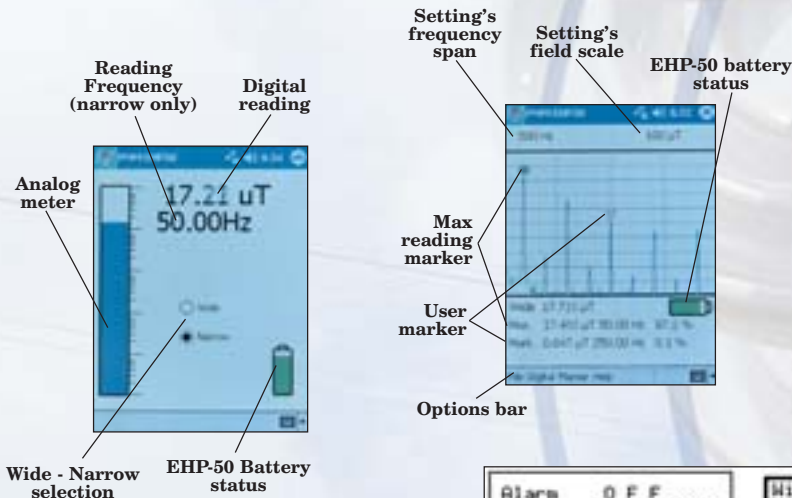
EHP-50C with Pocket PC

It is possible to connect the EHP-50C to HP iPAQ Pocket PC h 2210 via fiber optic, by using the provided software supplied on SD memory card. With this configuration is only possible to perform punctual measurements and get the spectrum analysis. The field shown is either in digital or analog form with indication of the battery status. The real time spectrum analysis offers the capability to see and to measure all 50/60 Hz harmonics together with the frequency and related field levels included inside the selected SPAN. The spectrum can be stored in TXT format and later on printed, manipulated or transferred to a PC.



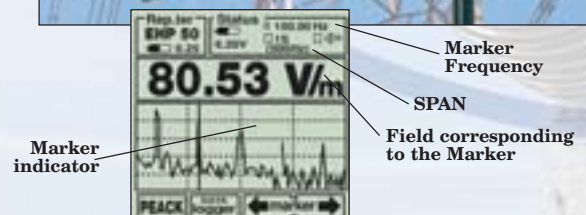
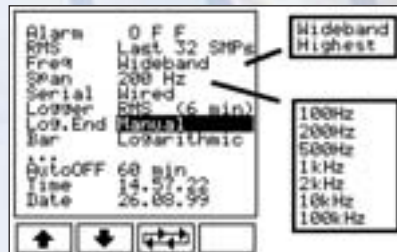
Features

- **Save:** to save the spectrum in TXT format (table of all frequencies and levels)
- **Probe Settings:** to configure the EHP-50C to measure electric or magnetic fields and to define the SPAN
- **Options:** to select the serial port
- **Exit:** to exit the program
- **The Marker function:** allows to perform peak or differential measurements (Delta)
 - **Delta peak:** with the pen of the Pocket PC it is possible to position a second Marker in every position of the spectrum to perform differential measurements
 - **With the Pocket PC:** it is not possible to get the data logger function (field versus time)



EHP-50C with 8053A

The system composed by 8053A+EHP-50C offers many additional features to perform different kind of acquisition and data logging until several days of continuous monitoring. From the 8053A Setup menu is possible to choose several kind of data acquisition modes by using all 8053A features (data logger of 8053A). On 8053A display it is possible to show the spectrums and save them inside its memory (up to 64 spectrums). By using the Marker it is possible to measure an individual frequency component, and in data logger mode is possible to store only the selected frequency over the time domain with a sample rate definable by the user.



New

Accessories supplied with EHP-50C

- Battery charger
- Fiber optic: 10m
- Optical to serial converter 8053-OC
- Optical short loop
- Mini Tripod
- Software to be installed on PC
- Calibration Certificate
- User manual

Optional Accessories

EHP-50PALM kit is composed by:

- RS232 cable with adapter for HP iPAQ Pocket PC h 2210
- Optical to serial converter 8053-OC
- 32 Mb SD memory with installed PMM software
- User manual

OPTIONAL ACCESSORIES

A wide range of accessories is available to help the user to perform accurate and reliable measurement.



PMM SB-10 SWITCHING CONTROL BOX

The PMM SB-10 Switch Control Box is a versatile and expandable accessory for the PMM electric and magnetic fields and electrosmog measurement devices family. Either the PMM 8053A Portable Field Strength Meter and the OR-03 Optical Repeater with all their field probes are supported.

The EHP50/A/B/C are not supported.

One PMM SB-10 allows taking field measurement with up to 10 measuring devices connected at the same time, either placed in different measuring points and/or working on different frequencies and full scale ranges. It is possible to have a chain composed by up to five SB-10 to connect up to 50 remote devices.

One PMM SB-10 allows to connect up to ten devices via optical fiber to the Personal Computer by a single RS232 interface connection.

▶ The standard accessories included with PMM SB-10 are:

- External DC supply (DC 12 V, 1,25 A)
- USB cable, type A-B (1.8 m long);
- RS232 serial cable (2 m long);
- SB-10 to SB-10 Expansion cable (20 cm long);
- Optic protection caps (20 pcs)
- Operating Manual;
- Certificate of Compliance;
- Return for Repair Form.



TT-01 TELESCOPIC SUPPORT

Fiberglass telescopic support for holding sensors or optical repeater expandable from 1,15 to 4 m.

Size: 1,15 m (closed)

Weight: 0,6 kg



8053-CC RIGID CARRYING CASE

This alluminium case has been designed to carry 8053A with few probes and accessories.

Size: 500 x 400 x 170 mm



TR-02A TRIPOD

Wooden tripod with swivel and soft carrying case

Height adjustable from

1 to 2 m.

Thread: 1/4" x 20

Size: 1 m (closed)

Weight: 3 kg



8053-CAL CALIBRATOR

This device, powered by 8053A, is useful to test the functionality of 8053A's X, Y, Z input.

Readout on 8053A: 57,7 V/m

Accuracy: $\pm 2\%$



FO-8053 FIBER OPTIC

To increase the quality of the measurement and to avoid the influence of the operator, it is possible to connect the sensor to the PMM 8053A via a fiber optic using the dedicated optical repeater OR-03.

The same fiber is used to connect the PMM 8053A to the PC equipped with

optical to serial converter 8053-OC.

Four sizes of fiber optics are available:

FO-8053/10: 10 m - FO-8053/20: 20 m

FO-8053/40: 40 m - FO-8053/80: 80 m



8053-TR REMOTE TRIGGER

This device is used to remote trigger the 8053A.

At each contact closure, 8053A takes and store a reading. It is useful together with the metric wheel to associate a spatial position to a field.



8053-OC RS232 OPTICAL CONVERTER

This device allows to translate the light coming out from the fiber into a RS232 signal for PC.

PMM 8053A

GENERAL PURPOSE FIELD METER

(see specific probes for dedicated specs.)

Frequency Range

Frequency range	5 Hz – 40 GHz
Dynamic range	> 140 dB (depending on sensor)
Operating range	E-Field: 0,03 V/m to 100 kV/m H-Field: 1 nT to 10 mT
Resolution	0,01 to 100 V/m; 0,1 nT to 0,1 mT
Sensitivity	0,1 to 1 V/m; 10 nT to 0,1 mT
Units	V/m, kV/m, μ W/cm ² , mW/cm ² , W/m ² , A/m, nT, μ T, mT

LCD Display Function

Field measured	X, Y, Z in absolute values or % and total are displayed
Time & Date	Internal real time clock
Sensor type	Model and calibration date are shown
Graphic bar	An analog sliding bar (either linear or logarithmic) will show: - real time value with respect to full scale - field versus time with automatic time scaling - alarm threshold

Measuring Function

Measuring time	150 msec with 80 Hz filter 250 msec with 40 Hz filter 450 msec with 20 Hz filter 900 msec with 10 Hz filter
Internal memory	Up to 32.700 measurements (8.100 standard memory, 21.600 extended memory)
Alarm	Variable threshold 0 to 100% full scale. Internal sound and blinking symbol on the display when the level is greater than the alarm threshold
Function	Max., Min., Averaging
Averaging Mode	Arithmetic, quadratic (RMS), manual, rolling average and spatial over
Averaging time	Selectable from 30 sec, 1, 2, 3, 6, 10, 15, 30 min
Data Acquisition (Logger)	Sampling mode (1, 10÷900 sec/sample) Data change mode (\pm 3 dB variation) Over the limit mode Average on 6 min (1 or 6 min resolution) Manual mode Spectrum mode with EHP-50A/B/C

General Specifications

Output	LCD display 72 x 72 mm 128 x 128 pixel, RS232 or fiber optic
Input	Direct through Fischer connector or via fiber optic connector
Internal battery	Rechargeable NiMH batteries (5 x 1,2 V)
Operating time	> 24 hours in normal mode; > 48 hours in save mode (display off)

Recharging time	< 4 hours (15 minutes charge = 1 hour operation)
External DC supply	DC, 10 - 15 V, 500 mA
Software update	Free; via Internet
Interface	RS232 for remote operation calibration and firmware update
Selftest	Automatic during switch-on of all functions. Automatic check of each individual diode
Calibration	Inside the built-in E ² PROM of the sensor
Conformity	To Directive 89/336 and 73/23 and amendments, etc.
Operating temperature	-10 to +40°C
Storage temperature	-20 to +70°C
Tripod support	Threaded insert 1/4"
Dimensions (WxHxD)	108 x 240 x 50 mm
Weight	1,07 kg

Standard Accessories Included with 8053A

8053-SC	Soft carrying case
8053-BC	Battery charger
8053-RS232	Serial cable (1,5 m)
8053-SW01	Downloading software
8053-SW02	Acquisition software
8053-8000	Manual (Italian, English or French)

Optional Accessories

EP-300	Electric field 100 kHz - 3 GHz
EP-330	Electric field 100 kHz - 3 GHz
EP-301	Electric field 100 kHz - 3 GHz
EP-33A	Electric field 925 MHz - 960 MHz
EP-33B	Electric field 1805 MHz - 1880 MHz
EP-33C	Electric field 2110 MHz - 2170 MHz
EP-33M	Electric field 700 MHz - 3 GHz
EP-44M	Electric field 100 kHz - 800 MHz
EP-105	Electric field 100 kHz - 1 GHz
EP-183	Electric field 1 MHz - 18 GHz
EP-408	Electric field 1 MHz - 40 GHz
HP-032	Magnetic field 100 kHz - 30 MHz
HP-102	Magnetic field 30 MHz - 1 GHz
EHP-50C	Electric & Magnetic 5 Hz -100 kHz
HP-050	Magnetic field 10 Hz - 5 kHz
HP-051	Magnetic field 10 Hz - 5 kHz
8053-GPS	GPS module
SB-04	Automatic switching Box
SB-10	Programmable switching Box
8053-RT	Remote trigger
8053-CAL	Calibrator for 8053A
FO-8053/10	Fiber optic cable (10 m)
FO-8053/20	Fiber optic cable (20 m)
FO-8053/40	Fiber optic cable (40 m)
FO-8053/80	Fiber optic cable (80 m)
TR-02A	Tripod
8053-CC	Rigid carrying case
8053-CA	Car adapter
TT-01	Telescopic support
OR-03	Programmable optical repeater
8053-OC	RS232 optical converter



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