PMM 8053A
THE SOLUTIONS FOR EVERY ELECTROSMOG PROBLEM
from 5 Hz up to 40 GHz
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 in to 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.

RALLWAYS

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.

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 in to account, implementing new standards to protect workers and citizens world-wide.
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.

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 living 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.

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 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.

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

Two RS232 interfaces (wire and optical)

Fiber optic input/output for additional sensor probes
LIGHT AND EASY TO USE

PMM 8053A MAIN FEATURES

• Three axis probes
• Automatic antenna diodes checking
• Internal Calibration data
• Low frequency filters
• Large graphic LCD display (7x7 cm)
• Dynamic range >140 dB
• Arithmetic, Quadratic and Spatial averaging (30s, 1, 2, 3, 6, 10, 12, 30 min. etc.)
• Analog indication (lin & log scale)
• Alphanumeric keyboard
• Fiber optic output
• Acoustic and display blinking alarm
• Labelled and partitioned internal memory (32.700 readings)
• Acquisition software
• Battery status
• Optical repeater
• Programmable auto-off
• Two years warranty
  Two years recalibration cycle

BENEFITS

• Precise measurements
• High confidence of correct operation
• Greatest accuracy
• Highly reliable measurements
• Plenty of data available simultaneously
• High resolution
• Field data can be evaluated by different types of user for different applications
• Accurate perception of fluctuating field levels
• Entering of information about data and location report
• Operations interference free and with higher user safety
• Easy to save different data with comments and setups according to location where data are gathered
• Easy way to manipulate data and generate reports
• Minimum troubles with battery
• Long data acquisition
• Battery saving
• Low maintenance cost

PMM EP-330
Three axis Isotropic probe with internal E'PROM 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: ± 0.8 dB
- Flatness (10 MHz - 200 MHz): ± 1.5 dB (Typical ± 0.8 dB)
- (200 MHz - 800 MHz): ± 2.0 dB (Typical ± 1.5 dB)
- Isotropy: ± 0.8 dB (Typical ± 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 °C
- H-field rejection: > 20 dB
- Calibration: internal into EPROM
- Size: 317 mm length, 58 mm ø
- 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 and 6 V/m: ± 0.8 dB
- Flatness (10 MHz - 300 MHz): ± 0.5 dB
- (3 MHz - 3 GHz): ± 1.5 dB
- Isotropy: ± 0.8 dB (Typical ± 0.5 dB @ 930 and 1800 MHz)
- H-field rejection: > 20 dB
- Temperature error: 0.02 °C
- Out band attenuation respect to 50 MHz - 900 MHz - 3 GHz: > 12 dB (Typical > 15 dB)
- H-field rejection: > 20 dB
- Calibration: internal into EPROM
- Size: 317 mm length, 58 mm ø
- 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 opportune 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

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature</td>
<td>from -10 to +40°C</td>
</tr>
<tr>
<td>Storing temperature</td>
<td>from -20 to +70°C</td>
</tr>
<tr>
<td>Dimensions</td>
<td>130 mm x 55 mm ø</td>
</tr>
<tr>
<td>Weight</td>
<td>270 g</td>
</tr>
<tr>
<td>Standard accessories included</td>
<td></td>
</tr>
<tr>
<td>Battery charger</td>
<td>8053-BC</td>
</tr>
<tr>
<td>Plug international adapter</td>
<td>8053-OC</td>
</tr>
<tr>
<td>Optical converter RS232</td>
<td>FO-8053/10</td>
</tr>
<tr>
<td>Optical fiber cable</td>
<td>8053A</td>
</tr>
<tr>
<td>Conical Tripod support</td>
<td>WINOR03</td>
</tr>
<tr>
<td>Software diskette</td>
<td>WINOR03</td>
</tr>
</tbody>
</table>

PMM OR-03-X

Technical specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output connector</td>
<td>optic fiber (maximum length of optic fiber: 80 m)</td>
</tr>
<tr>
<td>Input connector</td>
<td>Fischer connector for PMM probes</td>
</tr>
<tr>
<td>Data output</td>
<td>X, Y, Z axis and total field; probe model and calibration date; frequency correction value; battery voltage and filter used</td>
</tr>
<tr>
<td>Compatibility</td>
<td>with all PMM 8053A probes, SB-04 and SB-10</td>
</tr>
<tr>
<td>Programmability</td>
<td>all functions are programmable</td>
</tr>
<tr>
<td>Internal battery</td>
<td>rechargeable NiMH batteries (5 x 1.2 V)</td>
</tr>
<tr>
<td>Operating time</td>
<td>&gt; 48 - 72 hours (depends on the filter selected)</td>
</tr>
<tr>
<td>10 Hz filter</td>
<td>&gt; 72 hours</td>
</tr>
<tr>
<td>20 Hz filter</td>
<td>&gt; 61 hours</td>
</tr>
<tr>
<td>40 Hz filter</td>
<td>&gt; 53 hours</td>
</tr>
<tr>
<td>80 Hz filter</td>
<td>&gt; 48 hours</td>
</tr>
<tr>
<td>Recharging time</td>
<td>&lt; 4 hours</td>
</tr>
<tr>
<td>External power supply</td>
<td>DC, 10 - 15 V, I = around 300 mA</td>
</tr>
<tr>
<td>Self testing</td>
<td>automatic function checks</td>
</tr>
<tr>
<td></td>
<td>during switch-on; automatic connection check of the instrument; automatic check of each individual sensor diode</td>
</tr>
</tbody>
</table>

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

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

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: 2 V/m ± 1 dB
- Flatness (925 - 960 MHz): + 0,2 dB / -1,8 dB
- OFF Band attenuation respect to 942.5 MHz:
  - 860 MHz: > 10 dB
  - 1025 MHz: > 10 dB
- Isotropy: ± 0,8 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:
  -EPROM internal
- Size: 317 mm length, 58 mm ø
- Weight: 100 g

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**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: 2 V/m ± 1 dB
- Flatness (1805 - 1880 MHz): + 0,2 dB / -1,8 dB
- OFF Band attenuation respect to 1842.5 MHz:
  - 1580 MHz: > 10 dB
  - 2010 MHz: > 10 dB
- Isotropy: ± 0,8 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:
  -EPROM internal
- Size: 317 mm length, 58 mm ø
- Weight: 100 g

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**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: 2 V/m ± 1 dB
- Flatness (2110 - 2170 MHz): + 0,2 dB / -1,8 dB
- 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:
  -EPROM 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
- Isotropicity: ± 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 E2PROM
- Size: 317 mm length, 58 mm ø
- Weight: 100 g

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
- Isotropicity: ± 0,8 dB (Typical ± 0,5 dB @ 930 MHz)
- E-field rejection: > 20 dB
- Calibration: internal into E2PROM
- Temperature error: 0,05 dB/°C
- Size: 317 mm length, 58 mm ø
- Weight: 110 g

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
- Isotropicity: ± 0,8 dB (Typical ± 0,5 dB @ 930 MHz)
- H-field rejection: > 20 dB
- Calibration: internal into E2PROM
- Temperature error: 0,05 dB/°C
- Size: 350 mm length, 133 mm ø
- Weight: 290 g
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
- **Isotropy**:
  - (1 - 25 MHz): ± 0.8 dB (Typical ± 0.5 dB @ 1 MHz)
  - (25 MHz - 100 MHz): ± 0.5 dB
  - (100 MHz - 300 MHz): ± 0.3 dB
- **Temperature error**: 0.05 dB/°C
- **Flatness (1 - 25 MHz)**: ± 1 dB
- **Isotropy**:
  - (25 MHz - 100 MHz): ± 0.8 dB (Typical ± 0.5 dB @ 1 MHz)
  - (100 MHz - 300 MHz): ± 0.5 dB
- **Weight**: 400 g

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

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**: ± 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
- **Isotropy at 200 MHz**: ± 0.8 dB (Typical ± 0.5 dB @ 930 and 1800 MHz)
- **Temperature error**: 0.02 dB/°C
- **H-field rejection**: > 20 dB
- **Calibration**: internal into E'PROM
- **Size**: 317 mm length, 50 mm ø
- **Weight**: 90 g

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): ± 1.5 dB
  - (930 MHz): ± 0.8 dB (Typical ± 0.5 dB)
- **Isotropy @ 930 MHz**: ± 0.8 dB (Typical ± 0.5 dB)
- **Temperature error**: 0.05 dB/°C
- **H-field rejection**: > 20 dB
- **Calibration**: internal into E'PROM
- **Size**: 317 mm length, 58 mm ø
- **Weight**: 100 g

**Typical isotropic and frequency responses** for each probe are shown in the image.
PMM EP-408
ELECTRIC FIELD PROBE

Technical Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>HP-408</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range</td>
<td>1 MHz - 40 GHz</td>
</tr>
<tr>
<td>Level range</td>
<td>0.8 - 800 V/m</td>
</tr>
<tr>
<td>Overload</td>
<td>&gt; 1000 V/m</td>
</tr>
<tr>
<td>Dynamic range</td>
<td>&gt; 60 dB</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.01 V/m</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>0.8 V/m</td>
</tr>
<tr>
<td>Absolute error @ 200 MHz and 8 V/m</td>
<td>± 0.8 dB</td>
</tr>
<tr>
<td>Flatness (1 MHz - 1 GHz)</td>
<td>± 1.5 dB</td>
</tr>
<tr>
<td>(1 GHz - 3 GHz)</td>
<td>± 2.0 dB</td>
</tr>
<tr>
<td>(3 GHz - 18 GHz)</td>
<td>± 2.5 dB</td>
</tr>
<tr>
<td>(18 - 26.5 GHz)</td>
<td>± 3 dB</td>
</tr>
<tr>
<td>(26.5 - 40 GHz)</td>
<td>± 4 dB</td>
</tr>
<tr>
<td>Isotropcity @ 200 MHz</td>
<td>± 0.8 dB (Typical ± 0.5 dB)</td>
</tr>
<tr>
<td>Temperature error</td>
<td>0.02 dB°C</td>
</tr>
<tr>
<td>H-field rejection</td>
<td>&gt; 20 dB</td>
</tr>
<tr>
<td>Calibration</td>
<td>internal into E’PROM</td>
</tr>
<tr>
<td>Size</td>
<td>317 mm length, 52 mm ø</td>
</tr>
<tr>
<td>Weight</td>
<td>90 g</td>
</tr>
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PMM EP-301
ELECTRIC FIELD PROBE

Technical Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>EP-301</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range</td>
<td>100 kHz - 3 GHz</td>
</tr>
<tr>
<td>Level range</td>
<td>1 - 1000 V/m</td>
</tr>
<tr>
<td>Overload</td>
<td>&gt; 1200 V/m</td>
</tr>
<tr>
<td>Dynamic range</td>
<td>&gt; 60 dB</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.1 V/m</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>1 V/m</td>
</tr>
<tr>
<td>Absolute error @ 50 MHz and 20 V/m</td>
<td>± 0.8 dB</td>
</tr>
<tr>
<td>Flatness (10 - 300 MHz)</td>
<td>± 0.5 dB</td>
</tr>
<tr>
<td>Flatness (3 MHz - 3 GHz)</td>
<td>± 1.5 dB</td>
</tr>
<tr>
<td>Isotropcity @ 830 - 1800 MHz</td>
<td>± 0.8 dB (Typical ± 0.5 dB)</td>
</tr>
<tr>
<td>Temperature error</td>
<td>0.05 dB/°C</td>
</tr>
<tr>
<td>H-field rejection</td>
<td>&gt; 20 dB</td>
</tr>
<tr>
<td>Calibration</td>
<td>internal into E’PROM</td>
</tr>
<tr>
<td>Size</td>
<td>317 mm length, 88 mm ø</td>
</tr>
<tr>
<td>Weight</td>
<td>100 g</td>
</tr>
</tbody>
</table>

PMM HP-050 & HP-051
MAGNETIC FIELD PROBE

Technical specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>HP-050</th>
<th>HP-051</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range</td>
<td>10 Hz - 5 kHz</td>
<td>10 Hz - 5 kHz</td>
</tr>
<tr>
<td>Level range</td>
<td>10 nT - 40 μT</td>
<td>50 nT - 200 μT</td>
</tr>
<tr>
<td>Overload</td>
<td>400 μT</td>
<td>400 μT</td>
</tr>
<tr>
<td>Dynamic range</td>
<td>&gt; 72 dB</td>
<td>&gt; 72 dB</td>
</tr>
<tr>
<td>Resolution</td>
<td>1 nT</td>
<td>1 nT</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>10 nT</td>
<td>50 nT</td>
</tr>
<tr>
<td>Absolute error @ 50 Hz 25 °C</td>
<td>± 0.4 dB @ 200 nT</td>
<td>± 0.4 dB @ 3 μT</td>
</tr>
<tr>
<td>Flatness (40 Hz - 1 kHz)</td>
<td>± 1 dB</td>
<td>± 1 dB</td>
</tr>
<tr>
<td>Isotropcity @ 50 Hz</td>
<td>± 0.3 dB @ 200 nT</td>
<td>± 0.3 dB @ 3 μT</td>
</tr>
<tr>
<td>Temperature error</td>
<td>0.015 dB/°C</td>
<td>0.015 dB/°C</td>
</tr>
<tr>
<td>E-field rejection</td>
<td>&gt; 20 dB</td>
<td>&gt; 20 dB</td>
</tr>
<tr>
<td>Calibration</td>
<td>internal into E’PROM</td>
<td>internal into E’PROM</td>
</tr>
<tr>
<td>Size</td>
<td>350 mm length, 133 mm ø</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>400 g</td>
<td></td>
</tr>
</tbody>
</table>
**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 8053 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.

### 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:

- \( H (A/m) = E (V/m) / 377 \)
- \( S (W/m^2) = E (V/m) \times H (A/m) \)

### 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**
  - 4 fiber optical connector
- **Interfaces**
  - 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**

### PMM 8053-SW02 - DATA ACQUISITION SOFTWARE

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

Technical specifications

<table>
<thead>
<tr>
<th></th>
<th>Electric field</th>
<th>Magnetic field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range</td>
<td>5 Hz – 100 kHz</td>
<td>5 Hz – 100 kHz</td>
</tr>
<tr>
<td>Level range</td>
<td>0.01 V/m – 100 kV/m</td>
<td>1 nT – 10 mT</td>
</tr>
<tr>
<td>Overload</td>
<td>200 kV/m @ 50Hz</td>
<td>20 nT @ 50Hz</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.001 V/m (on 8053 display)</td>
<td>1 nT (on 8053 display 8053 or EHP-50C internal data logger)</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.1 V/m (with 8053 data logger)</td>
<td>± 0.5 dB (at 50 Hz and 0.1 mT)</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>± 0.5 dB</td>
<td>± 0.2 dB (200 nT - 10 mT)</td>
</tr>
<tr>
<td>Absolute error</td>
<td>± 0.5 dB</td>
<td>± 0.2 dB (200 nT - 10 mT)</td>
</tr>
<tr>
<td>Linearity @ 50 Hz</td>
<td>± 0.2 dB (1 V/m - 100 kHz)</td>
<td>± 0.2 dB (200 nT - 10 mT)</td>
</tr>
<tr>
<td>Magnetic field rejection</td>
<td>&gt; 20 dB</td>
<td>&gt; 20 dB</td>
</tr>
<tr>
<td>Electric field rejection</td>
<td>&gt; 20 dB</td>
<td>&gt; 20 dB</td>
</tr>
</tbody>
</table>

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
  - Dynamic: FFT Spectral analysis
  - Start frequency: FFT Spectral analysis
  - Stop frequency: FFT of the SPAN
  - Overload: 1,2% of the SPAN
  - Span: 100, 200, 500 Hz;
  - Flatness (40 Hz - 10 kHz): ± 0.5 dB
  - Isotropy: ± 1 dB
  - Calibration: Internal on E-PROM
  - Temperature error: 0.05 °C
  - Size: 96 x 96 x 115 mm
  - Weight: about 525 g
  - Battery: rechargeable NiMH (5 x 1,2V)
  - Operating temperature: -10 / +40 °C

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

The 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, the SPAN wished and the sampling intervals 1 per minute or 1 per 30 seconds.

<table>
<thead>
<tr>
<th>SPAN</th>
<th>Typical operation time in Normal mode (hours)</th>
<th>Time that EHP-50C is ON (sec.)</th>
<th>Battery operation time in Low Power mode with Data logger set at 60 sec (hours)</th>
<th>Battery operation time in Low Power mode with Data logger set at 300 sec (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 Hz</td>
<td>&gt;11</td>
<td>25</td>
<td>&gt;24</td>
<td>&gt;72</td>
</tr>
<tr>
<td>200 Hz</td>
<td>&gt;11</td>
<td>15</td>
<td>&gt;36</td>
<td>&gt;110</td>
</tr>
<tr>
<td>500 Hz</td>
<td>&gt;10</td>
<td>8</td>
<td>&gt;48</td>
<td>&gt;130</td>
</tr>
<tr>
<td>1 kHz</td>
<td>&gt;10</td>
<td>5</td>
<td>&gt;72</td>
<td>&gt;150</td>
</tr>
<tr>
<td>2 kHz</td>
<td>&gt;9</td>
<td>5</td>
<td>&gt;65</td>
<td>&gt;150</td>
</tr>
<tr>
<td>10 kHz</td>
<td>&gt;6</td>
<td>5</td>
<td>&gt;60</td>
<td>&gt;130</td>
</tr>
<tr>
<td>100 kHz</td>
<td>&gt;9</td>
<td>4.5</td>
<td>&gt;72</td>
<td>&gt;150</td>
</tr>
</tbody>
</table>
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 it is only possible to perform punctual measurements and get the spectrum analysis. The field shown is either in digital or analogic 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 it 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 it is possible to store only the selected frequency over the time domain with a sample rate definable by the user.

**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.

8053-CC RIGID CARRYING CASE
This aluminium 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

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

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
Fiberglas 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-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: ± 2%

8053-TR REMOTE TRIGGER
This device is used to remote trigger the 8053A.
At each contact closure, 8053A takes and stores 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

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 (± 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
Selftest Automatic during switch-on of all
functions. Automatic check of
each individual diode
Calibration Inside the built-in E2 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
HP-10 Magnetic field 10 kHz - 5 kHz
HP-105 Magnetic field 10 Hz - 5 kHz
8053-GPS GPS module
8053-SB Automatic switching Box
8053-SB-10 Programmable switching Box
8053-RF 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
8053-OC RS232 optical converter

Specifications are subject to change without notice. 07/2004

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