

**Manufacturing Plant:**

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# User's Manual

# PMM 1008

## MAGNETIC FIELD GENERATOR

### **SERIAL NUMBER OF THE INSTRUMENT**

You can find the Series Number on the rear panel of the instrument.

Series Number is in the form: 0000X00000.

The first four digits and the letter are the Series Number prefix, the last five digits are the Series Number suffix. The prefix is the same for identical instruments, it changes only when a configuration change is made to the instrument.

The suffix is different for each instrument.

**NOTE:**

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If the instrument is used in any other way than as described in this User's Manual, it may become unsafe.

Before using this product, the related documentation must be read with great care and fully understood to familiarize with all the safety prescriptions.

To ensure the correct use and the maximum safety level, the User shall know all the instructions and recommendations contained in this document.



This product is a **Safety Class I** and **Installation Category II** instrument according to IEC classification and has been designed to meet the requirements of EN61010-1 (Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use).

It complies with the requirements of **Pollution Class II** (usually only non-conductive pollution). However, occasionally it may become temporarily conductive due to condense on it.

The information contained in this document is subject to change without notice.

**EXPLANATION OF ELECTRICAL AND SAFETY SYMBOLS :**



You now own a high-quality instrument that will give you many years of reliable service. Nevertheless, even this product will eventually become obsolete. When that time comes, please remember that electronic equipment must be disposed of in accordance with local regulations. This product conforms to the WEEE Directive of the European Union (2002/96/EC) and belongs to Category 9 (Monitoring and Control Instruments). You can return the instrument to us free of charge for proper environment friendly disposal. You can obtain further information from your local Narda Sales Partner or by visiting our website at [www.narda-sts.it](http://www.narda-sts.it).



Warning, danger of electric shock



Earth



Read carefully the Operating Manual and its instructions, pay attention to the safety symbols.



Unit Earth Connection



Earth Protection



Equipotential

**EXPLANATION OF SYMBOLS USED IN THIS DOCUMENT :**



The **DANGER** sign draws attention to a serious risk to a person's safety, which, if not avoided, will result in death or serious injury. All the precautions must be fully understood and applied before proceeding.



The **WARNING** sign indicates a hazardous situation, which, if not avoided, could result in death or serious injury. All the precautions must be fully understood and applied before proceeding.



The **CAUTION** sign indicates a hazardous situation, which, if not avoided, could result in minor or moderate injury.



The **NOTICE** sign draws attention to a potential risk of damage to the apparatus or loss of data.



The **NOTE** sign draws attention to important information.

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**⚠ WARNING SAFETY RECOMMENDATIONS AND INSTRUCTIONS**

This product has been designed, produced and tested in Italy, and it left the factory in conditions fully complying with the current safety standards. To maintain it in safe conditions and ensure correct use, these general instructions must be fully understood and applied before the product is used.

- This is an industrial instrument for special EMC test purposes and should be installed and operated by qualified, authorized and trained personnel only.
- High magnetic fields are present around the instrument when used at high currents. It is highly recommended not to approach the machine when in operation, and especially forbidden for people with pacemakers or other electromedical devices.
- When the device must be connected permanently, first provide effective grounding;
- If the device must be connected to other equipment or accessories, make sure they are all safely grounded;
- In case of devices permanently connected to the power supply, and lacking any fuses or other devices of mains protection, the power line must be equipped with adequate protection commensurate to the consumption of all the devices connected to it;
- In case of connection of the device to the power mains, make sure before connection that the voltage selected on the voltage switch and the fuses are adequate for the voltage of the actual mains;
- Devices in Safety Class I, equipped with connection to the power mains by means of cord and plug, can only be plugged into a socket equipped with a ground wire;
- Any interruption or loosening of the ground wire or of a connecting power cable, inside or outside the device, will cause a potential risk for the safety of the personnel;
- Ground connections must not be interrupted intentionally;
- To prevent the possible danger of electrocution, do not remove any covers, panels or guards installed on the device, and refer only to NARDA Service Centers if maintenance should be necessary;
- To maintain adequate protection from fire hazards, replace fuses only with others of the same type and rating;
- Follow the safety regulations and any additional instructions in this manual to prevent accidents and damages.
- It is important to create a security zone around the instrument (at least 1.5m) where no one should go in while the test is in progress.
- Since improper or careless operation could result in an injury risk, these operating instructions make an essential part of the device and must be available to the operator at all times. The user must satisfy all safety instructions and warnings.



*Shel*



# Dichiarazione di Conformità *EC Declaration of Conformity*

In accordo alla Decisione 768/2008/EC, conforme alle direttive EMC 2014/30/UE, Bassa Tensione 2014/35/UE e RoHS 2011/65/UE, ed anche alle norme ISO/IEC 17050-1 e 17050-2.

*In accordance with the Decision 768/2008/EC, compliant to the Directives EMC 2014/30/UE, Low Voltage 2014/35/UE and RoHS 2011/65/EU, also compliant to the ISO/IEC standard 17050-1 and 17050-2*

Il costruttore  
*The manufacturer* **narda Safety Test Solutions S.r.l. Socio Unico**

Indirizzo  
*Address* **Via Benessea, 29 / B**

**I-17035 Cisano sul Neva (SV) - Italy**

**sulla base delle seguenti norme europee armonizzate, applicate con esito positivo:**  
***based on the following harmonized European Standards, successfully applied:***

EMC - Emissioni:  
*EMC - Emission:* **IEC EN 61326-1 (2021)**

EMC - Immunità:  
*EMC - Immunity:* **IEC EN 61326-1 (2021)**

Sicurezza:  
*Safety:* **EN 61010-1 (2010)**

**dichiara, sotto la propria responsabilità, che il prodotto:**  
***declares, under its sole responsibility, that the product:***

Descrizione  
*Description* **MAGNETIC FIELD GENERATOR**

Modello  
*Model* **PMM 1008**

**è conforme ai requisiti essenziali delle seguenti Direttive:**  
***conforms with the essential requirements of the following Directives:***

Bassa Tensione  
*Low Voltage* **2014/35/EU**

Compatibilità Elettromagnetica  
*EMC* **2014/30/EU**

RoHS  
*RoHS* **2011/65/EU**

Cisano sul Neva, 06 December 2022

Egon Stocca  
General Manager



# 1 - General Information

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## 1.1 Documentation

Enclosed with this manual are:

- a service questionnaire to send back to NARDA in case of equipment service is needed
- an accessories check list to verify all accessories enclosed in the packaging.

## 1.2 Instruction Manual changes

Instruments manufactured after the printing of this manual may have a series number prefix not listed on the title page; this indicates that instruments with different Series Number prefix may be different from those documented in this manual.

## 1.3 Introduction to PMM 1008

PMM 1008 is a magnetic field generator system at power frequency. The generator is a current generator and the indication of the field is obtained considering the antenna factor, the system includes the antenna formed by one coil and the antenna mast.

The correct output current is automatically set and regulated by the generator.

PMM 1008 is designed to meet all the requirements contained in the EN 61000-4-8 standard and to cover all the levels described in continuous and short mode.

## 1.4 Instrument items

PMM 1008 includes the following items:

- Magnetic field generator
- Mains Supply Cable
- Two cables to connect generator to the loop
- RS232 cable
- Hardware Key
- Allen key 5mm
- Allen key 6mm
- Software Media including user's manual.

## 1.5 Optional accessories

The optional accessories are:

- One generator support with 4 screws;
- Square loop 1m
- Square loop 1.5m
- Square loop 2m
- Circular loop 40cm
- Circular loop 1m
- Rectangular loop 2.6x1m
- Second antenna mast for square loop 1.5m, or 2m, or rectangular loop 2.6x1m

All Loops are supplied with Support, Mast, and Cart.

- 1.6 Main specifications** Table 1-1 lists the PMM 1008 performance specifications.  
The following conditions apply to all specifications:
- The ambient temperature shall be 10° to 40° C.

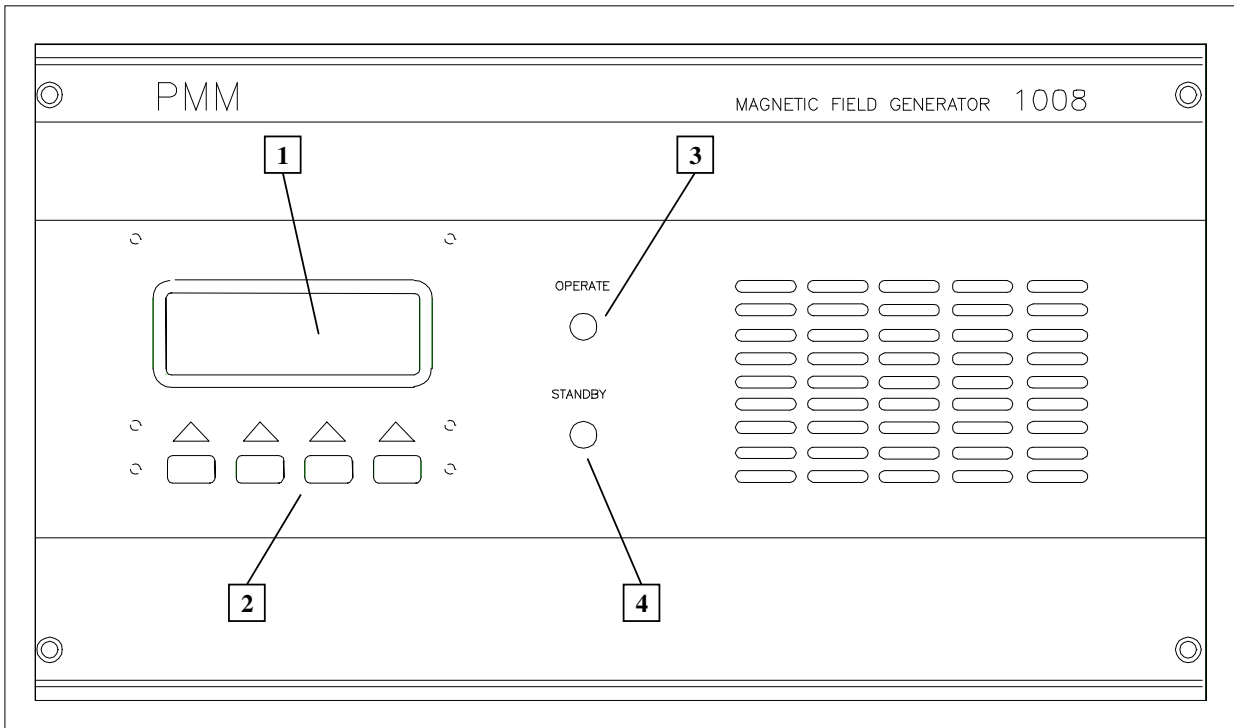
**TABLE 1-1 Technical specifications**

<b>Frequency Range</b>	50/60 Hz
<b>Remote control System interface Connector</b>	RS-232/485
<b>User port</b>	DB9
	Two function: - HD Key - Interlock
<b>Display</b>	4 lines LCD 20 characters
<b>Power supply AC</b>	230 VAC±10%,
<b>Max current</b>	16 A
<b>Output voltage Without load</b>	Max 4Vac
<b>Output current Max continuous</b>	170 A
<b>Max short</b>	1200 A
<b>Modes</b>	
<b>Continuous</b>	
<b>Short</b>	
<b>Manual</b>	
<b>Ramp</b>	
<b>Internal timer</b>	
<b>Continuous mode</b>	1-12000 min.
<b>Short mode</b>	1-5 sec.
<b>Timer resolution</b>	
<b>Continuous mode</b>	1 min
<b>Short mode</b>	1 sec.
<b>Size</b>	
<b>Generator</b>	365 x 200 x 480 mm (WxHxD)
<b>Loop</b>	1030 x 35 x 1030 mm (WxHxD)
<b>Truck</b>	550 x 210 x 650 mm (WxHxD)
<b>Mast antenna</b>	1900 mm (H)
<b>Cables</b>	95 mm <sup>2</sup> 1.5 mm
<b>Weight</b>	
<b>Generator</b>	28 Kg
<b>Loop</b>	6 Kg
<b>Truck</b>	25 Kg



**Fig. 1-1** PMM 1008

## 1.7 Front panel

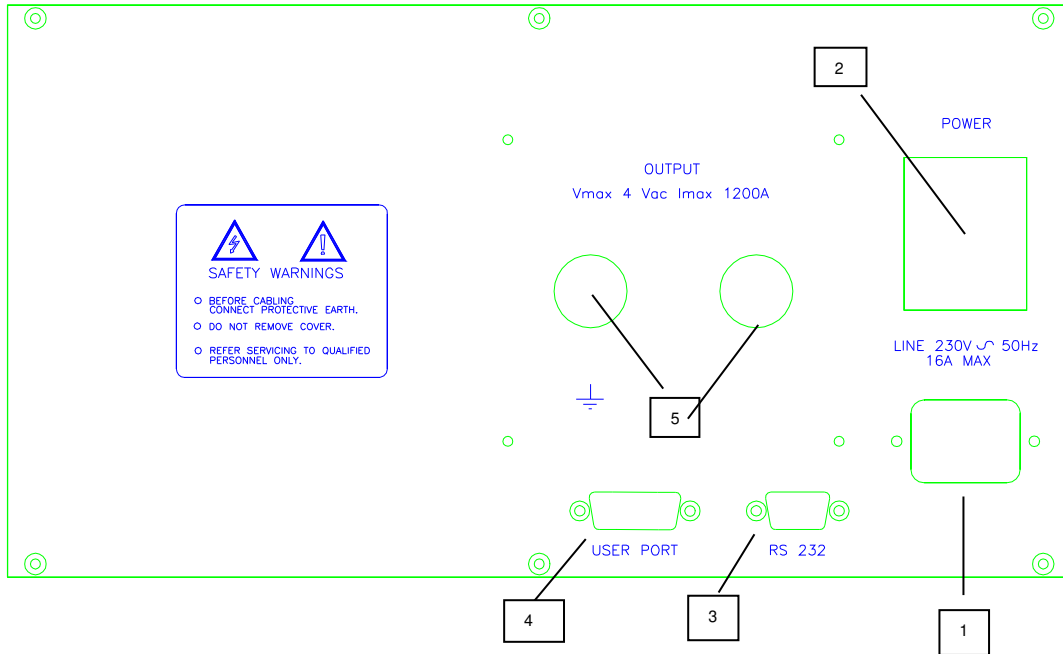


**Fig. 1-2** Front Panel

### Legend:

- 1.- LCD display
- 2 - Functional keys
- 3 - Operate led
- 4 - Stand-by led

## 1.8 Rear panel



**Fig. 1-3** Rear Panel

### Legend:

- 1.- Mains plug IEC/CEE22
- 2 - power switch
- 3 - RS232/485 interface DB9
- 4 - User I/O port DB15
- 5 - current output connector  $\varnothing$  14 mm bolt

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## 2 - Installation

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### 2.1 Introduction

This section provides the information needed to install your PMM 1008. Included is information pertinent to initial inspection, power requirements, line voltage, power cables, interconnection, environment, instrument mounting, cleaning, storage and shipment.

### 2.2 Initial inspection



**To avoid hazardous electrical shock, do not turn on the instrument when there are signs of shipping damage to any portion of it.**

### 2.3 Packing and Unpacking

Inspect the shipping container for damage. If the shipping container or cushion material is damaged, it should be kept until the contents of the shipment have been checked for completeness and the instrument has been checked mechanically and electrically. Verify the accessories availability in the shipping referring to the accessories check list enclosed with the Users Manual. Notify any damage to the carrier personnel as well as the NARDA Representative.

### 2.4 Preparation for use



**This is a Safety Class I equipment, it is provided with a protective earth terminal. An uninterruptible safety earth ground must be provided from the main power source to the product input wiring terminals through the power cable (or supplied power cable set). Verify the safety earth ground functionality before operation.**



**Before connecting this instrument, ensure that an uninterruptible safety earth ground is provided from the main power source to the product protective earth connection. If this instrument is to be connected to other equipment or accessories, prior to energizing either unit verify that a common ground exists between them. Any interruption or loosening of the protective earth ground conductor, either inside or outside the unit or in an extension cable will cause a potential shock hazard that could result in personal injury.**

## 2.5 Power cable

This instrument is equipped with a three wires power cable. When connected to an appropriate AC power receptacle, this cable grounds the instrument chassis.

## 2.6 Environment

The operating environment is specified to be within the following limitations:

- Temperature +10° to +40° C
- Humidity 80% (31°) ÷ 50% (40°)
- Altitude < 4000 meters

The instrument should be stored in a clean, dry environment

The storage and shipping environment is specified to be within the following limitations:

- Temperature -40° to + 50° C
- Humidity < 95% relative
- Altitude < 15000 meters

## 2.7 Return for service

If the instrument should be returned to NARDA for service, please complete the service questionnaire enclosed with the Users Manual and attach it to the instrument.

To minimize the repair time, be as specific as possible when describing the failure. If the failure only occurs under certain conditions, explain how to duplicate the failure.

If possible, reuse of the original packaging to ship the equipment is preferable.

In case other package should be used, ensure to wrap the instrument in heavy paper or plastic.

Use a strong shipping container and use enough shock absorbing material around all sides of the equipment to provide a firm cushion and prevent movement in the container.

To prevent damage during shipment in particular protect the front panel.

Seal the shipping container securely.

Mark the shipping container FRAGILE to encourage careful handling.

## 2.8 Equipment cleaning

Use a non abrasive clean, soft and dry cloth for equipment cleaning.

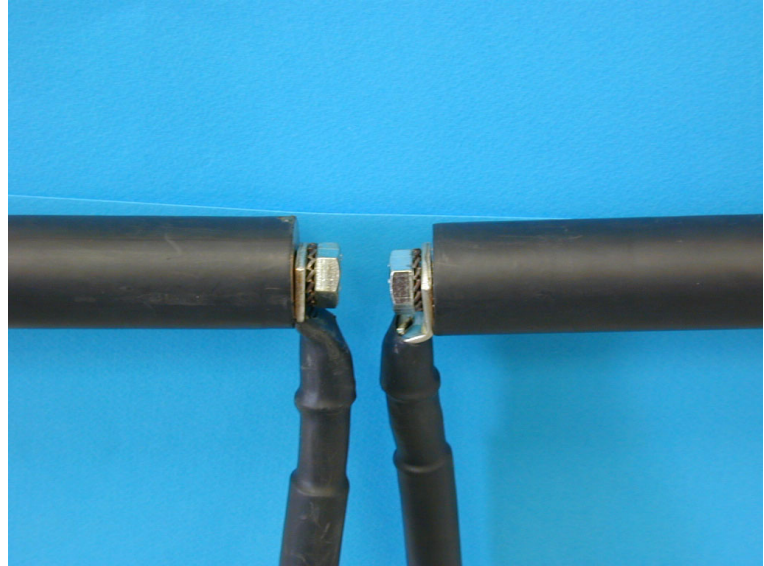
### **NOTICE**

**To clean the equipment do not use any solvent, thinner, turpentine, acid, acetone or similar matter to avoid damage to external enclosure.**

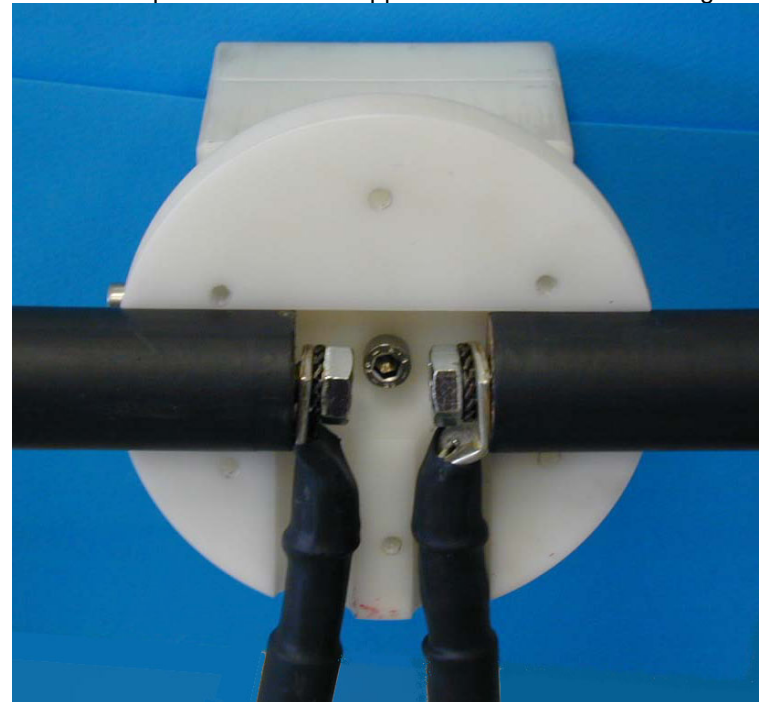
## 2.9 System Installation

PMM 1008 is a system with different parts and an installation needing. To install the PMM 1008 following the steps indicated:

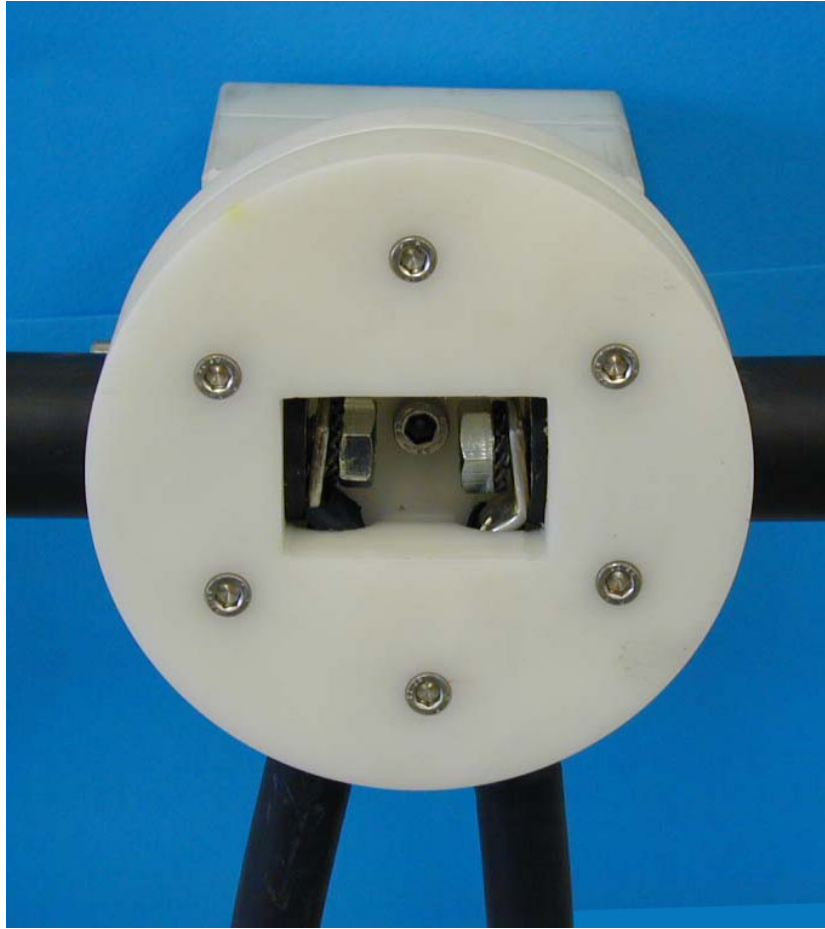
- 1) Connect the cables to the loop using the screws as shown in the next figure



- 2) Position the loop into the teflon support as shown in the next figure



3) Lock the loop to the support using the six screws



4) Lock the antenna mast on the Cart using the screw on the bottom



5) Put the generator support on the Cart and the loop support on the mast in the position desired using the screw mounted on the support. The final mounting should be the following:



6) Put the generator on his support on the Cart

7) Connect the cables from the loop to the output current connector in the PMM 1008 generator rear panel.

8) Insert HD Key on the USER PORT Connector (rear panel)

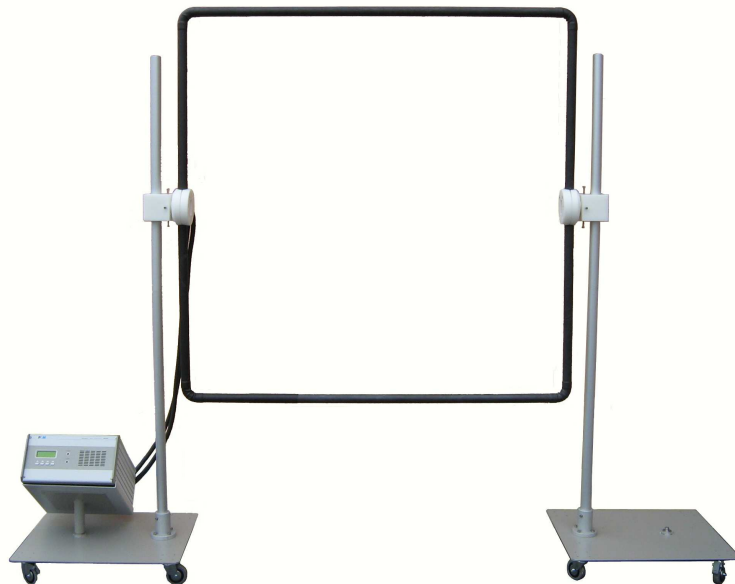


**NOTICE**

The antenna produces magnetic field, the field is high in the center of the loop, set the generator positioning outside of the loop like in the previous figure.



**Fig. 2-1** PMM 1008 with Square loop 1m



**Fig. 2-2** PMM 1008 with Square loop 1.5m



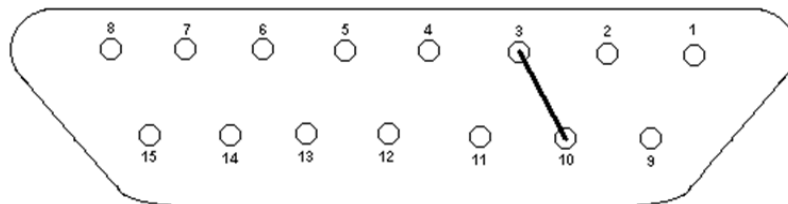
**Fig. 2-3** PMM 1008 with Circular loop 40cm

**2.10 Safety Interlock**

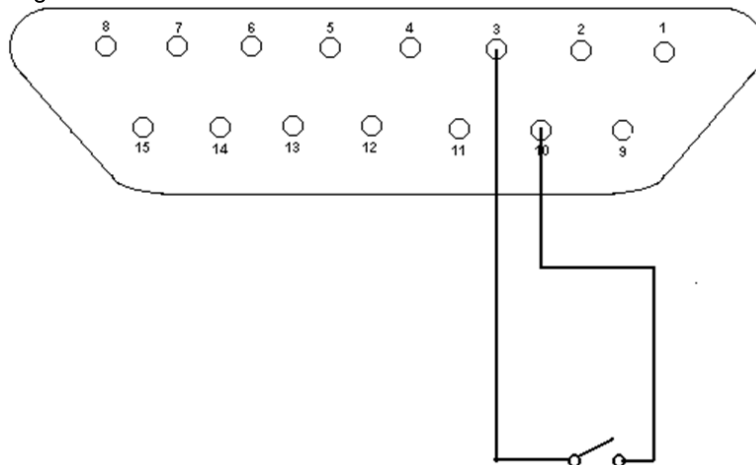
The PMM 1008 is provided by a safety interlock connected at user port on the rear panel. The connections are the following

**NOTICE**

**To use the PMM 1008, is necessary to insert the HD Key**



The interlock can be used to insert an external safety switch like in the following draw:



## 3 - Operating instructions

### 3.1 Starting PMM 1008

PMM 1008 has been designed with a user friendly interface to be used by EMC engineer as well by non-skilled personnel.

For a better safety must connect all cable before connected the Magnetic Field Generator at distribution Network and not disconnect anything before end of test.

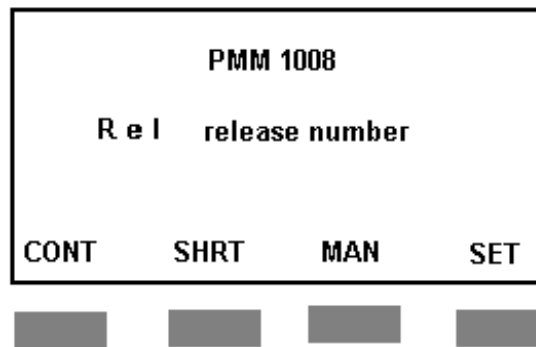
### NOTICE

**For connect the Magnetic Field Generator at distribution network must used only a appropriate cable included in the PMM 1008. For connect the instrument at distribution network don't use extension lead or adapter.**

### 3.2 Main menu display

Connect the power supply cable and HD Key to the rear panel connector and switch on, the standby led will switch on.

All functions can be recalled by the four functional keys located on the bottom of LCD display. When instrument is turned on the firmware initiates the internal testing procedure. If everything is OK, the display will show:



The main commands are:

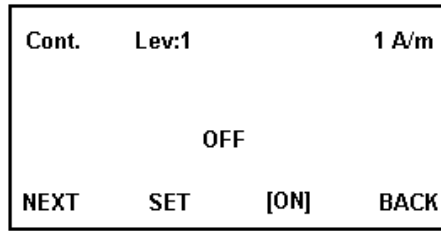
**CONT** to select continuous test menu  
**SHRT** to select short duration test menu  
**MAN** to select manual test menu  
**SET** to select setting menu

### NOTICE

**Before to do the test execute the calibration procedure**

### 3.2.1 Continuous test mode

Activating the function key under the CONT you will enter the continuous test menu that shows:



#### Setting open level

In the top of the display there is the indication of the level with reference to the standard. The levels available are:

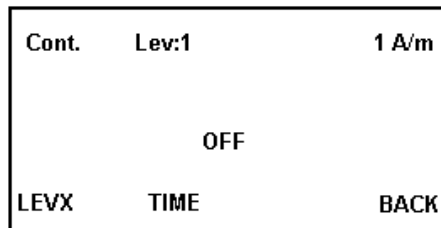
- Level 1 1 A/m
- Level 2 3 A/m
- Level 3 10 A/m
- Level 4 30 A/m
- Level 5 100 A/m

Level X open, in the range 1 - 100 A/m

Pressing the NEXT key it will be changed the level selected, and the indication will appear in the top of the display.

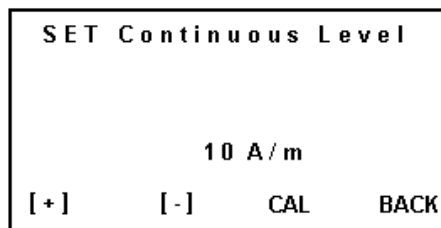
Select your field and press [ON] to start the test

Pressing the SET key the display will show the following



#### Setting LEVX open level

Using this menu it is possible to set the level of Level X and the time of the test. Pressing LEVX the display will show the following:



Using the [+] and [-] keys it is possible to set a test level in the range 1 - 100 A/m.

Pressing the CAL button the PMM 1008 will do a calibration of the output current level. With this operation the instrument will move the internal motor variac to set the correct current; this position will be stored for the test.

Pressing the BACK key will return in previous menu (setting open level and test time).

### Setting test time

From this menu it is possible to set the test time; pressing the TIME key will appear the following display:

```

SET Max Safety Time

          1 m i n

[+]      [-]      BACK
  
```



### Setting maximum test time

Using the [+] and [-] keys it is possible to set the maximum test time in the range 1 - 12000 minutes, the minimum step is 1 minute  
Pressing the BACK key will return in previous menu (setting open level and test time).

### Executing the test

Before to do the test it is necessary to execute a calibration

To execute the test follow these steps:

- execute a calibration
- select the test level using NEXT key.
- press [ON] key.

Pressing [ON] key the display will show the following:

```

Cont.   Lev:1           1 A/m

0 .20 .5           0 .98 A / m

          ** O N **

                               STOP
  
```



In the second row at the left there is the indication of time in seconds  
In the second row at the right there is the indication of the field, calculated considering the output current and the antenna factor. In fact the field is obtained from :

$$H=I \times f$$

where I is the current flowing into the loop and f is the antenna factor (0,87 for a square loop of 1m × 1m).

Starting the test, after pressed the [ON] key, the PMM 1008 will move the internal variac at the position stored during the calibration ; from this position the generator will regulate the position of the variac to obtain the correct output current.

The test will go on up to the maximum time set; it is possible to stop the test pressing the STOP key.

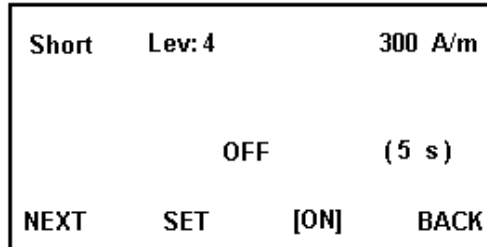
During the test the Operate led will switch on and will play a sound (beep) every 3 seconds.

### 3.2.2 Short test mode

## NOTICE

**Wait five minutes between three short test cycles.**

Using this test it is possible to do a short test with an high level of field, in fact the maximum current is 1250 A for a maximum time of 5 seconds. Pressing the SHRT key the display will be the following:



#### Setting test time and open level

In the top of the display there is the indication of the level with reference to the standard. The levels available are :

- Level 4 300 A/m
- Level 5 1000 A/m if antenna factor is  $\geq 0,87$  otherwise is  $(1000/0.87)*K$ .
- Level X open, in the range 300 - 1000 A/m (depending from antenna factor)

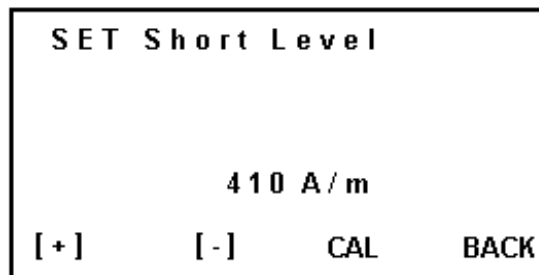
Pressing the NEXT key it will be changed the level selected, and the indication will appear in the top of the display.

#### Setting LEVX level

Pressing the SET key the display will show the following:



Using this menu it is possible to set the level of Level X and the time of the test. Pressing LEVX the display will show the following



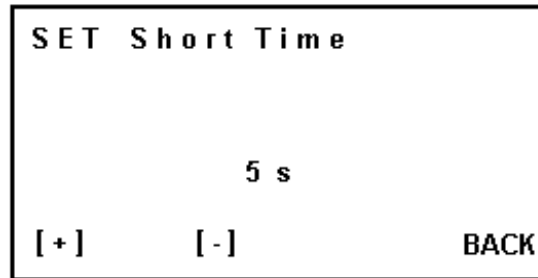
### Setting test time

Using the [+] and [-] keys it is possible to set a test level in the range 300 - 1200 A/m.

Pressing the CAL button the PMM 1008 will do a calibration of the output current level. With this operation the instrument will move the internal motor variac to set the correct current; this position will be stored for the test.

Pressing the BACK key will return in previous menu (setting open level and test time).

From this menu it is possible to set the test time; pressing the TIME key will appear the following display:



Using the [+] and [-] keys it is possible to set the maximum test time in the range 1 - 5 seconds, the minimum step is 1 second.

Pressing the BACK key will return in previous menu (setting open level and test time).

### 3.2.3 Executing a test

## NOTICE

**Before to do the test it is necessary to execute a calibration**

To execute the test follow these steps:

- execute a calibration
- select the test level using NEXT key.
- press [ON] key.

Pressing [ON] key the display will show the following:

Short	Lev:4	300 A/m
		301.5 A / m
	** O N **	4.55 s
		STOP

In the second row at the right there is the indication of the field.

In the third row there is the indication of the decreasing time in seconds.

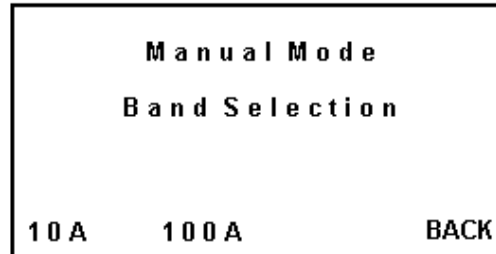
Starting the test, after pressed the [ON] key, the PMM 1008 will move the internal variac at the position stored during the calibration. After this operation the PMM 1008 will start the test procedure and for 5 seconds will advise with a beep every one second without any output current; after these 5 seconds the PMM 1008 will start the test; the operate led will switch on and will play a continuous beep.

The test will go on up to the maximum time set; it is possible to stop the test pressing the STOP key.

### 3.2.4 Manual mode

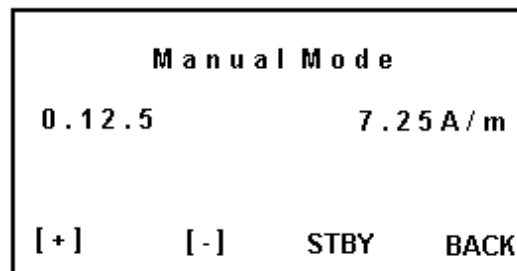
Using this function it is possible to do a test and change the field level during test, this feature can help to measure the level of susceptibility of the equipment under test.

Pressing the MAN key the display will show the following:



Choosing 10A key or 100A key the PMM 1008 will enable the output current, the operate led will switch on and the display will show the following:

In the second row left side there is the time increasing indication, in the right side the indication of the field.



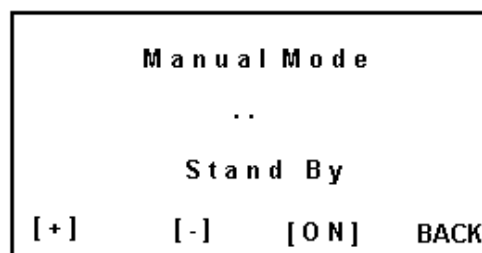
Pressing the [+] and [-] keys it is possible to increase or decrease the field level. If the band selected is 100 A the maximum current is 160 A and the maximum field depends from the antenna factor.

If the band selected is 10 A the maximum current is 16 A, the maximum field depends from the antenna factor but the resolution using the [+] and [-] key is higher.

### Manual mode stand-by

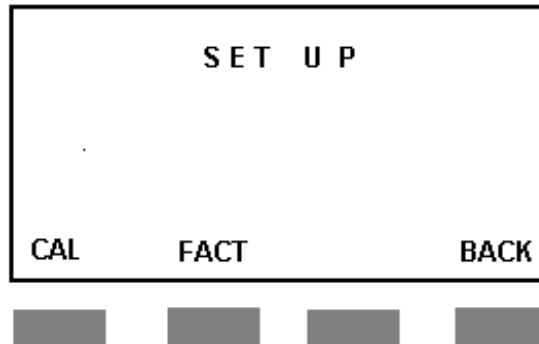
Pressing the STBY key the PMM 1008 will disable the output current, the operate led will switch off and will show the following display:

The [+] and [-] keys are disabled, pressing the ON key the PMM 1008 will go back in the previous menu and pressing the BACK key will stop the manual mode and will go back in main menu.



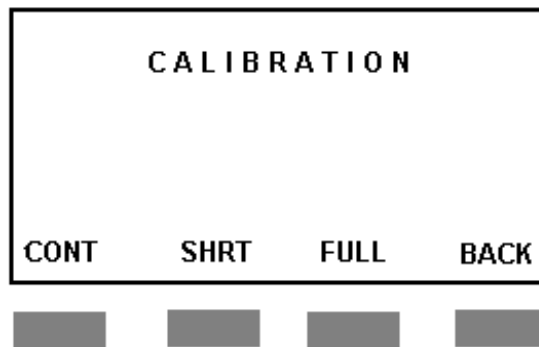
### 3.2.5 SET UP menu

Using the set menu it is possible to calibrate the system or to change the antenna factor. It is important to execute the calibration before to do test. Pressing the SET key from the main menu the display will be the following:



### Calibration menu

Pressing the CAL key it will be possible to calibrate the system, the display will be the following :



The calibration will store the position of the internal variac to obtain a current output current for the field level selected. In this way starting the test the PMM 1008 will move the variac in the stored position and then will regulate around it. The calibration can be done for the continuous test (CONT) or for the short test (SHRT) or both.

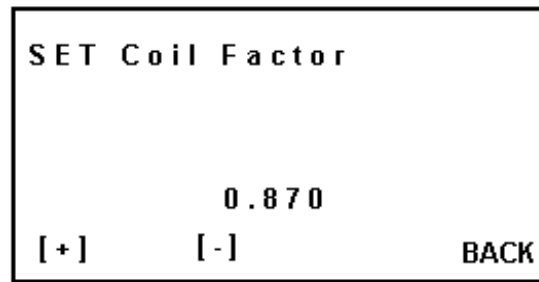
Pressing CONT key the PMM 1008 will calibrate all the continuous test levels, pressing SHRT key the PMM 1008 will calibrate all the short test levels, pressing FULL key the PMM 1008 will calibrate both the test, continuous and short.

In the setting mode it is also possible to change the antenna factor. The antenna factor depends from the shape and the dimensions of the antenna, setting a different antenna factor it is possible to use a different antenna. The antenna factor for a square loop are:

Standard Loop - Square loop 1m	0.87
Square loop 1.5 m	0.58
Rectangular loop 2.6x1	0.66
Circular loop 40cm	2.5
Circular loop 1m	1
Square loop 2m	0.435

### 3.2.6 Setting antenna factor

Pressing the FACT key from the setup menu the display will be the following:



Pressing [+] and [-] keys the PMM 1008 will change the antenna factor. When it is changed an antenna factor it is necessary to do a calibration, because the setting saved refers to a different current for the same level.

### **3.2.7 Error message**

If the antenna is disconnected after some seconds the PMM 1008 will display the error message:

LOOP OPEN

In this case check all the connections between the generator and the antenna.

## 4 - References

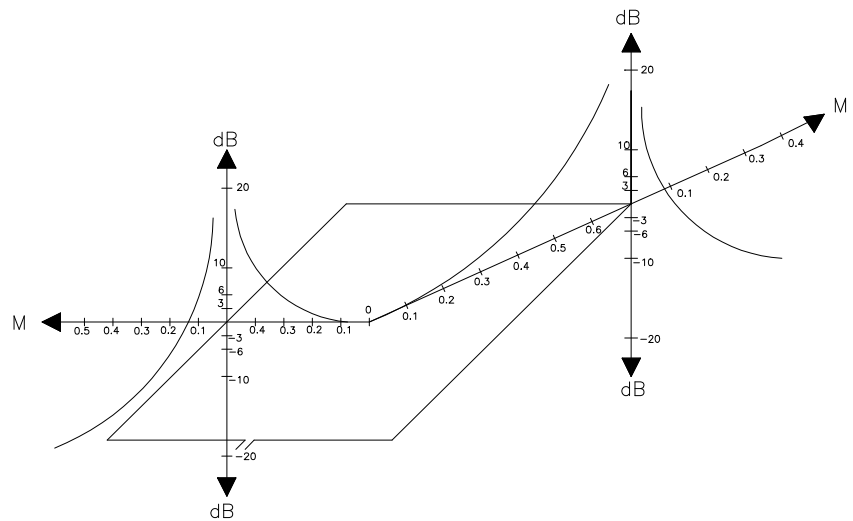
### 4.1 References

The preferential range of test levels, respectively for continuous and short duration application of the magnetic field is given in Table 4-1 e 4-2.

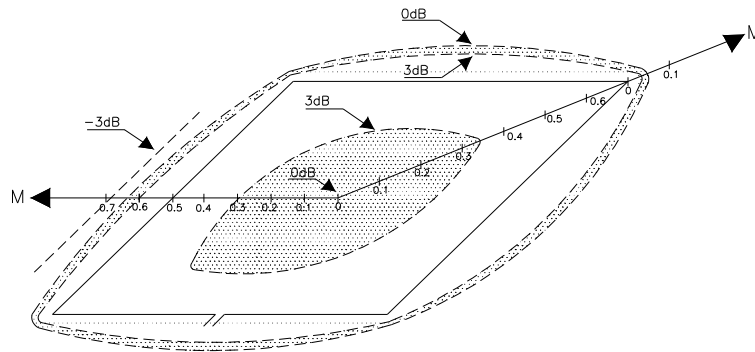
Table 4-1 Continuous field		Table 4-2 Short duration	
LEVEL	MAGNETIC FIELD	LEVEL	MAGNETIC FIELD
1	1	1	Not applicable
2	3	2	Not applicable
3	10	3	Not applicable
4	30	4	300
5	100	5	1000

### 4.2 Induction coil

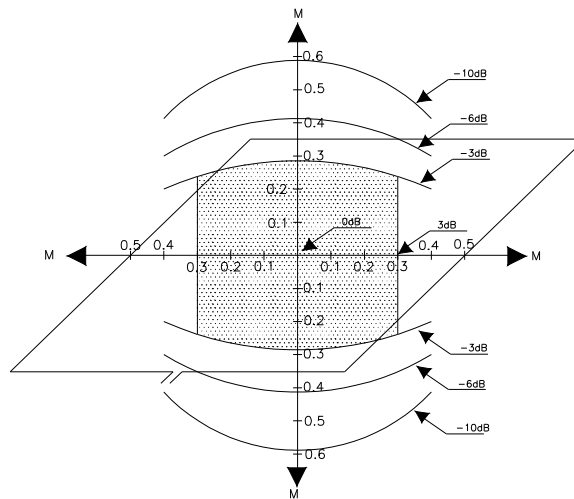
The PMM 1008 is supplied with a 1 meter square coil. The following figures describe the field uniformity for this kind of tool.



**Fig. 4-1:** Characteristics of the field generated by a square induction coil (1m side) in its plane



**Fig. 4-2:** 3dB area of the field generated by a square induction coil (1m side) in its plane



**Fig. 4-3:** 3dB area of the field generated by a square induction coil (1m side) in the mean orthogonal plane (component orthogonal to the plane of the coil).

Refer to the CEI-EW-61000-4-8 for further information.

## 5 - How to program

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### 5.1 Introduction

PMM 1008 has been designed to be programmed through his serial port using either RS232 as well RS485.

When using RS232 you can use only one instrument connected to PC serial port. If using RS485 you can connect up to 31 instruments to the same PC serial port.

PMM 1008 uses the same connector for both communications.

### 5.2 Communication

Half-duplex communication is implemented. The protocols are identical for RS232 and RS485.

A built-in automatic tool identifies the type of communication used and shows it on LCD display. Typical communication is implemented at 9600 baud with 8 bit, one stop bit and no parity.

### 5.3 Protocol

Be aware that only the PC can send the commands. PMM 1008 will answer when is inquired only.

Communication is done at 9600 Baud with 8 bit, 1 stop bit and no parity.

The communication uses strings with variable byte width. The characters used inside the strings are in ASCII format (00 - 127) at 7 bit. The most significant bit are ignored in reception and put to 0 during transmission.

Every strings starts with the special character “#” and stops with “\*”.

### 5.4 Address

The address cannot be assigned but is fixed at “FM”. The PMM 1008 can also answer at address 00.

### 5.5 Format

All messages are content between “#” and “\*” characters for strings send to Host PC and between “00” and “\*” for strings send to the instrument.

The string sent to the PMM 1008 has the following format: “#00c..c\*”.

Where:

- # Start character
- 00
- c..c Command
- \* End character

PMM 1008 will respond with the following string: - “#c..c”. In this case the address is not used because the PC does not need it.

Between “C..C” there is the message text where the length can varies from 1 to 100 characters.

**5.6 PMM 1008  
setting  
commands**

<b>Command</b>	<b>Explanation</b>	<b>Example</b>
<b>#00V*</b>	Instrument Type & Version.	<b>#00V*</b> --> <i>PMM1008; rel 1.0 8/98</i>
<b>#00Cn*</b> where n is the level in the range 1-5 which refer to the related field; <b>X</b> is the open level	Starts generating the indicated <b>continuous</b> magnetic field level. Note that this command is not recognized if received within sub-menus	<b>#00C2*</b> (3 A/m will be generated)
<b>#00Sn*</b> where n is the level in the range 4-5 which refer to the related field; <b>X</b> is the open level	Starts generating the indicated <b>short</b> magnetic field level. Note that this command is not recognized if received within sub-menus	<b>#00S4*</b> (300 A/m will be generated)
<b>#00B*</b>	If PMM 1008 is generating a magnetic field, this command <b>Breaks</b> it abruptly. Then it <b>leads to top of menus</b>	<b>#00B*</b>

**5.7 PMM 1008  
Query  
commands**

Command	Explanation	Example
#00?I* #00?i*	Returns the value of the generated (instantly) current expressed in A/m	#00?i* --> # 9.98 A/m *
#00?L* #00?l*	Returns the status of interlock switch	#00?L* --> # UNLOCKED *
#00?O* #00?o*	Returns whether the generator is generating (ON) or not (OFF) the field	#00?O* --> # ON *
#00?E* #00?e*	<p>Returns the ERRORS accumulated since the error register was <b>last</b> read.</p> <p>Note that <b>once</b> this register is <b>read</b>, it is automatically <b>reset</b>.</p> <p>The result has the following meaning:</p> <p>1           The argument supplied is out of range or inadequate.</p> <p>4           Menu ERROR. A command has not been executed because it was not allowed in the present menu.</p> <p>8           The Command was not recognized because is unknown.</p> <p>256        First read after switch ON .</p> <p>More type of error are accumulated so that a composite error flag can be detected.</p>	<p>#00?E*</p> <p>--&gt; # ERR: 5 *</p> <p>This example shows that there were detected 2 errors:</p> <ol style="list-style-type: none"> <li>1. Argument out of range (1)</li> <li>2. The command was not executed (4).</li> </ol> <p>The resulting error is: 4+1=5</p>

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## 6 - Firmware Upgrade

### 6.1 Introduction

PMM 1008 has been designed to be programmed through its serial port using either RS232 as well RS485.

Using RS232 it is possible to upgrade the firmware of the instrument at the latest release.

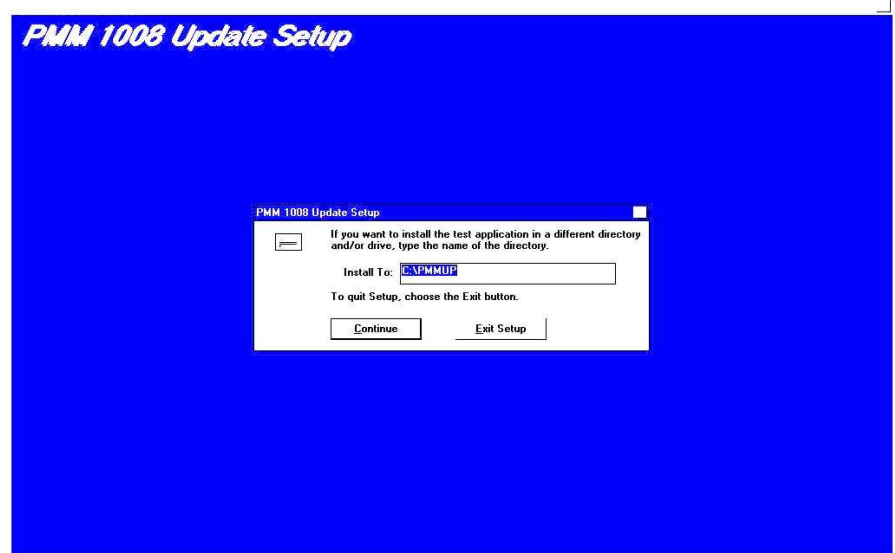
### 6.2 System requirements

For the software to operate properly, the user's Personal Computer should be equipped with the following:

- 486 Processor or Pentium
- 16 Mb of RAM
- at least 10 Mb of free space on hard disk
- 1 free serial port
- Windows Operating System™ 95/98

### 6.3 To install the software

The Update Firmware Program can be installed using the software diskette and running SETUP.



When the installation is complete the following window will be displayed



**6.4 Icon of PMM 1008 software**

Once the software has been installed in the PC, the related icon will be displayed. Press **PMM 1008 FirmWare Update** twice for running the update program.

**6.5 UPGRADE Procedure**

- 1) Switch off the PMM 1008.
- 2) Connect the serial cable between the PC and PMM 1008.
- 3) Run the upgrade software; the main window will be displayed:



- 4) Switch on the PMM 1008
- 5) When the upgrade procedure is completed correctly, the software will display the following message:



PMM 1008 is now updated with the new version of the internal firmware.

It is now possible to disconnect the cable connected to the PC, with the PMM 1008 either switched on or off.

Subsequently, when the apparatus is switched on, the new version of the firmware will be displayed on the display of PMM 1008

**NOTICE**

To obtain updating of the firmware or programs for PMM 1008, the user can contact his NARDA agent or download it directly from the following Web site: [www.narda-sts.it](http://www.narda-sts.it)



