

User's Manual

PMM 6630

RF POWER SENSOR

SERIAL NUMBER OF THE INSTRUMENT

You can find the Serial Number on the ID label. It is in the form: 000XY00000.

REMARK:

® Names and Logo are registered trademarks of Narda Safety Test Solutions GmbH and L3 Communications Holdings, Inc. – Trade names are trademarks of the owners.

If the instrument is used in any other way than it is described in this Users Manual, it may become unsafe.

Before using this product, the related documentation must be read carefully 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 III** 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).



This product has a **Pollution Degree II** normally only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation must be expected.

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

KEY TO THE ELECTRIC AND SAFETY SYMBOLS

 This is an high quality instrument designed to provide for 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 Dealer or by visiting our website at www.narda-sts.it.



Warning, danger of electric shock



Earth



Read carefully the User's Manual and its instructions, pay attention to the safety symbols



Unit Earth Connection



Earth Protection



Equipotential

KEY TO THE SYMBOLS USED IN THIS DOCUMENT:



DANGER

The **DANGER** sign draws attention to a potential risk to a person's safety. All the precautions must be fully understood and applied before proceeding



WARNING

The **WARNING** sign draws attention to a potential risk of damage to the apparatus or loss of data. All the precautions must be fully understood and applied before proceeding



CAUTION

The **CAUTION** sign draws attention against unsafe practices for the apparatus functionality



NOTE:

The **NOTE** draw attention to important information

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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.

- 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.

Declaration of EC Conformity

(in accordance with the Directives: EMC 89/336/EEC and Low Voltage 73/23/EEC)

This is to certify that the product: PMM 6630 RF Power Sensor 9 kHz – 3 GHz

Produced by: NARDA S.r.l.
Safety Test Solution
Via Benessea 29/B
17035 Cisano sul Neva (SV) - ITALY

complies with the following European Standards
Safety: CEI EN 61010-1 (2001)
EMC: EN 61326-1 (2007)

This product complies with the requirements of the Low Voltage Directive 2006/95/CE and with the EMC Directive 2004/108/CE.

NARDA S.r.l.

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1 – General

1.1 Documentation

This Manual includes:

- Questionnaire to send back together with the instrument to service.
- Check list of supplied accessories.

1.2 Introduction

The PMM 6630 is a simple and easy to use RF power measuring instrument.

It is very suitable in EMC applications to calibrate CDNs and CLAMPs for conducted and induced immunity tests, and to measure the power of RF signals forwarded to antennas or GTEMs cells.

Forward and reflected powers can be measured by using a directional coupler.

The internal compensation prevents temperature drifting effects.

The instrument is supplied together with drivers for any Windows™ environments. Just execute Windows™ software and get your reading (dBm, W and Vrms) into the PC monitoring window.

If you are using PMM immunity software (conducted or radiated) all drivers are already embedded and ready to use.



Fig. 1-1 PMM 6630

The PMM 6630 also can work with the optional accessory PMM 6630FOA that allows to convert the USB signal of the power sensor into fiber optic compatible signal. It is often beneficial to use noise immune fibre optic cable instead of USB cable in environments where is requested a low noise level or simply to extend the link; moreover, the optic link is immune to interferences caused by high field level. The PMM 6630FOA is linked to the USB port of any Personal Computer through the USB-OC Optical USB Converter supplied with the unit.



Fig. 1-2 PMM 6630FOA

**1.3
Standard
accessories**

Accessories and documents supplied with PMM 6630

- 6630-USB Cable;
- CD-ROM with Software;
- User's Manual
- Calibration Certificate
- Service form

**1.4
Other available
accessories**

Other equipment available from PMM to use in conjunction with the PMM 6630 RF power meter:

- PMM 3030 (3 GHz) – PMM 3010 (1 GHz) EMI Signal Generator
- PMM 6000N Wideband RF Power Amplifier
- PMM 6630FOA Fiber Optic Adapter

1.5 Specifications

This condition applies to all specifications:

- The operating ambient temperature range must be -10° to +40 °C.

TABLE 1-1 Specifications of the PMM 6630

Frequency range	9 kHz to 3 GHz		
Power measurement range	100 nW to 1 W (-40 dBm to +30 dBm)		
Max. Power	2 W peak envelope, max 300 ms		
RF Connector	N-male 50 Ω		
Max. SWR (25°C ± 10 °C)	10 kHz to 300 kHz	1.10	from +30 dBm to -9 dBm
	>300 kHz to 100 MHz	1.05	
	>100 MHz to 1 GHz	1.10	
	> 1 GHz to 3 GHz	1.25	
	10 kHz to 3GHz	1.20	from < -9 dBm to -40 dBm
Power linearity (25°C ± 10 °C)	-40 dBm to 30 dBm at 50 MHz: 0,2 dB		
Measurement Accuracy^{1,2} (25°C ± 10 °C)	< 0,35 dB		
Measuring ranges (automatic change)	High	+30 dBm to -9 dBm	
	Low	-9 dBm to -40 dBm	
	Switching point Hysteresis	1 dB typical	
Temperature operating range	-10°C to 50°C		

Power Supply	5 VDC – 100 mA (through USB Port)
PC Interface	USB 1.0 1.1 2.0
System requirements	Windows XP, Vista, Win7
Size	30 x 30 x 95 mm (WxHxD)
Weight	0.12 kg

1. Max SWR source = 1.25
2. Calculated with worst calibration uncertainties to the calibration factor of 0,17 dB.

1.6 Connectors



1-RF input

Fig. 1-3 PMM 6630 Front view



1- Fischer connector cable input

2-Led: Power ON Led

3-Led: Measuring range/
PC connection

Fig. 1-4 PMM 6630 Rear view

TABLE 1-2: Power ON Led

Led status	Meaning
Green	PMM 6630 ON
OFF	PMM 6630 OFF / Disconnected

TABLE 1-3: Measuring range/ PC connection Led

Led status	Meaning
Green	PMM 6630 in Low range, from -9 dBm to -40 dBm
OFF	PMM 6630 in High range, +30 dBm to -9 dBm
Red	Communication fault

1.7 ID Label PMM 6630



Fig. 1-5 PMM 6630 Side view

Legend: 1-Year of production
2-Serial Number

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2 – Operation

2.1 Foreword

None

2.2 Inspection

Once received the instrument, please check:

- packaging integrity
- instrument and accessories integrity
- contents, according to the check list attached to this manual



WARNING

Contact your Dealer immediately if something is damaged or missed.

2.3 Ambient

Store instrument and accessories in clean, dry environment free of dust and acid vapours.

Follow requirements for temperature and humidity:

Operation:

- Temperature -10° to +40° C
- Humidity < 90% RH

Storage:

- Temperature -20° to + 70° C
- Humidity < 95% RH

2.4 Return for service

When the instrument needs to be sent to NARDA for repairs please complete the questionnaire enclosed with this Operating Manual making sure you fill in all the details relative to the service requested.

In order to minimize repair time, please describe the nature of the failure. If the failure occurs only under certain conditions, please provide details on how we may recreate the same condition in order to identify the fault.

If possible, please reuse the original packaging, making sure the instrument is wrapped in heavy paper or plastic.

Alternatively, use a strong box filled with shockproof material, place enough material all around the equipment so that the unit is stable and firmly blocked inside the box.

Mark the box: FRAGILE HANDLE WITH CARE.

2.5 Cleaning

To clean the equipment use only dust-free, non-abrasive dry cloths.



WARNING

To avoid damage never use any kind of solvent, acid, or similar to clean the instrument.

2.6 Installation and use

PMM 6630 is supplied through USB port PC. The RF Input connector is located on the front; the Fisher connector (for PC connection) and Leds on the rear.

 **WARNING**

Connect the PMM 6630 to the PC only once the software Win6630 supplied in the CD-ROM has been successfully installed.

 **WARNING**

Do not connect the Data-Supply cable by applying force to the cable directly: this may damage the connection. Always hold firmly the connectors with your fingers to connect the cable.

Presence of dust, dirt or particles of any nature on the 4 poles connector surfaces must be carefully prevented.

 **WARNING**

To avoid damage, the arrow marked on the external part of the Data-Supply connector must match to the PMM 6630 connector.



Once Win6630 has been successfully installed (see Chapter 3), connect the Data-Supply cable (supplied) to the PMM 6630 respecting the connection sense; make sure to tighten the Fisher cable connector to the PMM 6630 connector.

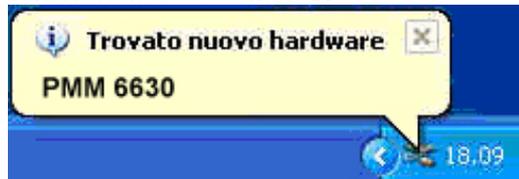


Connect the other cable end to the USB port PC.

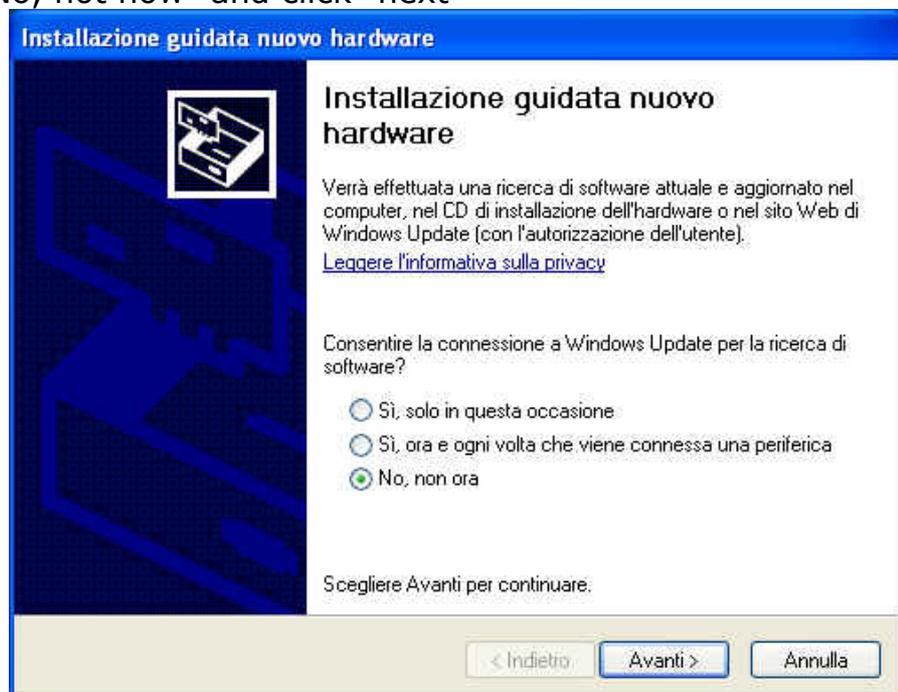


When the PMM 6630 is on, the Leds show the operating mode (see chapter 1).

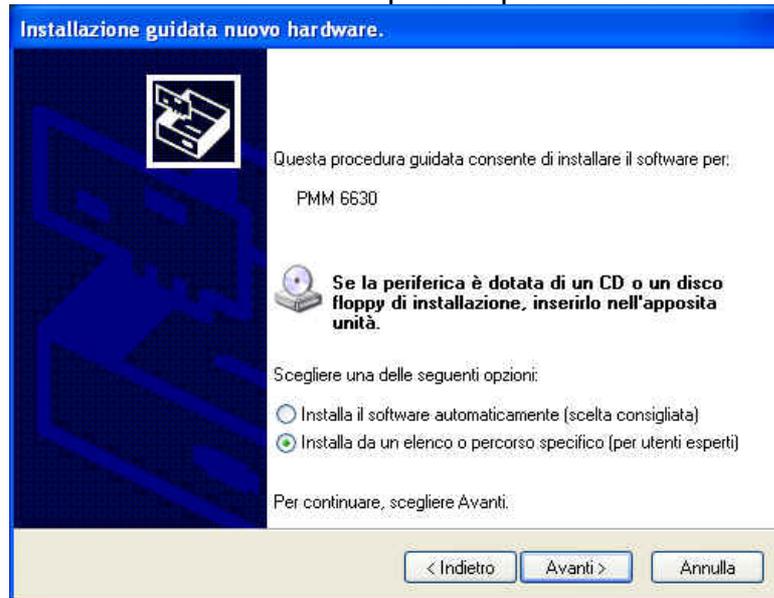
If the driver is not already installed a message informing that new hardware has been found will appear and a guided installation will be started:



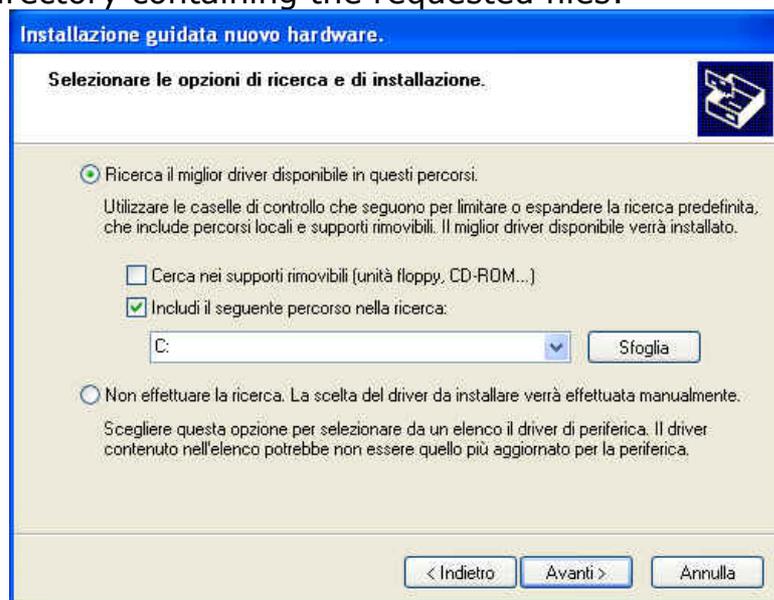
Do not allow connection to Windows Update by checking "No, not now" and click "next"



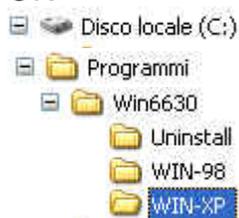
Select "Install from a list or specific path" and click "next"



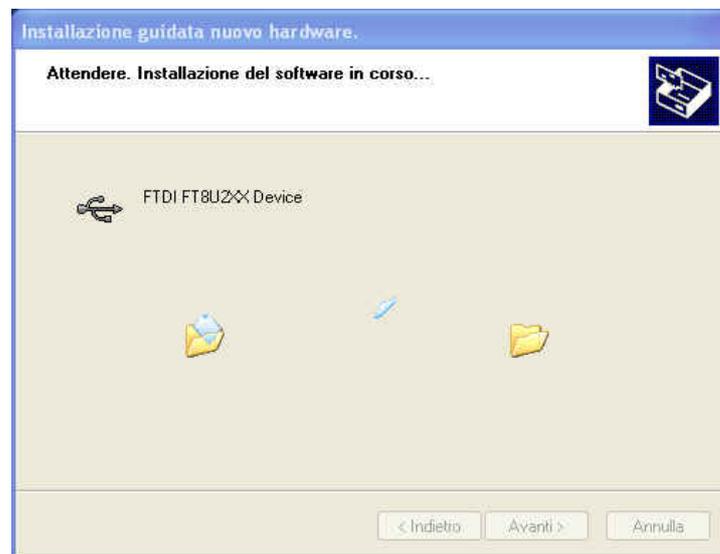
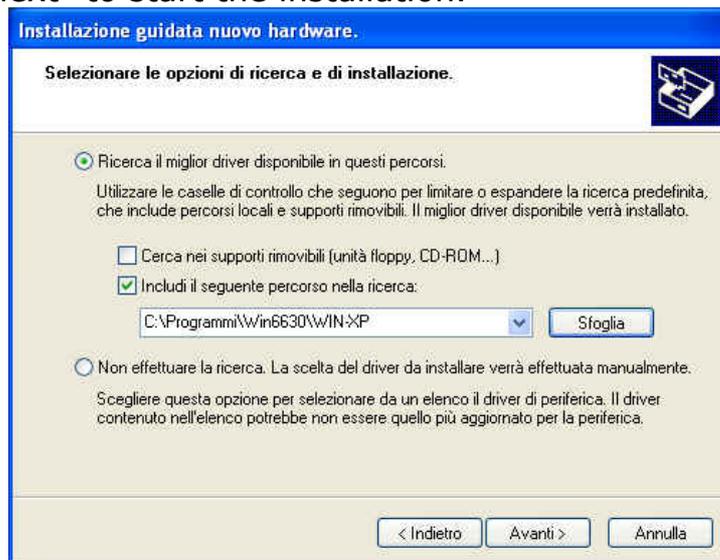
Select options as in the picture and click "browse" to select the directory containing the requested files:



The folder "USB-WIN-XP" which includes driver for Windows XP and Vista is in the following path: **c:\Programmi\Win6630\Win-XP**. Select it and click "OK"

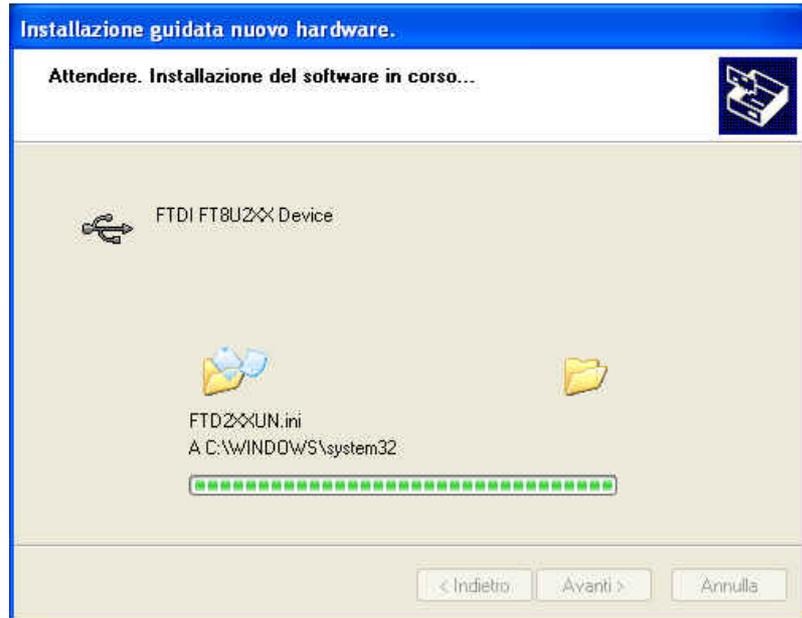


Click "next" to start the installation.



Click "continue"





Click "Finish" to complete the driver installation; the new hardware is now ready to use.



Connect the PMM 6630 RF input connector to the source.



WARNING

Tighten the PMM 6630 N-type RF connector input connector to the source connector. Loose connections may cause wrong readings.



**2.7
Functional
description**

The following block diagram represents the typical configuration of induced immunity tests where the PMM 6630 measure the power applied to the CDNs.

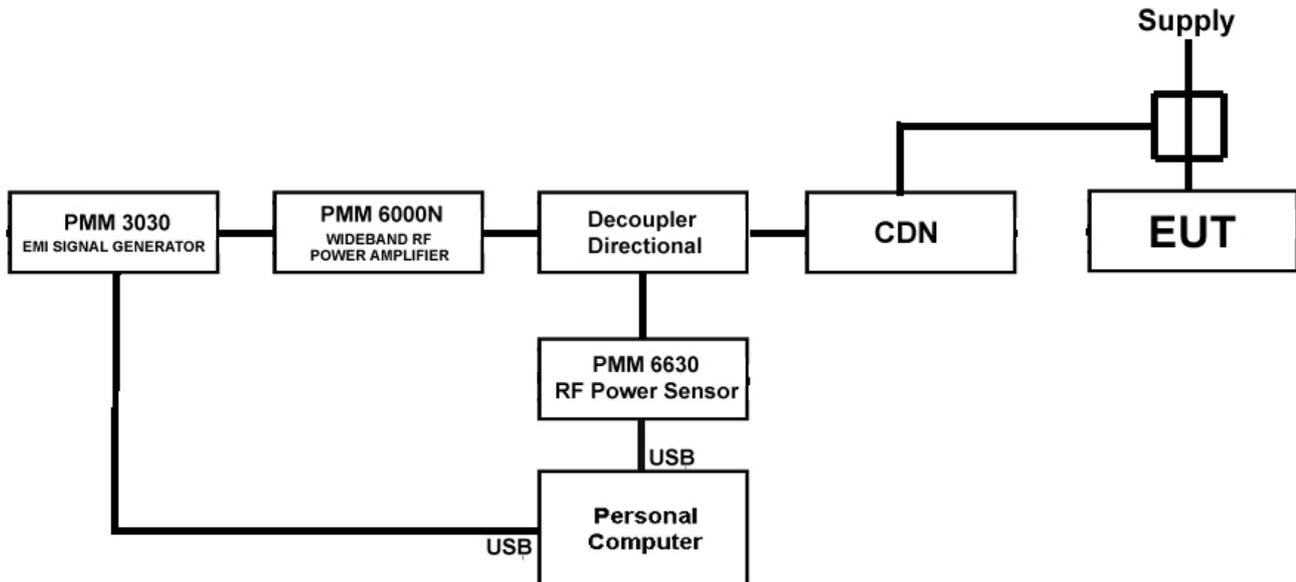


Fig. 2-1 Induced immunity set block diagram

**2.8
Power signals
of dangerous
level**



Do not apply to the PMM 6630 power levels exceeding the max. allowed value (see Table 1.1).

2.9 Remove PMM 6630 from the setup

NOTE

Uninstalling the driver is not required to remove the PMM 6630 from the setup.

Press  to close the Win6630 Software.

Disconnect the USB Cable from the PC.



WARNING

Do not disconnect the USB Cable by applying force to the cable directly: this may damage the connection. Always hold firmly the connectors with your fingers to disconnect the cable.

Disconnect the PMM 6630 from the RF source.



Disconnect the Fisher connector and the Data-Supply cable from the Power Sensor.



WARNING

Disconnect the Data-Supply cable by applying force to the cable directly: this may damage the connection. Always hold firmly the connectors with your fingers to disconnect the cable.



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3 –Win6630 Operating instructions

3.1 Foreword

This chapter is the installation and operation guide of the PC Software Win6630 supplied with the PMM 6630 RF Power Sensor.

3.2 PC minimum requirements

- Processor: Pentium
- 16 Mb RAM
- 10 Mb free space on hard disk;
- Operating system Windows™, XP/Vista/Win7.

NOTE

Software updates can be downloaded from the web page www.narda-sts.it.

2

3.3 Installation



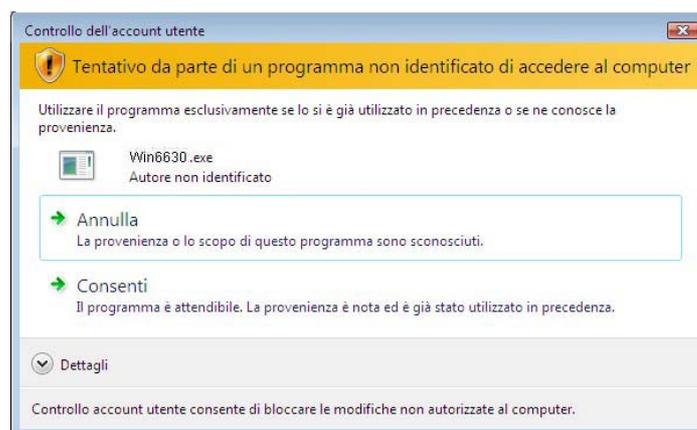
Do not connect the PMM 6630 to the PC until the installation is completed.

Insert the Win6630 CD into the PC CD-ROM driver.
In Computer Resources double click on the corresponding CD-ROM driver.

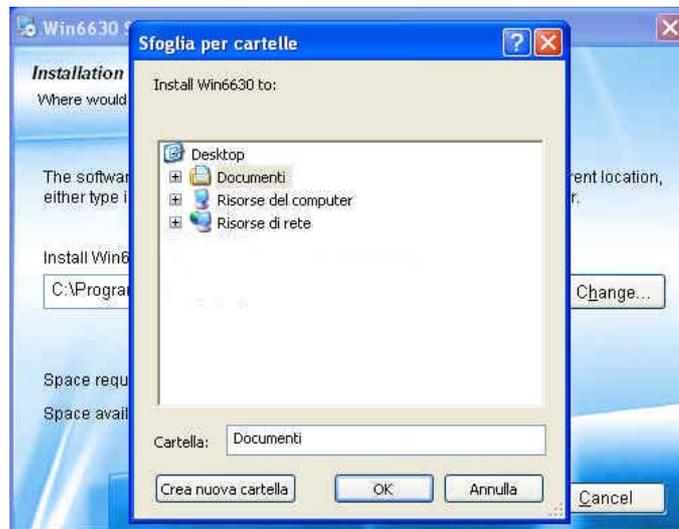
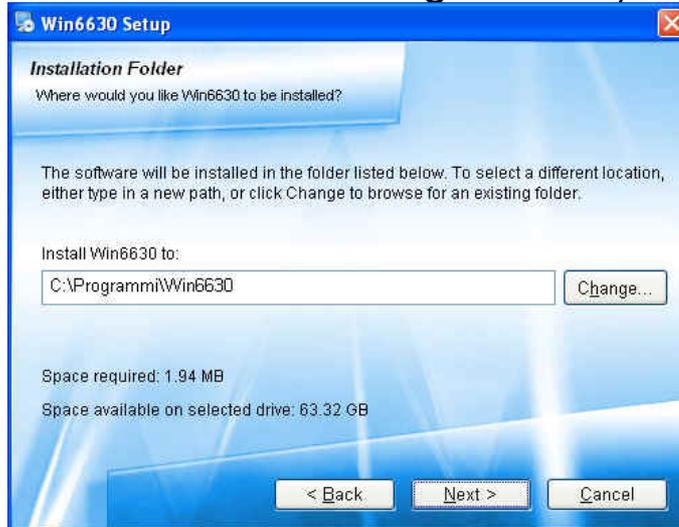
To start the installation double click on the **Win6630** icon.



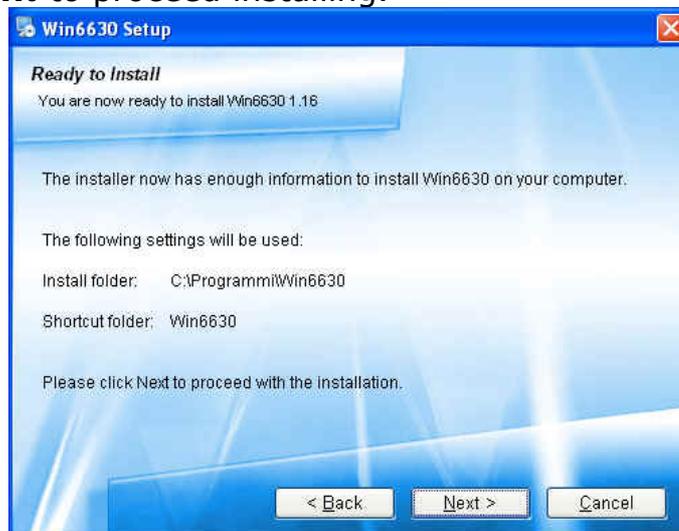
In Windows Vista most programs are blocked for computer protection. To start the installation correctly it might be necessary to authorize the operation.



The installation folder must be specified. Click **Next** to confirm the default folder or **Change** to modify.



Click **Next** to proceed installing.



The installing status is displayed then:



Click **Finish** to complete and exit the installer.
The folder **Win6630** are created under **Programs** with the icon **Win6630** on desktop.



3.4 Running Win6630

Connect the PMM 6630 to PC and click the icon on desktop.



Alternatively (Windows XP): **Start, All Programs, Win6630, Win6630.**

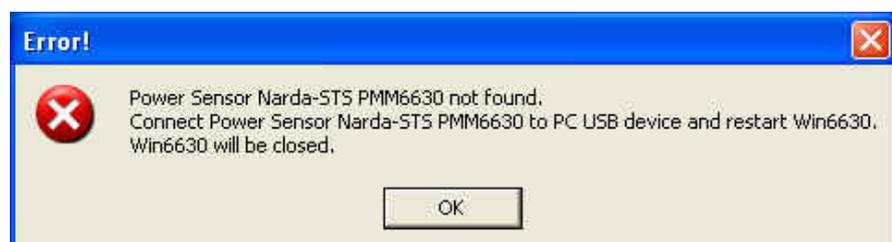


Windows Vista or 7: Click **Windows** (Windows logo), **Programs, Win6630, Win6630.**

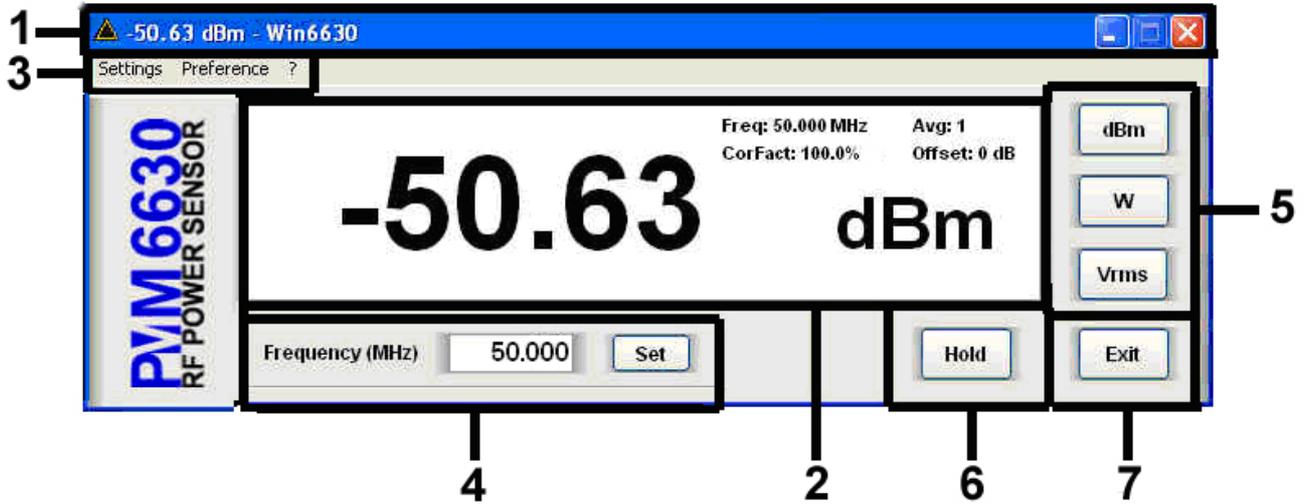
This window is displayed first:



This message appears when PMM 6630 is not connected or the communication is not established:



3.5 Main window: Main window contents



1. Title bar
2. Main window
3. Measurements and settings selections
4. Frequency setting
5. Unit setting;
6. Hold/run readings;
7. Exit and quit the program

3.5.1 Title bar



The title bar shows the Win6630 icon, the current RF power measurement, the measuring unit and the Software name. The control buttons allow to minimize to icon and exit the program.

When minimizing the main window the information is displayed in the Windows application bar at the bottom of screen.



3.5.2 Main window

The main window displays:



- Power data.
-50.91
- Measuring unit (see "Unit setting")
dBm
- Correction frequency (see par. "Frequency setting")
Default: Freq: 50.00 MHz
- Average, Correction Factor e Offset
(see "Setting menu/Settings")
Avg: 1
- CorFact: 100.0%**
- Offset: 0.0 dB**

3.5.3 Setting menu

Commands:

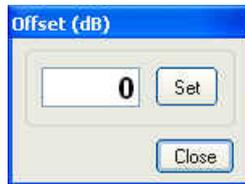
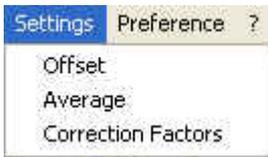
- **Settings:** Average, Correction Factor, Offset.
- **Preference:** program skin.
- **? (Info):** software and product information.

Settings Preference ?

3.5.3.1 Settings

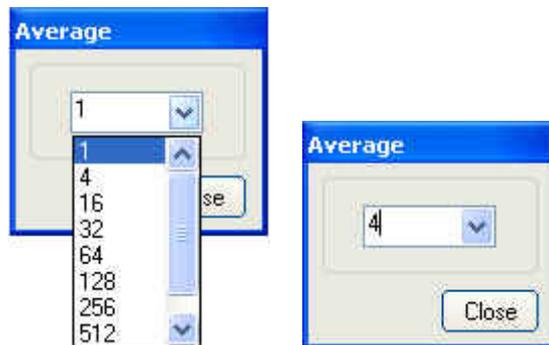
Settings options:

- **Offset:** The value represents the compensation of the eventual attenuation between the device under test and the Power Sensor.



Enter a new offset value , confirm with and close the window with .

- **Average:** setting of the number (1, 4, 16, 32, 64, 128, 256, 512 and 1024) of readings to calculate the arithmetic average (AVG).

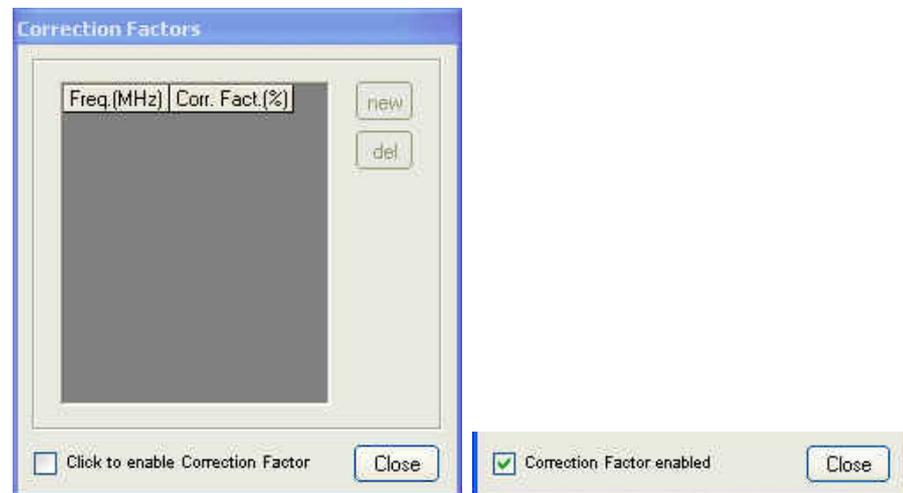


In the example, the average value of the last 4 field readings will be displayed.

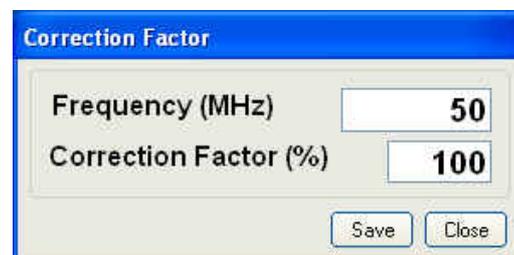
Press to close the Average window .

- **Correction Factors** expressed in %, for each frequency. The displayed level is the incident power corrected by this factor.

At the first run the correction factor is disabled; to enable, tick on "Click to enable Correction Factor".



Press new to enter a Correction Factor. The following window will be displayed:



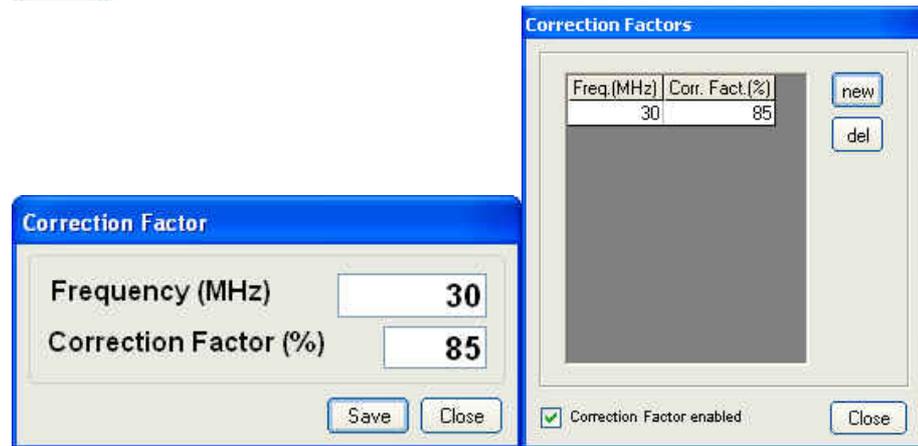
 **NOTE**

The setting displayed at the first run is the default one; the last setting will be displayed then.

NOTE

Enter a frequency correction factor between 80% and 120%.

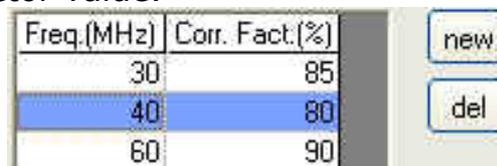
Set the Frequency and the Correction Factor ; press to store the values on the table and close the window with .



A warning message will appear if the new frequency value is already present in the table.

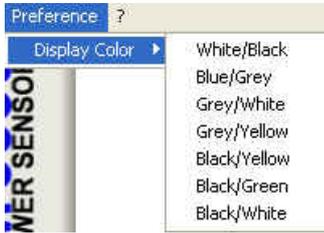


To cancel the Correction Factor, click on the corresponding line, that turns blue, then press to cancel the Correction Factor value.



3.5.3.2 Preference

Selection of different colour combinations of the main window:



Background / readings and units

- Blue/Gray
- Grey/White
- Grey/White
- Grey/White
- Black/Yellow
- Black/Green
- Black/White

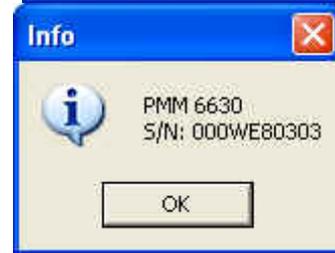
NOTE

The settings colours of Freq, Avg, CorFact and Offset will be displayed accordingly.

3.5.3.3 ? (Info)

Contents:

- **Info:** current PMM 6630 firmware version and date, Software version and serial number



- **About:** Manufacturer information.



3.5.3.4 Frequency correction setting

This setting in MHz recalls the corresponding frequency correction factor stored in the PMM 6630 memory.



The frequency is displayed with three decimals, with max. resolution of 0.001 MHz. Press **SET** to enter the frequency value.

3.5.3.5 Unit setting

Click on the buttons to change the measuring units:



3.5.3.6 HOLD / RUN

Press **HOLD** to hold the last reading.



Click on the button to toggle from HOLD to RUN

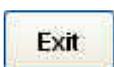
The button XYZ/TOT is active even when in HOLD.

NOTE

If the program is ended when in HOLD mode, it will restart in RUN mode.

3.5.3.7 EXIT

Press **EXIT** to end the program. The current settings are saved and will be recalled at the next start.



3.6 Uninstalling Win6630

Disconnect the USB cable (the procedure of "safe disconnection" is unnecessary).

Windows XP: click **Start**

in Windows Vista or 7: click **Windows** 

Then **All Programs, Win6630, Uninstall Win6630.**

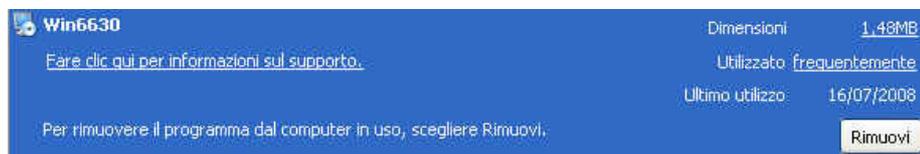


NOTE

If the Uninstaller is not available:

- Disconnect the USB cable (the procedure of "safe disconnection" is unnecessary).
- Click **Start, Settings, Control Panel and Add or Remove Programs** (Programs and functions for Windows Vista or 7).

Find Win6630 then click **Remove** and follow the instructions.



WARNING

When asked if removing the shared files, answer NO to prevent other programs not to run correctly.

3.7 Uninstalling PMM 6630 Driver

Right click **My computer** to access **Properties**



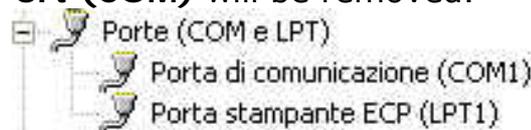
Select **Hardware and Device Manager**.
Click + to expand **Port (COM and LPT)**.
Right click **USB Serial Port (COM)** then click **Uninstall**



Click **OK** to end.



Once the uninstall is completed the peripheral **USB Serial Port (COM)** will be removed.



4 - Communication protocol

4.1 Disclaimer

This chapter provides the information required to control the PMM 6630 via the Data-Supply cable connected to a PC and by means of user's own PC software applications. Narda STS S.r.l supports the correctness of the information only, and disclaim for any consequence the use of such information may cause to anybody. The inclusion of Narda's communication protocol into user's or third party software is entirely at the user's risks and responsibility. In no way Narda STS S.r.l shall be liable for damages of any kind consequent to the use of the information provided in this chapter.

4.2 Protocol

The commands are sent to the device through FTDI driver in USB mode (USB 1.1 / 2.0) or virtual serial port whose parameters are:

- Bits per second: 9600
- Data Bits: 8
- Parity: Nessuna
- Stop Bits: 1
- Flow control: None

The commands are composed by an ASCII string delimited by “#” (0x23) and “*” (0x2A)

Commands must start with “#63”.

The answer can be either in ASCII or Binary, according to the command sent. The first character is always like the character sent, and can be used as control marker or synchronization for the answer.

The available commands are of two categories:

- **Query COMMANDs**
- **Setting COMMANDs**

The commands have this format:

#63Qcommand(parameters)* where::

= command string start;

63 = string always present;

Q = ? for query commands;

S for setting commands;

Command = command string;

(parameters) = setting parameters value (where present);

***** = command string end.

TABLE 4-1 Query COMMANDs

<p>?v Release</p>	<p>#63?v* sends back a string containing information about model, release and date of firmware.</p> <p>Example of reply to the command #63?v*: "PMM 6630:A.00.01/08;"</p>
<p>?p Power</p>	<p>#63?p* sends back a string containing power data expressed in dBm.</p> <p>When this command is sent while the 6630 is switching the ADCs, the data is meaningless, thus the 6630 replies with the string: " *** ".</p> <p>Example of reply to the command #63?p*: "-4.97 dBm"</p>
<p>?m Average of 4 measurements</p>	<p>#63?m* sends back a string containing the average power of 4 measurements. As for power data, it is expressed in dBm.</p> <p>When the 4 last data are taken from different ranges, the average is meaningless, thus the 6630 replies with the string: " *** ".</p> <p>Example of reply to the command #63?m*: "-4.97 dBm"</p>
<p>?M Average of 16 PWR's</p>	<p>#63?M* sends back a string containing the average power of 16 measurements. As for power data, it is expressed in dBm.</p> <p>When the 16 last data are taken from different ranges, the average is meaningless, thus the 6630 replies with the string: " *** ".</p> <p>Example of reply to the command #63?M*: "-4.97 dBm"</p>
<p>?s Serial Number</p>	<p>#63?s* sends back a string containing the serial number of the 6630.</p> <p>Example of reply to the command #63?s*: "123456789"</p>
<p>?f Frequency</p>	<p>#63?f* sends back a string containing the frequency at which the 6630 is set. Note that this frequency value establishes the correct calibration of the 6630 at that particular frequency only, thus when this value has not the appropriate setting, the 6630 measurements are meaningless. It is expressed in kHz.</p> <p>Example of reply to the command #63?f*: "f:1200 kHz"</p> <p>When frequency value is set to 0 kHz no frequency correction factors are computed.</p> <p>Example of reply to the command when frequency is set to 0 kHz #63?f*: "f:dis"</p>

TABLE 4-2 Setting COMMANDs

<p>Sf Set Frequency</p>	<p>#63Sf<value>* sets the frequency(<value>) to which refer the correction factor. The frequency is expressed in kHz. Once the 6630 has received and recognized this command, all measurements will be corrected using the factor stored at factory and related to that frequency. Sending a frequency value of 0 kHz disables the frequency correction factor function.</p> <p>Example of command #63Sf9*: Set the referring frequency to 9 kHz and reply: f:9 kHz (This value is the PMM 6630 minimum frequency)</p> <p>Example of command #63Sf3000000*: Set the referring frequency to 3 GHz and reply: f:3000000 kHz (This value is the PMM 6630 maximum frequency)</p> <p>Example of command #63Sf0*: Disable frequency correction factor function and reply: f:dis</p>
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5 - Accessories

5.1 Foreword

This chapter explains how to use the accessories of PMM 6630.

The following general indications apply to all accessories.

5.2 Inspection

Check the packaging integrity.



WARNING

If anything is found damaged or missed, immediately contact your Dealer.

Check the accessories with reference to the packing list included in the package.

5.3 Ambient

Store the accessories in clean, dry environment free of dust and acid vapours.

Follow requirements for temperature and humidity:

Operation:

- Temperature -10° to +50° C
- Humidity < 90% RH

Storage:

- Temperature -20° to + 70° C
- Humidity < 95% RH

5.4 Return for service

Every part of the accessories can only be replaced by NARDA, when the instrument needs repair or is malfunctioning, please contact the NARDA Support center. When an accessory needs to be sent to NARDA for repairs please complete the questionnaire enclosed with this Operating Manual making sure you fill in all the details relative to the service requested.

In order to minimize repair time, please describe the nature of the failure. If the failure occurs only under certain conditions, please provide details on how we may recreate the same condition in order to identify the fault.

If possible, please reuse the original packaging, making sure the accessory is wrapped in heavy paper or plastic.

Alternatively, use a strong box filled with shockproof material, place enough material all around the equipment so that the unit is stable and firmly blocked inside the box.

Mark the box: FRAGILE HANDLE WITH CARE.

5.5 Cleaning

To clean the equipment use only dust-free, non-abrasive dry cloths.



WARNING

To avoid damage never use any kind of solvent, acid, or similar to clean the instrument.

5.6

6630-USB Data-Supply Cable



Fig. 5-1 6630-USB Data-Supply Cable

TABLE 5-1 Specifications of the 6630-USB Data-Supply Cable	
Length	1,8 m
USB Connector	Type A Male
Multipolar Connector	4 Poles

 **NOTE**

Such devices like USB Hubs and USB cable extensions may not work properly. Connect the PMM 6630 to the PC directly with the supplied 6630-USB cable.



Front view

Connector 4 poles



Rear view

USB Type A Male

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5.7

PMM 6630FOA Fiber Optic Adapter (Optional)

Introduction

The PMM 6630FOA Fiber Optic Adapter is an optional accessory of the PMM 6630 RF Power Sensor.

The PMM 6630FOA is a fiber optic adapter that allows to convert the USB signal of the PMM 6630 into fiber optic compatible signal; it is often beneficial to use noise immune fibre optic cable instead of USB cable in environments where a low noise level is required or simply to extend the link; moreover, the optic link is immune to interferences caused by high level field.

The PMM 6630FOA is linked to the USB port of any Personal Computer through the USB-OC Optical USB Converter supplied with the unit.

The power supply is provided by an internal Li-Ion battery for up to 8 hours of continuous operation; the internal battery can be recharged with the battery charger supplied with the unit.

The PMM 6630FOA has been designed for EMC applications and can be driven by Win6630 or PMM Immunity Test software or by a software developed directly by the user.



Fig. 5-2 PMM 6630FOA

Standard accessories and documents

The accessories and documents enclosed with the instrument PMM 6630FOA are:

- PMM 6630FOA Fiber Optic Adapter;
- USB-OC Optical USB Converter;
- FO-6630/10 Cable, Fiber Optic Cable (10m);
- Battery charger + international plug adapter;
- Operating Manual + repair request form;
- Calibration Certificate.

Optional accessories

The following accessories can be ordered separately:

- FO-6630/10 Cable, fiber optic 10 m;
- FO-6630/20 Cable, fiber optic 20 m;
- FO-6630/40 Cable, fiber optic 40 m.

Specifications

This condition applies to all specifications:

- The operating ambient temperature range must be -10° to +50 °C.

TABLE 5-2 Specifications of the PMM 6630FOA

Output	connector for optic fibre Maximum length of optic fibre, 80 meters
Input	Connector 4 poles
Compatibility	with PMM 6630 RF Power Sensor
Power Supply	Internal battery 3,7 V – 1,8 Ah Li-Ion, rechargeable
Operating time	8 hours
Recharging time	4 hours
Temperature operating range	-10°C to 50°C
Storing temperature	from -20 to +70°C
Dimensions	40 x 40 x 61 mm (WxHxD)
Weight	168 g

Housing

The PMM 6630FOA is allocated in a small rectangular housing; on the front panel is located the 4 poles connector for 6630 matching; on the rear panel there are connection for the fiber optic, connector for the battery charger, power switch, LEDs for checking about charging and ID label for immediate identification;



Fig. 5-3 PMM 6630
Front view

Legend:

4 poles Connector



Fig. 5-4 PMM 6630
Rear view

Legend:

- 1- Optic link
- 2- Green Led
- 3- Red Led
- 4- Connector for battery charger
- 5- Power switch
- 6- ID Label



Fig. 5-5 PMM 6630FOA
Label with Serial Number

Legend:

- 7- Serial Number

Installation



Make sure USB-OC converter driver is installed in your PC.

Connect the PMM 6630FOA to the PMM 6630 only once the software has been successfully installed.

Connect the Fisher connector of the PMM 6630FOA by holding firmly it with your fingers.

Presence of dust, dirt or particles of any nature on the 4 poles connector surfaces must be carefully prevented.



To avoid damage, the arrow marked on the external part of the connector must match to the PMM 6630 connector.

Connect the PMM 6630FOA connector to the Power Sensor respecting the connection sense.



Place the units on a stable surface.



Make sure USB-OC converter driver is installed in your PC; connect the converter supplied with the unit to the first available USB port

 NOTE

Sometime devices like USB Hubs or USB cable extensions may not work properly. In such occurrences simply connect the USB-OC to the PC directly.

Connect the supplied fiber optic to the **FIBER OPTIC** connector of the PMM 6630FOA taking care that the spigot matches the housing. Connect the other end of the fiber optic to the USB-OC.

Connect the PMM 6630 RF input connector to the source.

 WARNING

Tighten the PMM 6630 N-type RF connector input connector to the source connector. Loose connections may cause wrong readings.



Power supply and battery charging

NOTE

To charge the unit it's needed to switch OFF the unit.

The PMM 6630FOA is supplied by internal rechargeable Li-Ion battery which can be recharged with the battery charger supplied with the unit.

Make a full charging cycle before using the Optic Adapter for longest battery operation time.

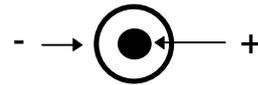
The battery charger has an internal output current limiter in case of overload when connecting to the mains.

NOTE

The complete charging cycle of a new battery lasts 4 hours.

Battery charger:
output: DC, 12 V, ~ 1.25A

Connector:



To charge the unit it's needed to switch **OFF** the unit at first; connect the battery charger to the AC mains **BEFORE** connecting it to the connector labelled **CHG** of the PMM 6630FOA. The LEDs show how charging progresses, according to what specified in Table 5-3.

**Use of
PMM 6630FOA
with PMM 6630**

 **NOTE**

During the use, it is suggest to disconnect the PMM 6630FOA from the battery charger.

Once PMM 6630FOA has been successfully installed to the PMM 6630, the fiber Optic Adapter can be switched ON by power switch (also the PMM 6630 is then automatically switched on).

When switched ON, both LEDs of the PMM 6630FOA are OFF; one of the two green LEDs on PMM 6630 body turns ON, after two seconds the other green led turns also ON. The PMM 6630 and PMM 6630FOA are ready to be used.

If there are communications problems between the PMM 6630FOA and the software, it will be displayed an error message on the screen.

During the use, the Red Led of the PMM 6630FOA turns ON to warn the Operator that the instrument is running out of battery; the residual autonomy during measurements is of 15 minutes.

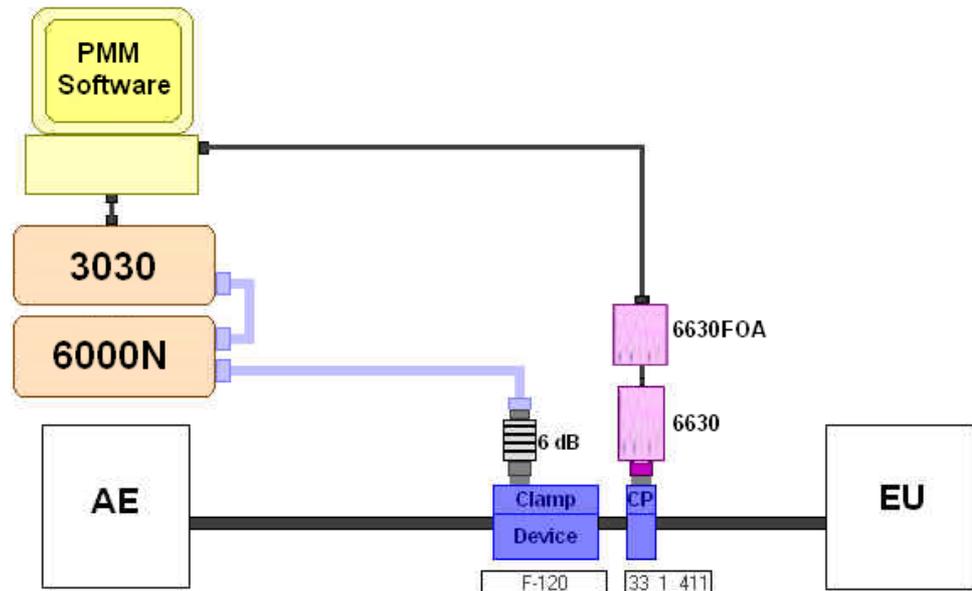
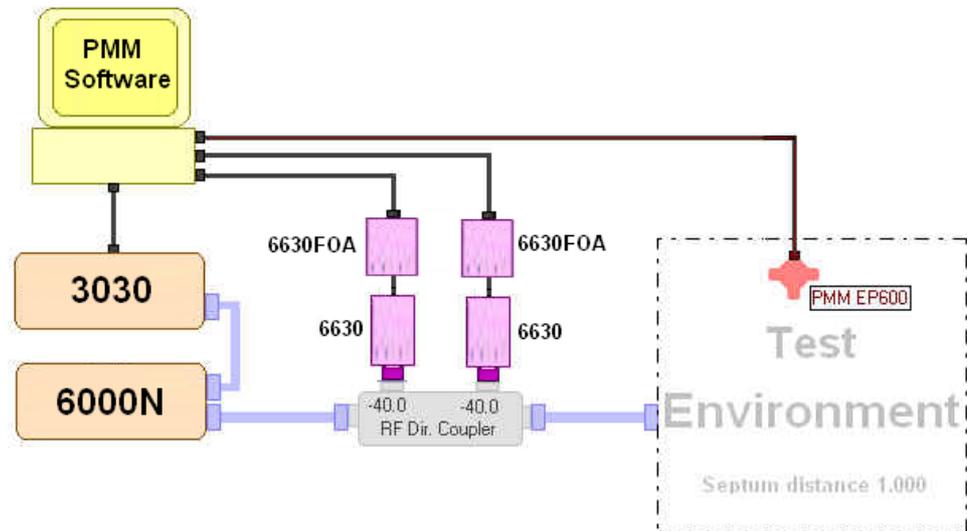
Check the Led status as per the table below.

Switch		TABLE 5-3: LEDs Status
ON*	Red ON	the instrument is running out of battery.
OFF	Green OFF	Battery recharging completed
	Green ON	the battery is under charge
	Red ON	error of charging

* disconnect the PMM 6630FOA from the battery charger.

Application

The wide frequency range and small size allow for using the PMM 6630 and PMM 6630FOA in EMC applications for monitoring the field strength during radiated and conducted immunity tests in Open Area Test Sites, TEMs/GTEMs and Anechoic Chambers.



**Remove
PMM 6630 and
PMM 6630FOA
from the setup**

 **NOTE**

Uninstalling the driver is not required to remove the PMM 6630, PMM 6630FOA and USB-OC from the setup.

Close the running Software.

 **WARNING**

To remove the PMM 6630FOA from the setup is needed to switch OFF the unit.

Disconnect the USB-OC from the PC.

 **WARNING**

Do not disconnect the USB-OC by applying force to the fiber optic directly: this may damage the connection. Always hold firmly the adapter with your fingers to disconnect.

Disconnect the PMM 6630 from the RF source taking care to the fiber optic adapter with other hand.



Place the units on a stable surface.



Disconnect the PMM 6630FOA from the Power Sensor holding it from the ring nut.



WARNING

Don't disconnect the PMM 6630FOA applying huge force to the connector: this could damage the connection on both side. Always hold firmly the connector at ring nut with your fingers, being sure it has been completely unscrewed at first.



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