narda Safety Test Solutions
an L3 Communications Company
http://www.narda-sts.it

NARDA
Safety
Test
Solutions
S.r.l. Socio Unico

Sales & Support:
Via Leonardo da Vinci, 21/23
20090 Segrate (MI) - ITALY
Tel.: +39 02 2699871
Fax: +39 02 26998700

Manufacturing Plant:
Via Benessea, 29/B
17035 Cisano sul Neva (SV)
Tel.: +39 0182 58641
Fax: +39 0182 586400

AMB-8057

AREA MONITOR BROADBAND

User's Manual

AMB-8057/00
AMB-8057/01
AMB-8057/02
AMB-8057/03

SERIAL NUMBER OF THE INSTRUMENT
You can find the Serial Number near the probe connector.
Serial Number is in the form: 000XY0000.
The first three digits and the letters are the Serial Number prefix, the last four digits are the Serial 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.

Document AMB8057EN-20119-2.11 – Copyright © NARDA 2007

NOTE:

® 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 as described in this Users 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 III** and 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).

In accordance with the IEC classification, the power supply of this product meets requirements **Safety Class II** and **Installation Category II** (having double insulation and able to carry out mono-phase power supply operations).

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:

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 .

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

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.**

Contents

	Page
Safety recommendations and instructions ….....	VII
EC Conformity Certificate…….....…….....	VIII

1 General information	**Page**
1.1 Documentation.....……....	1-1
1.2 Introduction…..……....	1-1
1.3 Standard accessories AMB-8057/00 and AMB-8057/02	1-2
1.4 Standard accessories AMB-8057/01 and AMB-8057/03	1-3
1.5 Optional accessories……	1-4
1.6 Main specifications.....	1-5
1.7 AMB-8057/00 and AMB-8057/02 panels…… ..	1-16
1.7.1 Bottom panel (inside the protective tube)…….....	1-16
1.7.2 Battery compartment cover…….....	1-16
1.7.3 Top panel (inside the protective tube)…….....	1-17
1.8 AMB-8057/02 Serial cable 2 m long for User Port……	1-18
1.9 AMB-8057/00 and AMB-8057/01 Serial Cable Jack-DB9	1-19
1.10 Battery for AMB-8057/00 and AMB-8057/02.....……	1-20
1.11 Tamperproof interlock……	1-20
1.12 AMB-8057/01 and AMB-8057/03 panels……..	1-21
1.12.1 Bottom panel (inside the protective tube)……...	1-21
1.12.2 Top panel (inside the protective tube)……	1-21
1.13 Tamperproof interlock…….….	1-21
1.14 Solar Panel module and power unit of AMB-8057/01 and AMB-8057/03……	1-22

2 Installation and use	**Page**
2.1 Introduction.....….....	2-1
2.2 Initial inspection.....….....	2-1
2.3 Working environment.....….....	2-1
2.4 Return for repairs.....…….....	2-1
2.5 Cleaning…….....…....	2-1
2.6 Installation and use..…….....……	2-2
2.6.1 Installation.....….....	2-4
2.6.1.1 Installation of AMB-8057/00 and AMB-8057/02…..	2-4
2.6.1.2 Installation of AMB-8057/01 and AMB-8057/03…..	2-6
2.7 GSM Modem.....	2-9
2.7.1 SIM card…….....….	2-9
2.7.2 How to switch the GSM modem on……	2-10
2.7.2.1 Programmed mode……	2-11
2.7.2.2 Spontaneous mode……	2-11
2.7.2.3 Automatic mode……	2-11
2.7.3 Status of led in relation to the status of the monitoring station.....……..	2-12
2.8 Field probes…….....….....	2-13
2.9 RF Signals of dangerous intensity…….....	2-14
2.10 Signals with AM modulation……	2-14
2.11 Controlling the internal batteries.....….....	2-14
2.12 Power consumption and operating mode……..	2-15

3 8057SW-02 – User's guide and CSD Communication **Page**

3.1 Introduction…… 3-1
3.1.1 Connection…… 3-1
3.1.2 First connection…… 3-1
3.2 Hardware requirements…… 3-3
3.3 Software installation…… 3-4
3.4 Assigning the serial port…… 3-8
3.5 Checking the Modem…… 3-9
3.6 Starting the program…… 3-10
3.7 Password management…… 3-12
3.7.1 Entering the Terminal Password…… 3-12
3.7.2 Changing password…… 3-13
3.7.3 Entering the Setting Password…… 3-14
3.7.4 Setting stations to CSD/RS232 communication mode…. 3-15
3.8 Main window…… 3-17
3.9 Station management…… 3-19
3.9.1 Entering a new station…… 3-19
3.9.2 Removing a station…… 3-21
3.9.3 Editing a station…… 3-21
3.9.4 Automatic data downloads…… 3-22
3.9.5 Answering…… 3-23
3.9.6 Calling…… 3-24
3.9.7 Auto ASCII File…… 3-24
3.9.8 Autoload events…… 3-25
3.10 Data management…… 3-25
3.10.1 Filing data…… 3-25
3.10.2 Exporting data…… 3-26
3.11 Direct reading…… 3-27
3.12 Send settings…… 3-28
3.13 Calendar of measurements…… 3-29
3.14 Calling a station via RS232…… 3-30
3.15 Calling a station via GSM modem (CSD mode)…… 3-31
3.16 Control window…… 3-33
3.17 Description of controls…… 3-34
3.17.1 Alarm…… 3-37
3.17.1.1 Notify alarms through…… 3-38
3.17.1.2 Last field…… 3-38
3.17.1.3 Averaging field…… 3-38
3.17.1.4 Max field alarm setting…… 3-39
3.17.1.5 Battery section…… 3-40
3.17.1.6 Probe section…… 3-41
3.17.1.7 Temperature limit…… 3-41
3.17.1.8 Memory full…… 3-42
3.17.1.9 Case open…… 3-42
3.17.2 Schedule for Modem…… 3-43
3.17.3 Schedule for SMS…… 3-44
3.17.4 Rate Settings…… 3-45
3.17.5 Get DATA…… 3-48
3.17.5.1 Examples of errors…… 3-50
3.17.6 Firmware Update…… 3-53
3.17.7 Station Date & Time…… 3-54
3.18 General commands…… 3-55
3.18.1 Read Station Conf…… 3-55
3.18.2 Enable setting…… 3-55
3.18.3 Hang&Exit…… 3-55
3.19 Download data via serial port RS232…… 3-56
3.19.1 Examples of errors…… 3-57
3.20 Software update…… 3-58
3.21 Uninstalling Software…… 3-59

4 8057SW-02 - GPRS communication **Page**
4.1 General Information…….. 4-1
4.1.1 Introduction…….. 4-1
4.1.2 Brief description of GPRS communication…… 4-1
4.1.3 Monitoring networks…….. 4-1
4.1.4 System operation in GPRS mode…….. 4-2
4.1.5 Some advantages…….. 4-2
4.2 General Requirements…….. 4-3
4.2.1 Remote station…….. 4-3
4.2.2 Minimum requirements of the controller pc…… 4-3
4.2.3 FTP server requirements…….. 4-4
4.2.4 Brief operating description and file structure…… 4-4
4.2.5 Structure…….. 4-4
4.2.5.1 CFG File (configuration)…….. 4-4
4.2.5.2 FLD File (Read)…….. 4-5
4.2.5.3 Record File (Write)…….. 4-5
4.2.5.4 FLD File (Write)…….. 4-5
4.2.5.5 Event File (Write)…….. 4-6
4.3 First installation and Parameter setting…….. 4-6
4.4 New commands for GPRS communication…….. 4-27
4.5 Additional tests and hints…….. 4-29
4.6 AMB-8057 Firmware updates…….. 4-30

5 Data display **Page**
5.1 Introduction..... 5-1
5.2 Calendar..... 5-1
5.3 Data window..... 5-2
5.4 Main commands..... 5-4
5.4.1 File…….. 5-4
5.4.2 Option…….. 5-4
5.4.3 Trace…….. 5-5
5.4.4 Marker…….. 5-6
5.4.5 Vertical…….. 5-7
5.5 Secondary commands…….. 5-8
5.5.1 Save Files…….. 5-8
5.5.1.1 Save File in ASCII format…….. 5-9
5.5.2 Open Files…….. 5-11
5.5.2.1 Open Autotext file…….. 5-13
5.5.3 Make Report…….. 5-15
5.5.4 ClipBoard…….. 5-15
5.5.5 Zoom Mode…….. 5-16
5.5.6 Comment…….. 5-16
5.5.7 Redraw…….. 5-17
5.5.8 Appearance…….. 5-17
5.5.9 Setup…….. 5-18
5.5.9.1 Color palette…….. 5-18
5.5.10 Limit…….. 5-19
5.5.10.1 Screen sample…….. 5-19
5.5.11 Software release…….. 5-19
5.6 Graph window..... 5-19
5.7 Status window…….. 5-20
5.8 Importing data to Word or Excel…….. 5-20

6 Dual-Probe operation **Page**
6.1 Description…… 6-1
6.2 Installation…….. 6-1
6.3 Probe combinations..... 6-4
6.4 Selecting the reference probe..... 6-5
6.5 Control panel in Dual-probe configuration..... 6-6
6.6 Direct readings…… 6-6
6.7 Measurement results…….. 6-7

7 SMS commands and messages **Page**
7.1 Introduction…… 7-1
7.2 List of commands..... 7-2
7.3 Query COMMANDs..... 7-5
7.4 Setting COMMANDs..... 7-12
7.5 GPRS COMMANDs..... 7-19

8 Accessories **Page**
8.1 Introduction……..... 8-1
8.2 Initial inspection..... 8-1
8.3 Operating environment..... 8-1
8.4 Returning for repair..... 8-1
8.5 Cleaning..... 8-1
8.6 Battery charge (AMB-8057/01 and AMB-8057/03 only) 8-2
8.6.1 Recharging the batteries of stations equipped with solar panel…… 8-2
8.7 8057-MAST Supporting pole…… 8-5
8.7.1 Installation of the Field Monitor on the mast…… 8-5
8.7.1.1 Metal base…….. 8-6
8.7.1.2 Mast…….. 8-6
8.7.1.3 Bags…… 8-7
8.8 Installation of the field monitor on the mast…… 8-8
8.8.1 Indoor use…….. 8-8
8.8.2 Outdoor use…….. 8-10

9 Action of the wind into AMB-8057 **Page**
9.1 Introduction…….. 9-1
9.2 AMB-8057/02 without swivel joint; …… 9-2
9.3 AMB-8057/02 with swivel joint; …….. 9-4
9.4 AMB-8057/03 without swivel joint; …… 9-6
9.5 AMB-8057/03 with swivel joint; ……..... 9-8

Figures

Figure		Page
1-1	EP-1B-01 probe……	1-9
1-2	EP-3B-01 probe……	1-10
1-3	HP-1B-01 probe……..	1-11
1-4	EP-4B-01 probe……..	1-12
1-5	EP-1B-03 probe……	1-13
1-6	EP-4B-02 probe……..	1-14
1-7	EP-1B-04 probe……	1-15
1-8	AMB-8057/00 and AMB-8057/02 bottom panel…..…….....……	1-16
1-9	AMB-8057/00 and AMB-8057/02 Battery compartment cover…...	1-16
1-10	AMB-8057/00 and AMB-8057/02 top panel……....	1-17
1-11	AMB-8057/02 Serial cable pin configuration for User Port……..	1-18
1-12	AMB-8057/00 and AMB-8057/01Cable, Jack (m) – DB9 pin conf.	1-19
1-13	AMB-8057/00 base plate……..	1-19
1-14	AMB-8057/01 base plate……..	1-19
1-15	AMB-8057/01 and AMB-8057/03 bottom panel…..…….....…..…	1-21
1-16	AMB-8057/01 and AMB-8057/03 top panel…..…….....……	1-21
1-17	DB9 Female front side view……	1-22
2-1	AMB-8057/01 and AMB-8057/03……..……	2-2
2-2	AMB-8057/00 and AMB-8057/02……..	2-3
2-3	SIM Card.....…….....……	2-9
2-4	Removal of probe from AMB-8057/00 and AMB-8057/02 protective case……	2-13
2-5	Removal of probe from AMB-8057/01 and AMB-8057/03 protective case……	2-13
3-1	CSD Main window……	3-17
4-1	FTP Main window……..……	4-8
4-2	Setting window……	4-13
4-3	SIM card installation……	4-23
6-1	HP-1B-01 top panel……..	6-1
6-2	Dual probe configuration: EP-1B-01 mounted as secondary probe	6-2
6-3	Dual probe configuration: EP-1B-04 mounted as secondary probe	6-2
6-4	AMB-8057 area monitor Dual-Probe configuration……	6-3
6-5	Last Field, as shown by the control software, and field alarm thresholds settings. Reference on primary probe as default…….	6-4
6-6	Last Field, as shown by the control software, and field alarm thresholds settings. Reference on secondary probe……..	6-4
8-1	AMB-8057/02 on its mast without swivel join……..	8-5
8-2	AMB-8057/02 on its mast with swivel joint ……..……	8-5
8-3	AMB-8057/03 on its mast without swivel join……..	8-5
8-4	AMB-8057/03 on its mast with swivel joint ……..……	8-5
8-5	Swivel joint……..	8-8
8-6	Horizontal position of AMB-8057/02……..……	8-8
8-7	Horizontal position of AMB 8057/03……..……	8-9
9-1	Weight Ballast variation in comparison to the wind speed for AMB-8057/02 without joint……	9-3
9-2	Weight Ballast variation in comparison to the wind speed for AMB-8057/02 with joint……	9-5
9-3	Weight Ballast variation in comparison to the wind speed for AMB-8057/03 without joint……	9-7
9-4	Weight Ballast variation in comparison to the wind speed for AMB-8057/03 with joint……	9-9

Tables

Table		Page
1-1	Technical specifications of AMB-8057 unit…….....	1-5
1-2	Measurement/acquisition functions…….....	1-5
1-3	General Specifications…….....	1-6
1-4	Max acquisition time of AMB-8057…….....	1-7
1-5	Settings/Queries for AMB-8057…….....	1-7
1-6	Field probe for AMB-8057..…….....…….....	1-8
1-7	Technical Specifications of Field Probe.....	1-9
4-1	Connection Data……..	4-27
4-2	FTP Connection Data……	4-27
4-3	MISC……	4-28
6-1	Probe combinations……	6-4
8-1	8057-MAST Technical Specifications…….....	8-5
9-1	Wind resistance of the AMB-8057/02 without swivel joint……	9-2
9-2	Wind resistance of the AMB-8057/02 with swivel joint……..	9-4
9-3	Wind resistance of the AMB-8057/03 without swivel joint…….	9-6
9-4	Wind resistance of the AMB-8057/03 with swivel joint……..	9-8

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.

EC Conformity Certificate

(in accordance with directive EMC 89/336/EEC and low voltage directive 73/23/EEC)

This is to certify that the product: AMB-8057 Area Monitor Broadband

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 Low Voltage Directive 2006/95/CE and with Directive EMC 2004/108/CE.

NARDA S.r.l.

X	**EC Conformity**

1 – General Information

1.1 Documentation

This Users Manual contains the following annexes:

- A form to be returned to NARDA with the device when requesting service.
- A checklist of the accessories included in the shipment.

This Users Manual also includes the description of the system accessories for distributed monitoring of environmental electromagnetic fields.

1.2 Introduction

The AMB-8057 family products are revolutionary, accurate and reliable solutions for remote and continuous monitoring of electromagnetic fields.

AMB-8057/01 and AMB-8057/03 are powered by high capacity internal batteries and solar panels that ensure practically unlimited autonomy under conditions of normal sunlight.
For indoor applications, the autonomy of the unit is at least 80 days after full battery charge.

AMB-8057/00 and AMB-8057/02 don't have any solar cells, as they are powered by replaceable high capacity primary battery for several months autonomy.

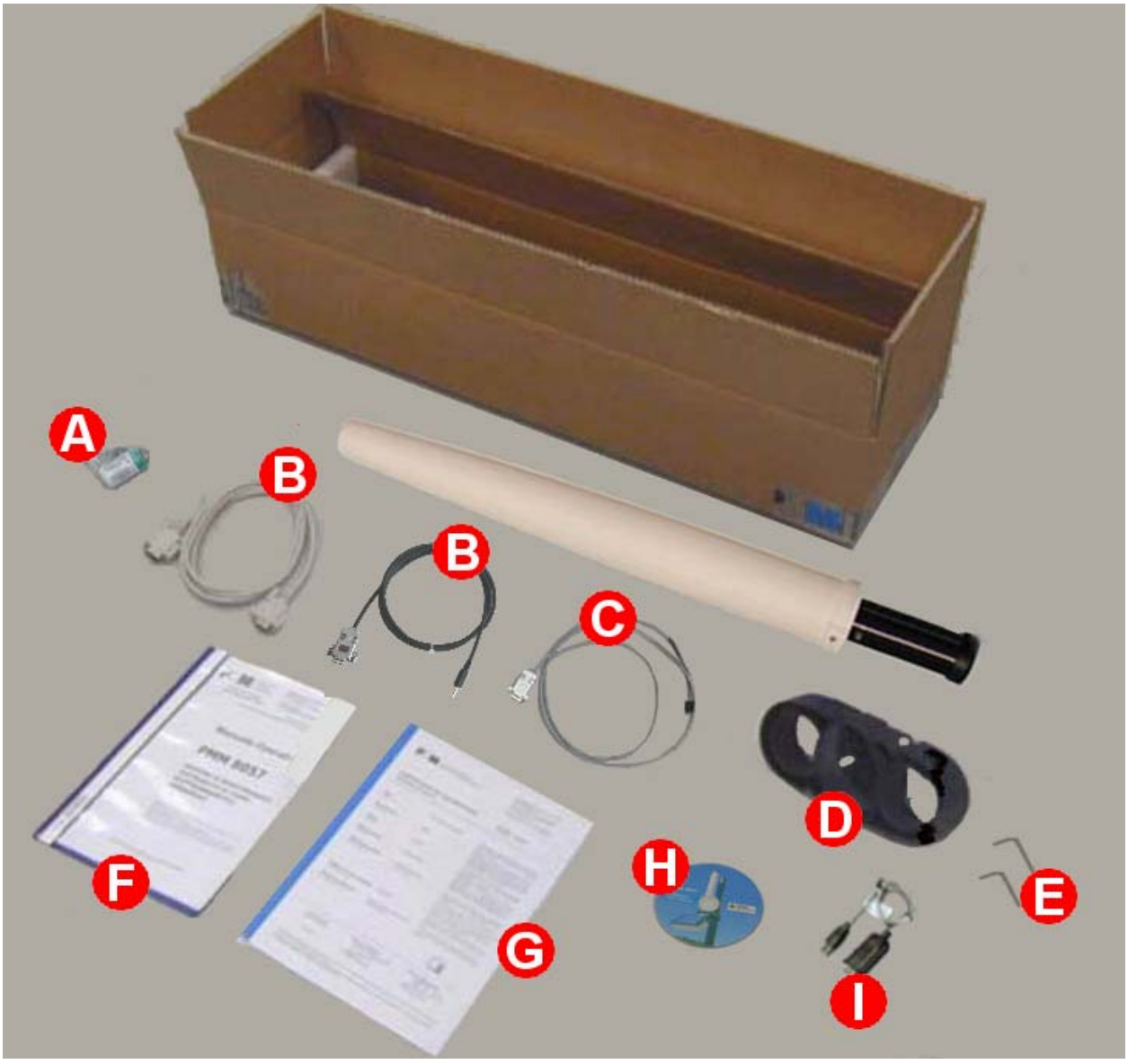
The system of acquisition makes it possible to program each parameter and transfer to a PC the data saved into the unit. The recorded data can be viewed either as a graph or as a table.

In the event of any alarm, such as a threshold setting being exceeded, or any attempt to tamper with the remote unit, or a breakdown of the unit, AMB-8057/02 and AMB-8057/03, which are equipped with GSM/GPRS modem, can be programmed to send an SMS, describing the alarm, to the user mobile phone, and /or generate a CSD data call to the controller PC. Stations set for GPRS/FTP communication mode can be programmed to access the user's FTP server and download measurement results as soon as any alarm condition occurs.

1.3 Standard accessories AMB-8057/00 and AMB-8057/02

Standard accessories included with AMB-8057/00 and AMB-8057/02 units are:

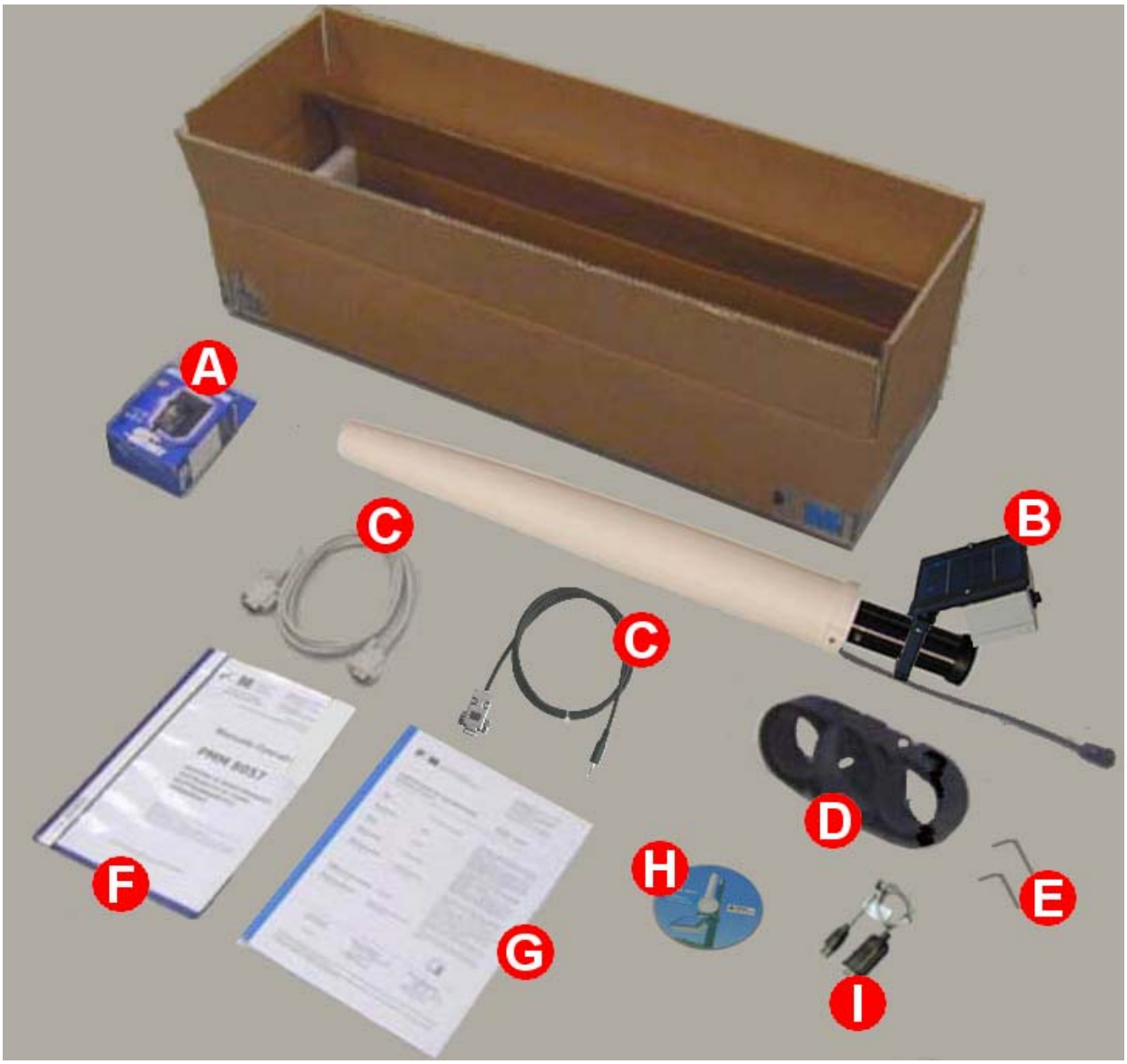
A -Primary Li-ion battery;
B - Serial cable Jack (m) – DB9 and Serial cable DB9 – DB9 (AMB-8057/00 only)
C - Serial cable 2 m long modified for User Port (AMB-8057/02 only);
D -Swivel joint for installation on the supporting pole;
E - 2.5 mm and 5 mm Allen keys for socket –head screws;
F - Users Manual with Return Form for repair
G - Calibration Certificate;
H - Software 8057-SW02 (CD-ROM);
I – USB-RS232 Serial Converter;



1.4 Standard accessories AMB-8057/01 and AMB-8057/03

Standard accessories included with AMB-8057/01 and AMB-8057/03 are:

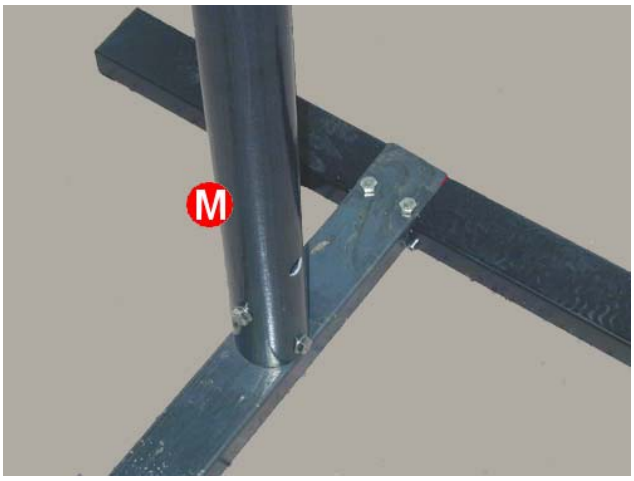
A - Battery charger;
B - Assembled Solar Panel
C - Serial cable, DB9 – DB9 (and Jack-DB9 for AMB-8057/01)
D - Swivel joint for installation on the supporting pole;
E - 2.5 mm and 5 mm Allen keys for socket –head screws;
F - Users Manual with Return Form for repair;
G - Calibration Certificate;
H -Software 8057-SW02 (CD-ROM);
I – USB-RS232 Serial Converter;



1.5 Optional accessories

Accessories supplied separately (on charge) for all models:

- 8057-MAST including:
  L - Metal supporting T-shaped base measuring 60 x 60 cm
  M - Fiberglass pole 2 m long;
  N - Tool Kit of screws and clamps.
  O - n°3 bags for ballast;
- Field probe EP-1B-01;
- Field probe EP-3B-01;
- Field probe HP-1B-01;
- Field probe EP-4B-01;
- Field probe EP-1B-03.
- Field probe EP-4B-02;
- Field probe EP-1B-04.



1.6 Main Specifications Tables 1-1 – 1-2 list the specifications of all models.

TABLE 1-1 Technical Specifications	
Frequency range	Depending on the probe
Dynamic range	Depending on the probe
Resolution	Depending on the probe
Sensitivity	Depending on the probe
Accuracy	Depending on the probe
Measurement Units	V/m, kV/m, nT, μT, mT. The unit shown depends on the probe connected
Field measured	Total field, average and Peak (MAX)
Sampling	1 measurement every 3 seconds

TABLE 1-2 Measurement/acquisition functions	
Memorization interval	from 30 sec to 15 min
Memory	over 12 Mbit
Max data retention time (before old data are replaced by new ones)	over 135 days with 1 acquisition every 6 min. (See table)
Data download	Manual Automatic managed by the unit at predefined timings (1), (3) Automatic by PC (2), (3) Automatic creation of a TXT and .BMP file after download
Functions	AVG, RMS, maximum peak; daily report via SMS (3) Display and marking of data acquired during GSM modem communication (3)
Field strength alarm-	two programmable field strength thresholds (warning and alarm) with automatic notice both of exceeding the limits and returning within the limits (3)
Clock	real time internal clock
Messages	SMS which can be sent to up to 2 mobile phones simultaneously (see table) (3)
Sensor	display of model and calibration date
Battery management	Every record includes Battery Voltage value
Temperature management	Every record includes Internal Temperature value

TABLE 1-3 General Specifications	
GSM module	Quad-band (850, 900, 1800, 1900 MHz) GPRS (3)
Field Probes	Interchangeable, several models available, single and dual probe operation
Interfaces	RS232, GSM/GPRS modem (3)
Protection	microswitch to notify case opening
Other Alarms	protective case opening, internal overheat, battery too low, battery overload (model AMB-8057/01 and AMB-8057/03 only), probe malfunction
Internal battery	
AMB-8057/00 and AMB-8057/02	Non rechargeable primary battery, lithium SAFT LSH20, 3,6 V, 13 A/h
AMB-8057/01 and AMB-8057/03	lead; 4 V, 2,5 A/h, rechargeable
Consumption	0,65 mA with GSM module off 16 mA with GSM module in stand-by state (3) 300 mA max with GSM module transmitting (3)
External power	DC, 6 – 9 V, 300 mA (AMB-8057/01 and AMB-8057/03 only)
Operating time	
AMB-8057/02	about 8 months @ 1min GSM module transmission per day and single probe operating mode (autonomy depends on probe and setting) (4)
AMB-8057/03	> 80 days in total darkness @ a 1 min GSM module transmission per day and single probe operating mode (autonomy depends on probe and setting) (4)
Recharge time	48 hours with external power unit (AMB-8057/01 and AMB-8057/03 only)
Autotest	automatic during startup and every 7 days, manual by sending specific command
Compliance	with directives 89/336 73/23 CEI 211-6 CEI 211-7
Environment temperature	-20 / +50°C
Dimensions	(WxDxH) 112 x 112 x 730 mm
Weight	
AMB-8057/00	1,2 kg only the unit; 6,5 kg total weight inclusive of supports and base
AMB-8057/01	2,4 kg only the unit; 7,7 kg total weight inclusive of supports and base
AMB-8057/02	1,2 kg only the unit; 6,5 kg total weight inclusive of supports and base
AMB-8057/03	2,4 kg only the unit; 7,7 kg total weight inclusive of supports and base
Environmental protection	IP54

Note (1): to the controller PC or to the user's FTP server depending on the preferred communication mode.
Note (2): directly from the station or from the user FTP server depending on the preferred communication mode.
Note (3): AMB-8057/02 and AMB-8057/03 only which are equipped with GSM/GPRS modem.
Note (4): Being not equipped with GSM/GPRS modem module, AMB-8057/00 and AMB-8057/01 power autonomy is longer.

TABLE 1-4 Max acquisition time

All models can measure and store data for an extremely long period of time: one of the 4 MB Flash memories is used exclusively for recording measurements and can contain up to 32.512 records of 16 bytes each. The following formula and table indicate the internal memory capacity depending on the Rate Setting.

Nrecords * [Rate (min)] / [minutes/day] = Memory capacity (days)

*For example, with a Storing Rate of 6 min, considering that a day consists of 1440 minutes, the memory capacity formula is: 32.512 * 6 / 1.440 = 135,5 days*

Storing Rate	Memory capacity
30 sec	11,3 days
6 min	135,5 days
15 min	338,7 days

NOTE

The above calculation is valid when using single and tri-band probes. The maximum acquisition time is halved when using quad-band probes

The internal memory can be read at every new data transfer to the central unit, at set times or by remote control. Moreover, when the memory is full, the new data are overwritten on the oldest so as to ensure availability of the data for the most recent measurement period.

All models also use an additional memory bank of 4MB which serves various functions. 32kB of this memory serve for the registration of events, each of them occupies a space of 128 bytes.
In the memory there is therefore space to record at least the latest 224 events.

The AMB-8057/02 and the AMB-8057/03 systems also feature the possibility to generate an alarm when records not yet downloaded exceed 75% of available memory.

TABLE 1-5 Settings/Queries

AMB-8057/02 and AMB-8057/03 can be set and queried remotely via mobile phone or a central unit consisting of a PC, with 8057-SW02 software installed, connected via GSM or Line Modem (station set for CSD communication) or, through the Internet, by FTP (station set for GPRS communication). All models can be set and queried locally by means of the serial connection (RS232/USB) to the controller PC. The following table describes the different possibilities:

Possible functions	SMS	via Modem (CSD)	via FTP (non real time)	PC via RS232
Setting	YES	YES	YES	YES
Reading status and alarms	YES	YES	YES	YES
Reading max value	YES	NO	NO	NO
Reading average value	YES	YES	NO	YES
Download data	NO	YES	YES	YES
Reading of battery	YES	YES	YES	YES
Reading of internal temperature	YES	YES	YES	YES
Spontaneous call	NO	YES	YES	NO
Reporting alarms	YES	YES	YES	NO
Reporting via SMS of daily maximum	YES	NO	NO	NO

TABLE 1-6 Field Probes

All AMB-8057 models can be equipped with electric and magnetic field probes, in Single-probe configuration, as follows:

Field Probe	Range of frequency	Reading
ELECTRIC FIELD PROBE EP-1B-01	100 kHz – 3 GHz	0,2 – 200 V/m
TRI-BAND ELECTRIC FIELD PROBE EP-3B-01	100 kHz – 3 GHz	0,2 – 200 V/m
MAGNETIC FIELD PROBE HP-1B-01	10 Hz – 5 kHz	50 nT – 200 μT
QUAD-BAND ELECTRIC FIELD PROBE EP-4B-01	100 kHz – 3 GHz	0,03 – 200 V/m
ELECTRIC FIELD PROBE EP-1B-03	100 kHz – 7 GHz	0,2 – 200 V/m
QUAD-BAND ELECTRIC FIELD PROBE EP-4B-02	100 kHz – 7 GHz	0,03 – 200 V/m
ELECTRIC FIELD PROBE EP-1B-04	10 Hz – 5 KHz	5 V/m – 20 kV/m

All AMB-8057 models can be equipped with electric and magnetic field probes, in Dual-probe configuration, as follows:

Dual-probe configuration
HP-1B-01 + EP-1B-04
HP-1B-01 + EP-1B-01
HP-1B-01 + EP-1B-03
HP-1B-01 + EP-3B-01

NOTE **Tri-band probes used in Dual-probe configuration provide the Wide band result only.**

TABLE 1-7 Technical Specifications of Field Probes

ELECTRIC FIELD PROBE EP-1B-01

Frequency range	0,1 – 3000 MHz
Reading range	0,2 – 200 V/m
Overload	600 V/m
Dynamic range	> 60 dB
Resolution	0,01 V/m
Sensitivity	0,2 V/m
Typical accuracy @ 6V/m	± 0,8 @ 50 MHz
Flatness @ 20V/m	1 – 200 MHz ±0,8 dB 150 kHz - 3 GHz ±1,5 dB
Anisotropy @ 6V/m	± 0,8 dB @ 50 MHz (typical 0,6 dB)
Rejection of magnetic field	> 20 dB
Temperature error	0,1 dB/°C
A/D conversion	On board
Calibration factors	On board E^2prom
Temperature sensor	On board
Dimensions	Length 450mm, diameter 55mm
Weight	180g

Fig. 1-1 EP-1B-01 probe

TRI-BAND ELECTRIC FIELD PROBE EP-3B-01

	Wide band	Low pass	High pass
Frequency range	0,1 – 3000 MHz	0,1 – 862 MHz	933 – 3000 MHz
Reading range	0,2 – 200 V/m		
Overload	600 V/m		
Dynamic range	> 60 dB		
Resolution	0,01 V/m		
Sensitivity	0,2 V/m		
Typical accuracy @ 6V/m	± 0,8 @ 50 MHz		± 0,8 @ 1 GHz
Flatness @ 20V/m	1 – 200 MHz ±0,8 dB 150 kHz - 3 GHz ±1,5 dB	1 – 200 MHz ±0,8 dB 150 kHz - 862 MHz ±1,5 dB	933 – 3000 MHz ±1,5 dB
Anisotropy @ 6V/m	± 0,8 dB @ 50 MHz (typical 0,6 dB)		+/- 0,8 dB @ 1 GHz (typical 0,6 dB)
Attenuation out of band	Not applicable	933 MHz – 3 GHz > 23 dB (respect to 50 MHz)	0,1 – 862 MHz > 23 dB (respect to 1 GHz)
Rejection of magnetic field	> 20 dB		
Temperature error	0,1 dB/°C		
A/D conversion	On board		
Calibration factors	On board E^2prom		
Temperature sensor	On board		
Dimensions	Length 450mm, diameter 55mm		
Weight	180g		

Fig. 1-2 EP-3B-01 Probe

MAGNETIC FIELD PROBE HP-1B-01

Frequency range	10 Hz – 5 kHz
Reading range	50 nT – 200 µT
Overload	> 1 mT
Dynamic range	> 72 dB
Resolution	1 nT
Sensitivity	50 nT
Flatness @ 40 Hz - 1 kHz	1 dB (typical 0,6)
Anisotropy @ 50 Hz 3µT	0,3 dB
Rejection of electric field	> 20 dB
A/D Conversion	On board
Calibration factors	On board E^2prom
Temperature sensor	On board
Dimensions	Length 83 mm, diameter 53 mm
Weight	110g

Fig. 1-3 HP-1B-01 Probe

QUAD-BAND ELECTRIC FIELD PROBE EP-4B-01

	Wide band	EGSM 900 Band pass	EGSM 1800 Band pass	UMTS Band pass
Frequency range	0.1 – 3000 MHz	925 – 960 MHz	1805 – 1880 MHz	2110 – 2170 MHz
Level range	0.2 – 200 V/m	0.03 – 30 V/m		
Dynamic range	> 60 dB	> 60 dB		
Resolution	0.01 V/m			
Sensitivity	0.2 V/m	0.03 V/m		
Flatness @ 6 V/m	1 – 200 MHz +/-0.8 dB 0.15 MHz - 3 GHz +/-1.5 dB	925 – 960 MHz +0.5 / -2.5 dB	1805 MHz – 1880 MHz +0.5 / -2.5 dB	2110 – 2170 MHz +0.5 / -2.5 dB
Anisotropicity @ 3 V/m	± 0.8 dB @ 50 MHz (typical 0.6 dB)	± 0.8 dB (typical 0.6 dB) @ 942.5 MHz	± 0.8 dB (typical 0.6 dB) @ 1842.5 MHz	± 0.8 dB (typical 0.6 dB) @ 2140 MHz
Out band attenuation	not applicable	> 8 dB @ 860 MHz > 8 dB @ 1035 MHz (respect to 942.5 MHz)	> 8 dB @ 1540 MHz > 8 dB @ 2050 MHz (respect to 1842.5 MHz)	> 8 dB @ 1860 MHz > 8 dB @ 2350 MHz (respect to 2140 MHz)
H filed rejection	> 20 dB			
Temperature error	0°C÷50°C = ± 0.3 dB		-20°C÷0°C = - 0.1 dB / °C	
Center frequency drift	not applicable	40°C÷60°C = ± 100 kHz	-20°C÷40°C = -100 kHz / °C	
A/D convertion	On board			
Calibration factors	On board E^2prom			
Temperature sensor	On board			
Size	Length 450 mm, diameter 55 mm			
Weight	210g			

Fig. 1-4 EP-4B-01 probe

ELECTRIC FIELD PROBE EP-1B-03

Frequency range	0,1 – 7000 MHz
Reading range	0,2 – 200 V/m
Overload	600 V/m
Dynamic range	> 60 dB
Resolution	0,01 V/m
Sensitivity	0,2 V/m
Typical accuracy @ 6V/m	± 0,8 @ 50 MHz
Flatness @ 20V/m	3 MHz - 200 MHz +/-0.8 dB 0.15 MHz - 3 GHz +/-1.5 dB 0.1 MHz - 6 GHz +/-2 dB
Anisotropy @ 6V/m	± 0,8 dB @ 50 MHz (typical 0,6 dB)
Rejection of magnetic field	> 20 dB
Temperature error	0,1 dB/°C
A/D conversion	On board
Calibration factors	On board E^2prom
Temperature sensor	On board
Dimensions	Length 450mm, diameter 55mm
Weight	180g

Fig. 1-5 EP-1B-03 probe

QUAD-BAND ELECTRIC FIELD PROBE EP-4B-02

	Wide band	EGSM 900 Band pass	EGSM 1800 Band pass	UMTS Band pass
Frequency range	0.1 – 7000 MHz	925 – 960 MHz	1805 – 1880 MHz	2110 – 2170 MHz
Level range	0.2 – 200 V/m	0.03 – 30 V/m		
Dynamic range	> 60 dB	> 60 dB		
Resolution	0.01 V/m			
Sensitivity	0.2 V/m	0.03 V/m		
Flatness @ 6 V/m	3 – 200 MHz +/-1.5 dB 0.15 MHz - 3 GHz +/-2 dB 0.1 MHz – 7 GHz +/- 3 dB	925 – 960 MHz +0.5 / -2.5 dB	1805 MHz – 1880 MHz +0.5 / -2.5 dB	2110 – 2170 MHz +0.5 / -2.5 dB
Anisotropicity @ 3 V/m	± 0.8 dB @ 50 MHz (typical 0.6 dB)	± 0.8 dB @ 942.5 MHz (typical 0.6 dB)	± 0.8 dB @ 1842.5 MHz (typical 0.6 dB)	± 0.8 dB @ 2140 MHz (typical 0.6 dB)
Out band attenuation	not applicable	> 8 dB @ 860 MHz > 8 dB @ 1035 MHz (respect to 942.5 MHz)	> 8 dB @ 1540 MHz > 8 dB @ 2050 MHz (respect to 1842.5 MHz)	> 8 dB @ 1860 MHz > 8 dB @ 2350 MHz (respect to 2140 MHz)
H filed rejection	> 20 dB			
Temperature error	0°C÷50°C = ± 0.3 dB		-20°C÷0°C = - 0.1 dB / °C	
Center frequency drift	not applicable	40°C÷60°C = ± 100 kHz	-20°C÷40°C = -100 kHz / °C	
A/D convertion	On board			
Calibration factors	On board E^2prom			
Temperature sensor	On board			
Size	Length 450 mm, diameter 55 mm			
Weight	210g			

Fig. 1-6 EP-4B-02 probe

ELECTRIC FIELD PROBE EP-1B-04

Frequency range	10 Hz – 5 kHz
Level range	5 V/m – 20 kV/m
Overload	> 30 kV/m
Dynamic range	> 72 dB
Resolution	0.1 V/m
Sensitivity	5 V/m
Flatness @ 100 V/m (40 Hz - 1 kHz)	1 dB (typical 0,5)
Anisotropycity @ 100 V/m	0,5 dB @ 50 Hz
Rejection of magnetic field	> 20 dB
A/D Conversion	On board
Calibration factors	On board E^2prom
Temperature sensor	On board
Dimensions	Length 77 mm, diameter 53 mm
Weight	110g

Fig. 1-7 EP-1B-04 probe

1.7 AMB-8057/00 and AMB-8057/02 panels

1.7.1 Bottom panel (inside protective cover)

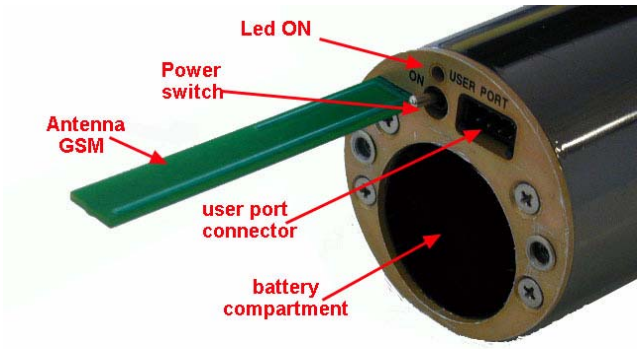


Fig. 1-8
Bottom panel

Legend:

- **Antenna GSM**: multi-band antenna for internal GSM modem (AMB-8057/02 only)
- **Power switch**: Switch the unit on/off
- **Led ON**: lit when power is on
- **User Port**: connector for data
- **Battery compartment**: to insert the replaceable primary battery

1.7.2 Battery compartment cover

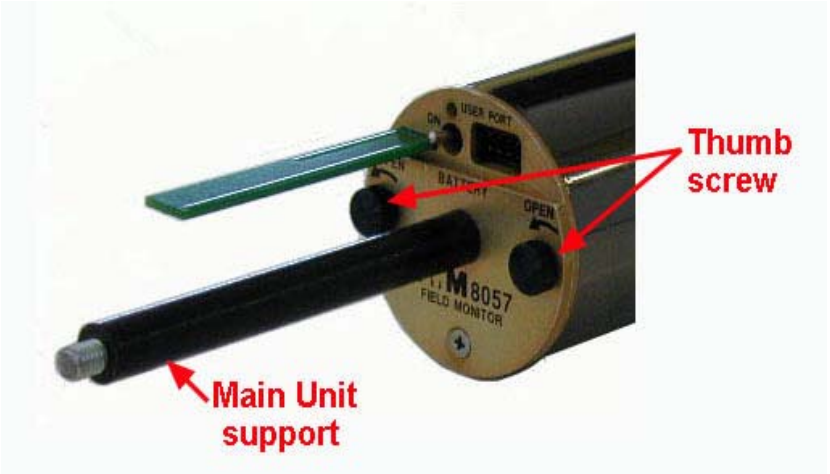


Fig. 1-9
Battery compartment cover

Legend:

- **Main Unit support**: to support the metering unit.
- **Thumb screw**: to open and close the battery compartment.

1.7.3 Top panel
(inside protective cover)

Fig. 1-10
Top panel

Legend:

- **Probe Connector**: Connector for measurement probe
- **SIM slot**: point of insertion of the SIM card for GSM/GPRS communication (AMB-8057/02 only)
- **S/N**: serial number of the unit

1.8 AMB-8057/02 Serial cable 2 m long (modified) for User Port

Connect the PC (serial port) to the “User Port” using the modified Serial cable supplied with the AMB-8057/02 System.
The following figure shows the Serial cable pin configuration.

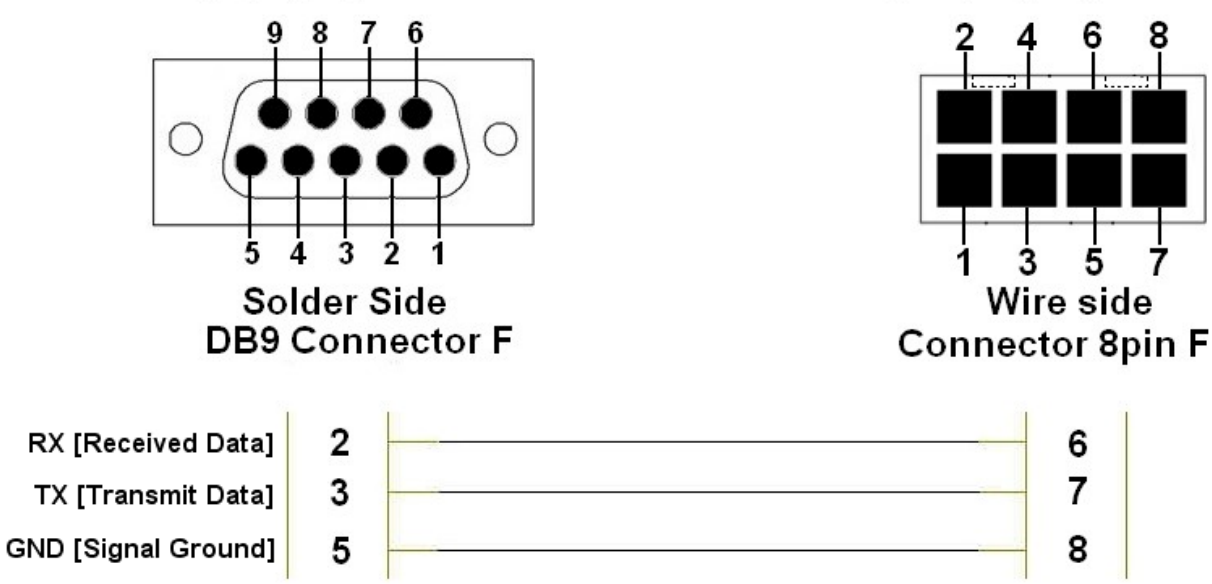


Fig. 1-11 AMB-8057/02 Serial cable pin configuration for User Port

1.9 AMB-8057/00 and AMB-8057/01 Serial cable, Jack(m) – DB9

Connect the PC (serial port) to the "User Port" using the Serial cable, Jack(m) – DB9, supplied with the AMB-8057/00 and AMB-8057/01 System. The following figure shows the Serial cable pin configuration.

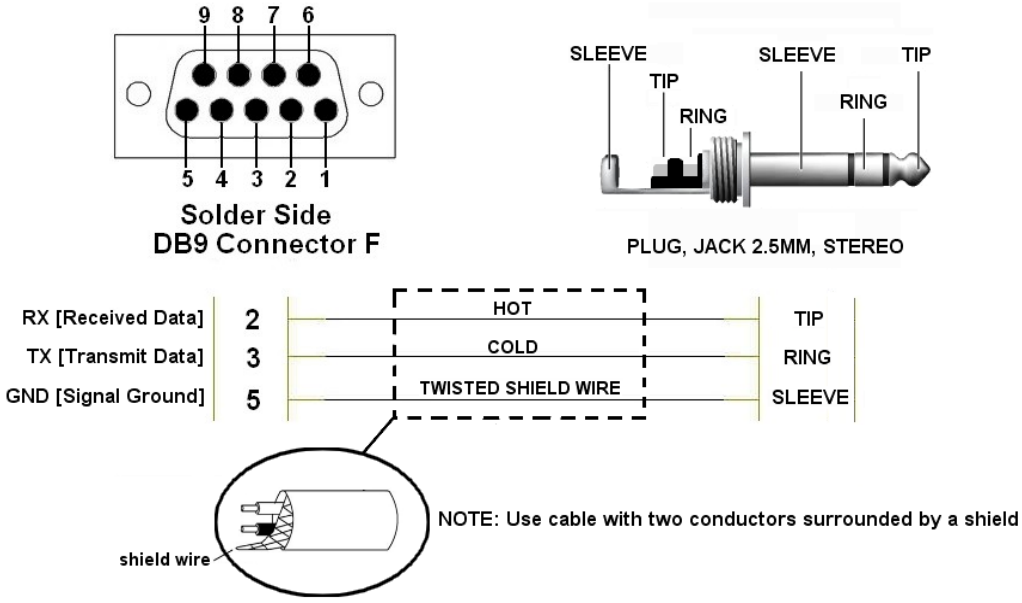


Fig. 1-12 Serial cable, Jack (m) – DB9 pin configuration

Connect the cable to the Socket Jack 2.5mm connector available on the lower side of the base plate; it allows to download the local data without removing the protective case.

AMB-8057/00 base plate

Legend:
1 - Socket Jack 2.5mm connector (User Port)
2 - Protective Plug for Socket
3 - Acrylic lens

Fig. 1-13 AMB-8057/00 base plate

AMB-8057/01 base plate

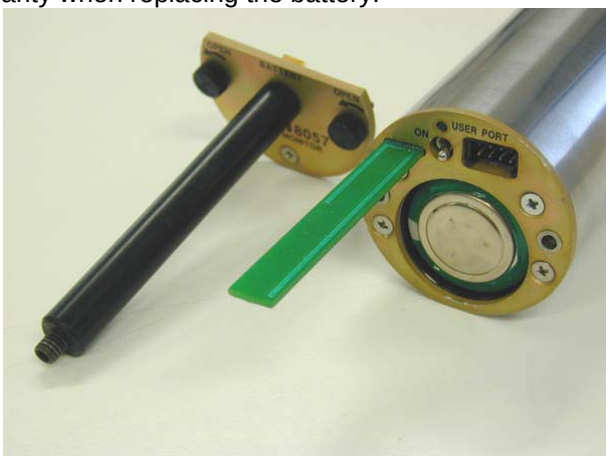
Legend:
1 - Socket Jack 2.5mm connector (User Port)
2 - Data-Supply cable and Protective Plug for Socket
3 - Acrylic lens

Fig. 1-14 AMB-8057/01 base plate

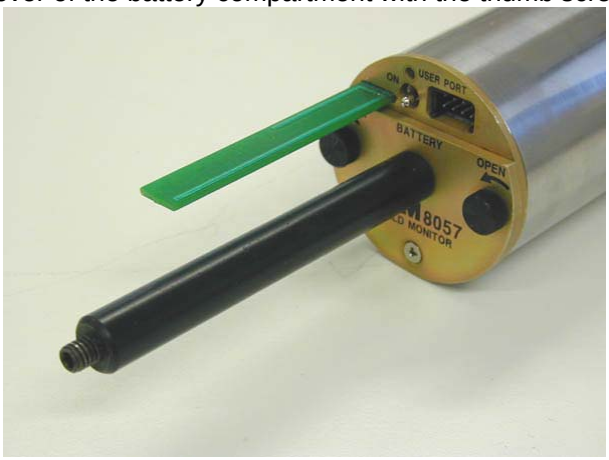
1.10 Battery for AMB-8057/00 and AMB-8057/02

The monitoring station AMB-8057/00 and AMB-8057/02 are powered by an internal replaceable primary (non rechargeable) battery.

Respect polarity when replacing the battery!



Close the cover of the battery compartment with the thumb screws



1.11 Tamperproof interlock

A micro switch on the side of the unit is tripped when the unit is opened. It is possible to activate an alarm, sent by AMB-8057/02 to any GSM mobile phone, warning of any attempts to tamper with the device.

1.12 AMB-8057/01 and AMB-8057/03 panels

1.12.1 Bottom panel (inside protective cover)

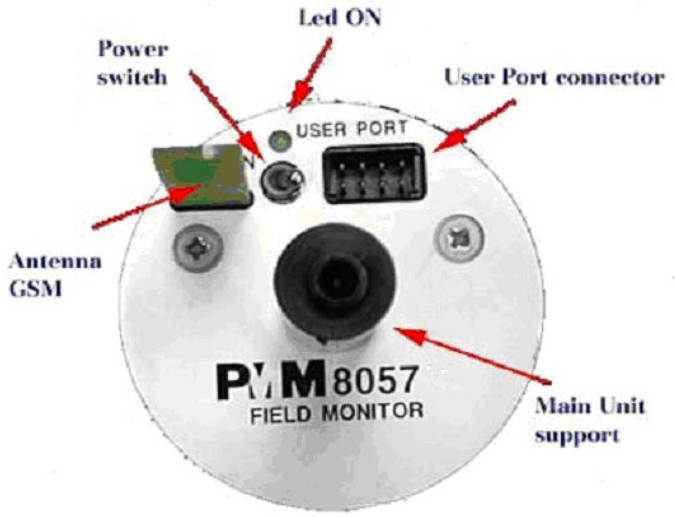
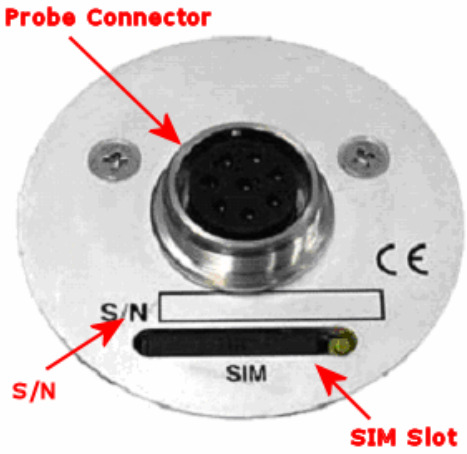


Fig. 1-15
Bottom panel

Legend:

- **Antenna GSM**: multi-band antenna for internal GSM/GPRS modem (AMB-8057/03 only)
- **Power switch**: switches AMB-8057 on/off
- **Led ON**: lit when power is on
- **User Port**: connector for data and power
- **Main Unit support**: mechanical support

1.12.2 Top panel (inside protective cover)



Legend:

- **Probe Connector**: Connector for measurement probe
- **SIM slot**: point of insertion of the SIM card for GSM/GPRS communication (AMB-8057/03 only)
- **S/N**: serial number of the unit

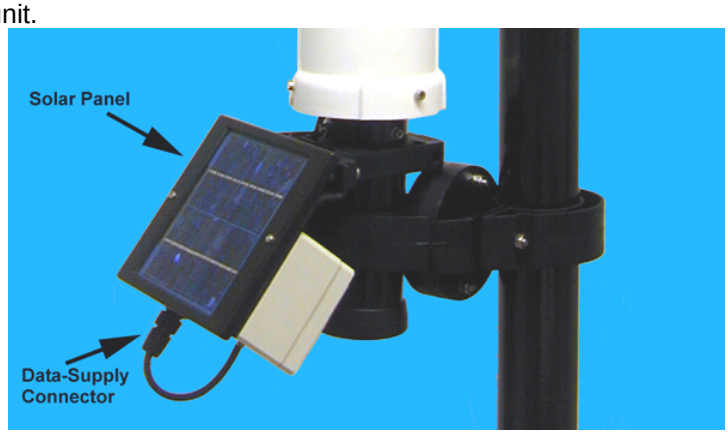
Fig. 1-16
Top panel

1.13 Tamperproof interlock

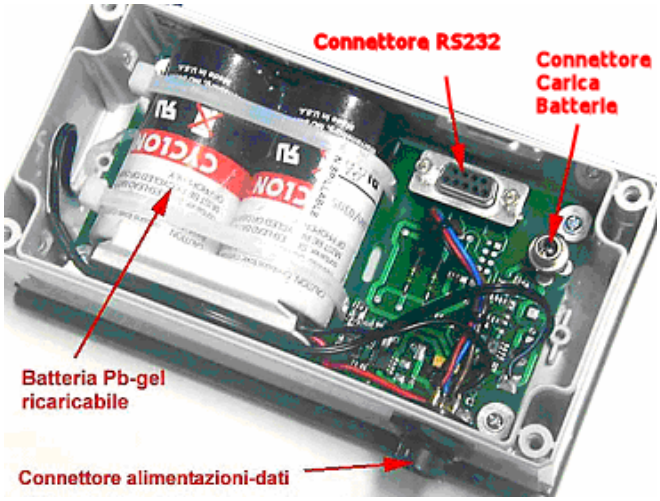
A micro switch on the side of the unit is tripped when the unit is opened. It is possible to activate an alarm, sent by AMB-8057/03 to any GSM mobile phone, warning of any attempts to tamper with the device.

1.14 Solar panel module and power unit of AMB-8057/01 and AMB-8057/03

AMB-8057/01 and AMB-8057/03 are equipped with an independent power supply system and powered jointly by a rechargeable battery Pb-gel 4V, 2,5A, placed in a sealed compartment (so called “Solar Module”), and by solar panels.
The Solar Module has an external Data-Supply connector to the monitoring station and two more connectors, inside, for RS232 and battery recharge.
This Solar Module has a suitable mechanical connection to the AMB-8057 main unit.



Power unit



Detail of Solar Panel module internal connections.

- Connector for battery charger
- Connector RS232 for direct connection to Personal Computer

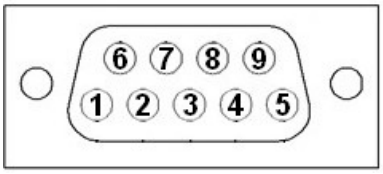


Fig. 1-17 DB9 Female front side view

DB9 Female Connector pin configuration:
Pin 1 CI [Received Line Signal Detector (Data Carrier Detect)]
Pin 2 RX [Received Data]
Pin 3 TX [Transmit Data]
Pin 5 GND [Signal Ground]
Pin 8 CTS [Clear To Send]
Pin 9 RI [Ring Indicator]

2 – Installation and use

2.1 Introduction

This section provides the information necessary to install and use the AMB-8057 broadband area monitors.
It also includes information regarding initial inspection, power requirements, interconnections, working environment, assembly, cleaning, storage and shipment.

2.2 Initial inspection

Inspect the package for any possible damage.

WARNING

If the packaging or protective material are damaged, check that the contents is complete and that the instrument has not been damaged in any of its electrical or mechanical parts. Check the accessories, referring to the checklist enclosed with the manual. Report any noticed damages to the forwarder and to NARDA.

2.3 Working environment

The working conditions for the instrument are as follows:

- Temperature From -20°C to +50°C
- Relative humidity (without condensation) ≤ 98% (45°C)

The instrument should be stored in a clean, dry place free of acids, dust and moisture.
The storage environment must have the following specifications:

- Temperature From -25°C to + 70°C
- Relative humidity (without condensation) < 99%
- Altitude Up to 4000 m (a.s.l.)

2.4 Return for repairs

Any part of the instrument – with the sole exception of the battery of AMB-8057/00 and AMB-8057/02 - can only be replaced by NARDA, therefore, in case of damage to parts and/or malfunctions, contact the NARDA service center.
When the instrument has to be returned to NARDA for repairs, please complete the form enclosed with this Users Manual, filling in all the information necessary for the service requested.
To reduce the time necessary for the repair, be as specific as possible in describing the malfunction. If the problem only occurs under specific conditions, detail in the best possible way how to reproduce these conditions.
Whenever possible, it is preferable to use the original packing for return, making sure to wrap the device in heavy paper or plastic. In alternative, pack the equipment in a sturdy card box with plenty of impact absorbing material all around the equipment, to ensure a tight fit and prevent it from moving inside the box. Take special precautions to protect the solar cells. Seal the package securely and write FRAGILE on the outside to encourage careful handling.

2.5 Cleaning

Use a clean, soft, dry cloth to clean the instrument and the solar cells.

WARNING

To clean the instrument do not use solvents, acids, cleaning fluid, turpentine, acetone or similar products which could damage it

2.6 Installation and use

The Systems for Distributed Monitoring of Environmental Electromagnetic Fields consist of a protective case made of material that is transparent to electromagnetic fields and designed to house the field probe, the electronic measuring instruments and the data transmission devices.

NOTE

Models AMB-8057/01 and AMB-8057/03 have power unit, consisting of solar panels and a battery.
When equipped with the solar panels, the low consumption of the system ensure a practically unlimited autonomy under normal sunlight conditions.

Fig. 2-1 AMB-8057/01
AMB-8057/03

NOTE **Models AMB-8057/00 and AMB-8057/02 don't have the solar panel module.**

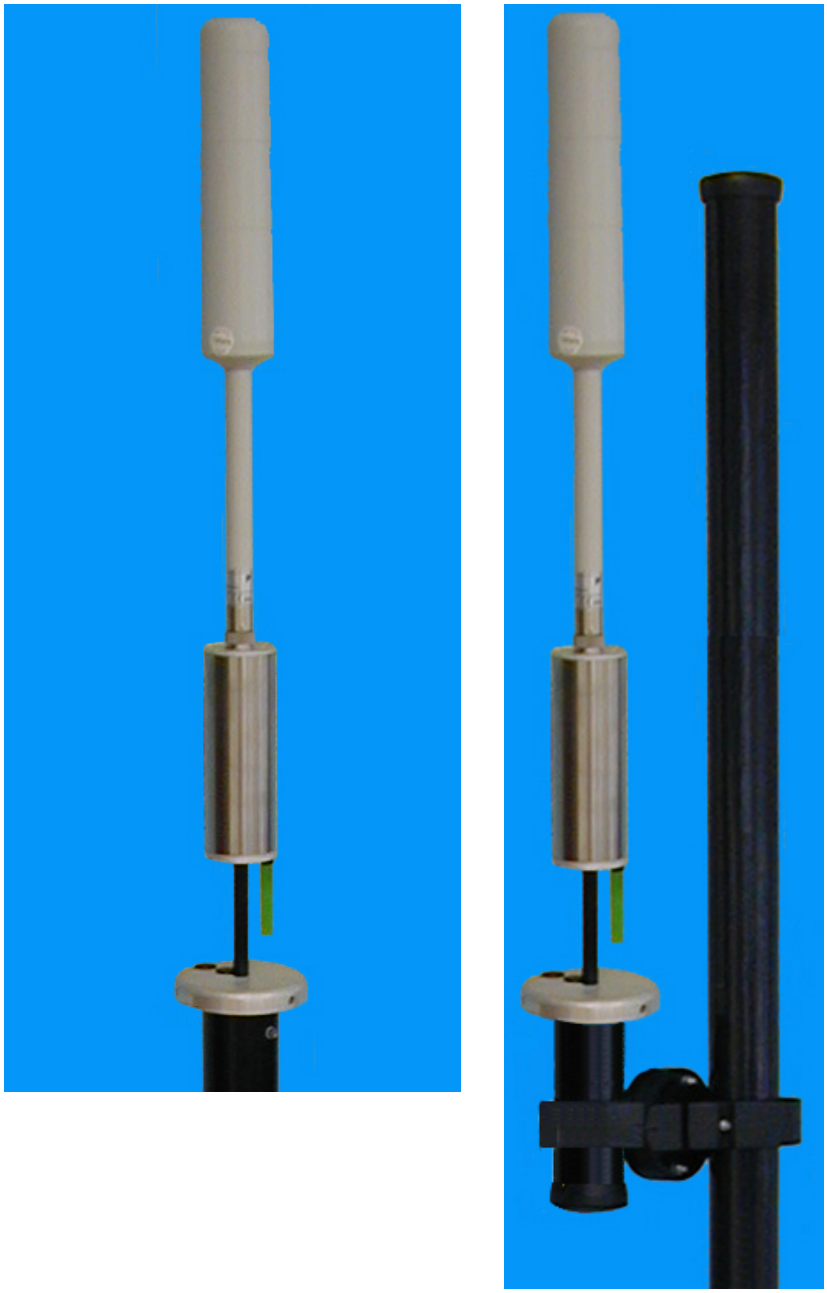


Fig. 2-2 AMB-8057/00
AMB-8057/02

2.6.1 Installation

The NARDA Area Monitor Broadband are designed to operate outdoors, in the vicinity of the electromagnetic fields sources that shall be controlled, and under the most severe environmental conditions.

2.6.1.1 Installation of AMB-8057/00 and AMB-8057/02

1. Remove the three screws and take off along its axis the protective case from the monitoring unit (see fig. 2.4).
2. Unplug the User Port connector (AMB-8057-00 only)
3. Remove the monitoring unit by unscrewing the support.
4. Be sure that the tray for the SIM card is locked inside its slot **even if the GSM is not being used** (AMB-8057/02 only) **or……**.
5. Insert the SIM card enabled for data communication in its tray in the GSM modem of the unit (see fig. 2-3). (AMB-8057-02 only).

NOTE

Remove the PIN CODE on the SIM card and be sure that on the monitoring site the signal of the selected GSM provider is strong enough to allow operations (AMB-8057/02 only).

6. Be sure that the probe connector is well locking.
7. On the bottom panel, remove the cover of the battery compartment unscrewing the thumbscrews.
8. Insert the Li-ion battery respecting the polarity (positive toward the inner side).
9. Close the battery compartment (see § 1.8).
10. Install the monitoring unit by screwing the support.
11. Plug the user port connector that was removed at step 2 (AMB-8057/00 only)
12. Connect the PC (serial port) to the “User Port” (next to the battery compartment of AMB-8057/02) using the supplied special cable or to the external RS232 Jack connector by means of the provided Jack-DB9 serial cable (AMB-8057/00 only).
13. Switch the unit ON.
14. Run the program 8057-SW02 and set the parameters as desired (see chapter 3).
15. Switch the unit OFF.
16. Disconnect the “User Port” cable (or RS232 Jack connector for AMB-8057/00) .
17. Install again the protective cover that was removed at step 1 and tight the screws. Install the monitoring unit on the site to be monitored.

Follow instructions below to install the monitoring unit on the site:

18. Install the fibreglass pole (see chapter 6) on the site.
19. Slide on the fibreglass pole the mechanical joint:
    a) Unscrew the socket-head screw under the bottom cap of the protective case housing the unit without loosing it completely.
    b) press on the screw (the movement should be about 1cm) to unlock the blocking wedge inside the cap.
    c) Remove the bottom cap.
    d) Slide on the fibreglass pole the mechanical joint (see fig. 2-2).
    e) Insert and close carefully the bottom cap (be sure it is fully inserted), then screw the socket-head screw.
20. Slide the group monitoring station- connection joint onto the fibreglass pole and tight the screws at the desired position.

WARNING

To use the mechanical joint see chapter 6.

21. Put on top of the fibreglass pole the supplied cap, and install the strays and the ballast bags (see chapter 6).
22. Remove the protective case, switch the unit ON and slide the protective case.
23. Local data download through RS232 will be regularly required if using AMB-8057/00. The RS232 Jack connector is available on the lower side of the station base plate.
    Local data download through RS232 will be regularly required even if using AMB-8057/02 in case no GSM signal is present in the installation place. In this case the protecting cover must be temporary removed to access the internal User Port connector (see chapter 3).

2.6.1.2 Installation of AMB-8057/01 and AMB-8057/03

1. Remove the three screws and take off along its axis the protective case from the monitoring unit (see fig. 2.5).
2. Be sure that the tray for the SIM card is locked inside its slot **even if the GSM is not being used** (AMB-8057/03 only) **or….**
3. Insert the SIM card enabled for data communication in its tray in the GSM modem of the unit (see fig. 2-3) (AMB-8057/03 only).

NOTE

Remove the PIN CODE on the SIM card and be sure that on the monitoring site the signal of the selected GSM provider is strong enough to allow operations (AMB-8057/03 only).

4. Be sure that the probe connector is well locking.
5. Be sure that the “user port” cable is well connected.
6. Switch the unit ON.
7. Install again the protective cover that was removed at step 1 and tight the screws.
8. Slide on the fibreglass pole the mechanical joint:
   a) Unscrew the socket-head screw under the bottom cap of the protective case housing the unit without loosing it completely.
   b) press on the screw (the movement should be about 1cm) to unlock the blocking wedge inside the cap.
   c) Remove the bottom cap.
   d) Slide on the fibreglass pole the mechanical joint (see fig. 2-1).
   e) Insert and close carefully the bottom cap (be sure it is fully inserted), then screw the socket-head screw.
9. Take off the cover of the Solar Module by unscrewing the 4 screws.
10. Charge the batteries for at least 48 hours (see § 1.12).
11. Connect the PC (serial port) to the connector inside the Solar Module; (see § 1.12).

NOTE

An additional RS232 Jack connector is available in the lower side of the base plate (AMB-8057/01 only)

12. Connect the Data-Supply cable to the external connector on the Solar Module.
13. Run the program 8057-SW02 and set the parameters as desired (see chapter 3).
14. Disconnect the serial cable.
15. Disconnect he Data-Supply cable (the unit is OFF).
16. Close the Solar Module. Install the monitoring unit on the site to be monitored.

WARNING

Follow instructions below to install the monitoring unit on the site:

17. Install the fibreglass pole (see chapter 6) on the site to be monitored;
18. Slide the group monitoring station - connection joint – Solar Module onto the fibreglass pole and tight the screws at the desired position, paying attention to orienting toward south the solar cells of the Solar Module;

To use the mechanical joint see chapter 6.

19. Put on top of the fibreglass pole the supplied cap, and install the strays and the ballast bags (see chapter 6);
20. Connect the Data-Supply cable to the external connector on the Solar Module.
21. Local data download through RS232 will be regularly required if using AMB-8057/01. The RS232 Jack connector is available on the lower side of the station base plate.
    Local data download through RS232 will be regularly required even if using AMB-8057/03 in case no GSM signal is present in the installation place. In this case the Solar Module cover must be temporary removed to access the internal RS232 connector (see chapter 3).

WARNING

In the northern (boreal) hemisphere, the AMB-8057/01 and AMB-8057/03 should be installed with the solar cells facing south, in order to take the best advantage of the solar radiation for continuous recharging of the internal batteries. An angle of 35° with respect to vertical is the ideal position for the solar cells to optimize solar radiation in the European latitudes, specially in winter when the light levels are generally lower than in summer.

WARNING

When using AMB-8057 equipped with the Solar module, to ensure maximum efficiency in recharging the battery and to take advantage of the maximum operating autonomy, make sure the position in which the unit is installed receives sunlight all the day long and is not shaded by buildings or other screening objects.

WARNING

To ensure maximum efficiency of recharging and optimum autonomy of the internal batteries, it is a good rule to keep the solar cells of the AMB-8057 clean, inspecting them periodically.
If necessary, clean them with a soft cloth and a normal glass cleanser.

WARNING

Correct readings may be conditioned by the nature of the places in which the field monitoring system is installed.
The field sensor is affected by huge metallic masses or other objects that may reflect the signal, if located in the vicinity of the unit.
Whenever possible, it is a good rule to install the unit at some distance from walls, high voltage pylons, buildings and other obstacles that could affect the signals reaching the sensor.

WARNING

Prior to installing stations equipped with the GSM/GPRS module, make sure that the point at which the field monitor will be installed is adequately covered by the mobile phone service allowing remote data communication.
This can be done using any GSM mobile phone capable of indicating the intensity of the signal coming from the local base radio station of the company chosen for the SIM card.

WARNING

The SIM card adopted shall be enabled to data transmission.
Dial up calls require that both the station SIM card as well as the PC modem one (if GSM) are enabled for CSD data communication.
GPRS/FTP communication mode require that the station SIM card is enabled for GPRS data communication allowing the station to access the user FTP server to download measurement results, automatically, according to the user setting. No modem but Internet access is required for the controller PC to access the user FTP server

NOTE

For both models, the internal clock has an autonomy of 1 week after the battery has been disconnected.

2.7 GSM Modem[(1)]

AMB-8057/02 and AMB-8057/03 are equipped with a GSM modem that allows remote communication for programming and for the remote collection of the data recorded.
The GSM modem requires a regular SIM Card enabled for data communication (CSD, GPRS or both, depending on the preferred communication mode).

2.7.1 SIM CARD

The SIM Card to be used must be enabled for the preferred data communication mode.
The user can choose the most suitable SIM Card to install, depending on the services and costs offered by the different mobile phone Service Providers; it should also be chosen so as to guarantee optimum coverage for the specific zone of installation of the field monitor.

Fig. 2-3 SIM Card

The modem for data transfer is housed inside the main unit and the SIM Card has to be inserted in the special slot, as shown in the figure. To extract it press the button just beside the SIM tray.

WARNING

To download the measurement data from the monitoring station through the serial port, the tray holding the SIM Card must be correctly fitted inside its slot even if no SIM Card is installed.

WARNING

Before removing or inserting the SIM Card, switch off the monitoring station.

WARNING

If you use a rechargeable SIM Card, make sure it is charged.
Before using the SIM Card with the monitoring station, disable the PIN code using the proper function available on any mobile phone.

(1) AMB-8057/02 and AMB-8057/03 only

2.7.2 How to switch the GSM modem on

AMB-8057 is a very low power consumption device allowing thus very long autonomy of models powered with a primary lithium battery and unlimited autonomy of models equipped with the Solar module despite the small dimensions of its solar panel.
AMB-8057/02 and AMB-8057/03 are equipped with a GSM/GPRS modem which power consumption, specially while transmitting, is very high if compared with the station overall consumption.
Additionally, modem transmissions, including communications between GSM terminal (modem) and GSM network that are not under the user control, generate E.M. fields that affect the measurement results.
For the above reasons the modem activity of an E.M field monitoring device should be reduced to the minimum by switching the modem OFF whenever convenient.
The GSM modem of AMB-8057 is therefore switched ON/OFF depending on the user settings and other conditions.
When the modem is OFF it neither consumes power nor generates any E.M. field. On the other hand it is not able to receive calls or messages.
It is suggested to program the modem to be OFF for the major part of the day except times, usually one hour per day or less, to download results and be able to receive calls and messages. Abnormal situations, like alarm conditions, will be able, anyway, to switch the modem ON to allow automatic activities like alarm notifications.
A modem ON, but not communicating, is defined here as to be in “Stand-by” mode. It consumes some power but it is able to receive calls and messages.
Short transmissions due to communications between the modem and the GSM network occur usually every few hours when the modem is in Stan-by mode.
During transmission the modem power consumption is high and depends on the quality of the GSM signal

On the monitoring station the GSM modem can be switched on in three different ways:

1. **Programmed** (the User decides when the modem has to be switched on and for how long).

2. **Spontaneous** (the monitoring station switches the GSM modem on whenever there is an alarm)

3. **Automatic** (the monitoring station switches the GSM modem on and off automatically when certain conditions arise)

2.7.2.1 Programmed mode

The Programmed mode consists of setting a time for switching the modem on and off and the repetition interval.
The parameter “Hours and Minutes” specifies at what time of the day the modem will be switched on and put on Stand-By; the “Stand-By” parameter establishes for how long (indicated in units of 15 minutes each) the GSM modem remains on and the parameter “Every” establishes the time interval of repetition or after how many hours from the last activation the modem has to be switched on again.
To keep the transmissions at the same time every day, the parameter “Every” is a sub-multiple of 24, for example: 1, 2, 3, 4, 6, 8, 12, 24.

2.7.2.2 Spontaneous mode

In Spontaneous mode, whenever an alarm condition occurs or when the normal conditions are restored (e.g. exceeding the threshold value set for the field intensity or returning below the threshold) the GSM modem is switched on directly by the monitoring station either to make a call or to send an SMS (depending on the settings) to the modem number(s) memorized.
Afterwards, the GSM remains on stand-by for 10 minutes.

2.7.2.3 Automatic mode

Certain particular conditions - apart alarms - can cause the modem to be switched on and off regardless of the programming time:

1. **AMB-8057/02 model only.**
   When the AMB-8057/02 is switched on, if the battery voltage is above **3,0** V, the GSM modem is switched on and remains on stand-by for 1 hour.

2. **AMB-8057/03 model only.**
   When the AMB-8057/03 is switched on, if the battery voltage is below **3,9** V, to allow the battery to be charged, the GSM is not switched on. In this case, for a faster recharge the battery charger should be used as indicated in paragraph 7.6. If the battery voltage is above the threshold, or upon reaching it, the GSM is switched on and remains on stand-by for 1 hour.

3. **Both models**
   If both Stand-By parameters (“Schedule for Modem” and “Schedule for SMS”) are set to zero, the GSM would never be switched on and therefore the monitoring station would be unreachable. To avoid this condition, at 11 a.m. of the internal clock every day the GSM modem is placed on Stand-By for 45 minutes.

2.7.3 Status of the LED in relation to the status of the monitoring station

When the monitoring station is switched on, the LED on the bottom panel is first lit with a steady light for about 5 seconds, then starts to blink at the rate of one blink per second, indicating that the monitoring station is active in normal Stand-By conditions and **not** in the low consumption mode.

The condition in which the LED blinks at a rate of one (brief) flash per second indicating that the monitoring station is in Stand-By mode and not in low consumption mode, are the following:

- All the time the Modem is on Stand-By
  Even if no modem is provided with AMB-8057/00 and AMB-8057/01 the LED behaves in the same way. Even if the user will disable most of the modem functions through the control software, the minimum periods at which the internal modem, if present, would be ON (first hour after switch ON without Low Battery alarm and from 11:00 to 11:45 when the "Schedule for modem" and "Schedule for SMS" are set to zero) the LED will be blinking every second
- The time between acknowledgment of a command (via RS232) to about 60 seconds from the last command received.
- All the time between the attempt by the monitoring station to establish a communication with the probe to about 60 seconds after correct acknowledgement of the connection.

NOTE

After exiting this mode, the LED changes the manner of blinking to a (brief) flash every three seconds, thus indicating the low consumption status. The monitoring station remains in this status until an event rouses it and causes the return to Stand-by status again.
Possible events are:

- Modem switched on in Programmed or Spontaneous mode
- Sending of a programmed or spontaneous SMS
- Activity on the RS232
- Absence or malfunction of the probe

As indicated above, about 60 seconds after the termination of the event, the LED resumes blinking at the frequency of 0,3 Hz.

The LED also has two additional statuses:

- It blinks at a higher frequency than once per second during a communication (from the beginning to the end) to indicate the modem is in use.
- It remains on with fixed light during data downloads.

2.8 Field probes

The technical features of the field probes are listed in Chapter 1 of this manual.

WARNING

Should it be necessary to change the probe, this must be inserted and removed holding it by the metal part of the connector.
Inserting or removing the probe holding it by its support or head could heavily damage it.

WARNING

When opening the protective case of the monitoring station, to avoid damages, remove along its axis the protective case from probe.

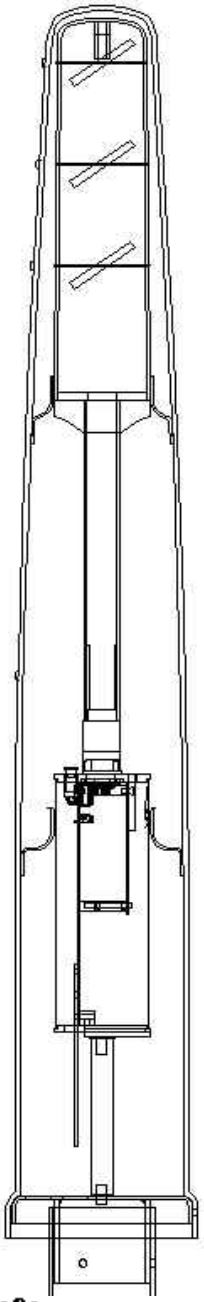


Fig. 2-4 Removal protective case from AMB/8057/00 and AMB-8057/02

Fig. 2-5 Removal protective case from 8057/01 and AMB-8057/03

WARNING

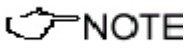
Before removing the probe, switch off the monitoring station. To avoid damages to the probe connector, the insertion key must be placed with care in correspondence of the connector.

2.9 RF signals of dangerous intensity

The probes used in the NARDA Area Monitor Broadband contain highly sensitive elements.
Never place the probe in an electrical field higher than the maximum allowed for that probe**.**

If radiated by strong electromagnetic fields, the probe can be damaged even if disconnected from the monitoring station, or connected to a monitoring station that is switched off.

2.10 Signals with AM modulation



When measuring fields coming from antennas transmitting at frequencies lower that few tens of MHz (e.g. medium wave AM stations), it is advisable to place the probe with the supporting handle perpendicular to the polarization of the antenna, so as to prevent it from affecting the measurement. In this case, if the monitoring station is installed indoor it should be placed in horizontal position. For outdoor installation the maximum allowed rotation (see 7.8.2) should not be exceeded.

The type of field sensor installed is automatically detected by the control system integrated in the NARDA Area Monitor Broadband, so it is not necessary to perform any operation after installing or replacing it.

2.11 Controlling the internal batteries

The voltage level (AMB-8057-00 and AMB-8057/02) or the level of the charge (AMB-8057/01 and AMB-8057/03) can be checked locally or by remote using the 8057-SW02 program: there is a specific window which displays battery voltage and where a battery charge alarm can be set, if necessary.
The battery status of stations equipped with GSM modem can be read from any mobile phone by sending to the AMB-8057 an SMS with the code **#F7?BAT***.

The lead batteries used in the AMB-8057/01 and AMB-8057/03 can be damaged if the charge drops to less than 3,2V.
Below this value chemical processes that could damage them begin. Therefore, if the unit is not used it should be switched off. For indoor applications or in the shade, do not use the station for longer than 80 days.
If it should be necessary to store the unit for a period of few months, it is advisable to disconnect the wire between the main unit and the Solar Module (AMB-8057/01 and AMB-8057/03 only).

Any part of the instrument, with the sole exception of the battery of AMB-8057/00 and AMB-8057/02, can only be replaced by NARDA, therefore in case of any damages to parts and/or malfunctions, please contact the NARDA Service Center.

Risk of explosion if the battery of AMB-8057/00 or AMB-8057/02 is replaced by an incorrect type. To replace the battery follow the instructions.

2.12 Power consumption and operating mode

The monitoring station is a device with very low current absorption. To achieve that, a number of different solutions have been applied, but the main one is to reduce the activity of the microcontroller to the very minimum.
Depending on the operating status of the monitoring station, it will absorb different current values for each status.

NOTE

The minimum consumption is obtained with the GSM modem completely off. In this mode, even the microcontroller shuts down about 20 seconds after having received the last command, with regular interruptions 20 times a minute to perform the check and function routines. This is the status in which the monitoring station operates most of the time.

Any command sent via RS232 immediately rouses the microcontroller. However, because of the peculiarity of the stop status, in this case the command is lost and must be sent again in order to be carried out. This is done automatically by the management software and should be taken into consideration by the User in developing any custom software.

WARNING

Obviously, this does not occur in case of commands issued via SMS or in case of connection via modem, as the microcontroller is always on when the GSM modem is on stand-by.
It should be noted, also, that the current absorption may be higher than normal, even with the modem off, when:

- **Data is required (the microcontroller is working);**
- **Any commands are sent (the microcontroller is working);**
- **There is no probe (the microcontroller is constantly in search mode);**
- **The RS232 serial cable is connected to a port (even if not in use).**

This page has been left blank intentionally

3 – 8057SW-02 - User's Guide for local RS232 and remote CSD communication

3.1 Introduction

This Chapter provides a guide for the installation and use of the data acquisition and control software 8057SW-02.
It also explains the functions available and the configuration details.

3.1.1 Connection

All AMB-8057 models can be connect to the PC via RS232. AMB-8057/02 and AMB-8057/03, that are equipped with a GSM/GPRS modem, provide additional remote communication modes like SMS (see chapter 6), GPRS/FTP (see chapter 4) and CSD.
CSD is a dial-up, point to point, remote data communication and require that the SIM card installed in the area monitor modem, as well as the one installed in the PC modem (if GSM), are specifically enabled for CSD communication mode.
8057SW02 shows two main sections: CSD and FTP. This chapter describes the CSD section only that provides functionalities for the local RS232 communication too.
AMB-8057/00 and AMB-8057/01, which do not provide remote communication capability, will be therefore managed through the CSD section of 8057SW02 control software. To operate stations not equipped with modem all settings related to the CSD remote communication will be disabled, whenever possible, or set as specifically indicated in the following instructions

3.1.2 First Connection

The first connection may take place either via GSM modem (if available, depending on station model) or via direct RS232 connection. The direct connection is much faster, therefore it is advisable to make the first connection in this way even if the subsequent operations will be done via GSM modem. For more details see chapter 2.

Remote communication in CSD mode is protected by a "Device Password" that is stored in every AMB-8057 area monitor.
The same password must be set, by the user, in the CSD station list provided by the control software.

WARNING

Remote communication in CSD mode is not allowed in case the two passwords do not match.
Device passwords are not checked during local RS232 communication.
All the monitoring stations are initialized in the factory with the password "PASSPMM" that is advisable to replace during the first connection.

NOTE

Using a GSM Modem make sure the PIN code of the SIM card in use has been removed.

NOTE

For GPRS communication mode, first connection must be done via RS232 cable to allow proper setting of GPRS parameters.

The 8057SW-02 software is a control program fully integrated into the Area Monitor Broadband AMB-8057. It allows to access all the remote Field Monitor stations to download data and modify station settings.
Downloaded data are filed within the controller PC and a calendar style search tool allows data displaying, printing and saving in graph and tabled form.
The data transfer can be controlled by:
- RS232 cable connection (every AMB-8057 model)
- Line or GSM PC modem (AMB-8057/02 and AMB-8057/03 set for CSD data communication)
- Internet by means of the user's FTP server (AMB-8057/02 and AMB-8057/03 set for GPRS/FTP data communication)

The software is based on the Windows™ operating system.

The 8057SW-02 software features the following basic functions:

- Querying and monitoring all the AMB-8057 Field Monitors installed;
- Programming different monitoring stations individually with different acquisition modes;
- Querying the Field Monitors at user programmable times (only stations equipped with modem);
- Communicating via line modem, GSM modem, Internet FTP or RS232;
- Protecting accesses with different keys at different querying levels;
- Controlling and verifying the reliability of the data recorded;
- Protecting the data recorded;
- Acquisition and display of fields detected on different frequency bands (depending on the probe in use), providing for each the average and peak values;
- Saving and manipulating all the downloaded readings;
- Saving graphs and tables representing all the measured data;
- Downloading data with automatic generation of Bitmap (.BMP) and text file (.TXT) to be used for easy data exchange with any "Office" applications;
- Keeping traces of all the commands launched (LOGFILE).

3.2 Hardware requirements

To ensure the proper operations of the 8057SW-02 software, the minimum hardware requirements of the Personal Computer are:

- Pentium processor;
- at least 16 Mb RAM;
- at least 100 Mb of free space on your hard disk;
- minimum display resolution 1024x768 (the Windows™ default screen appearance setting is recommended. Depending on the operating system in use, some customized screen appearance could cause abnormal displaying of the control software).
- GSM or line modem (for CSD data communication)
- Full Internet access allowed for FTP (for GPRS communication)
- Operating System: Windows™ XP, Vista, 7

PC modem can be either internal or external, line modem or GSM. It must support the data transmission protocol.

NOTE

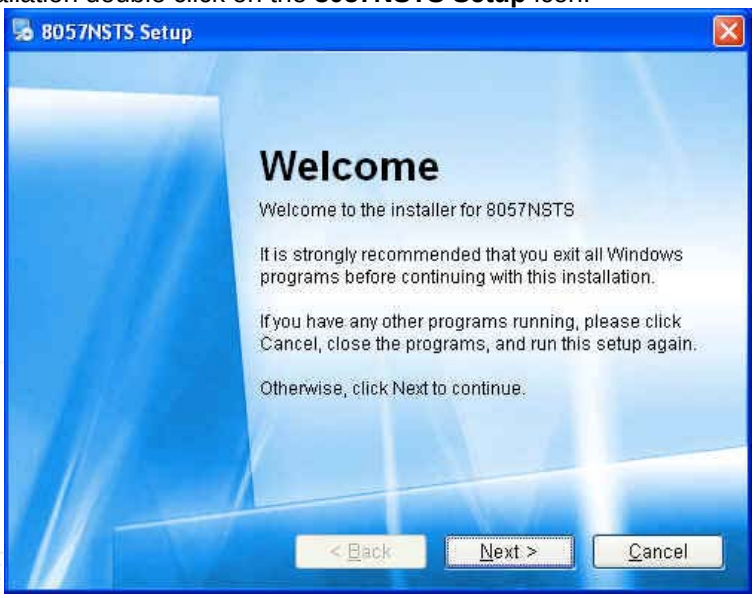
If a GSM or PCMCIA GSM model with SIM Card is used, it must allow to receive and transmit data, not only on fixed phone numbers but also to and from cellular phones; check with the Telephone Service Provider to make sure this additional service is available.

For proper installation of the modem refer to the instructions of modem manufacturer.

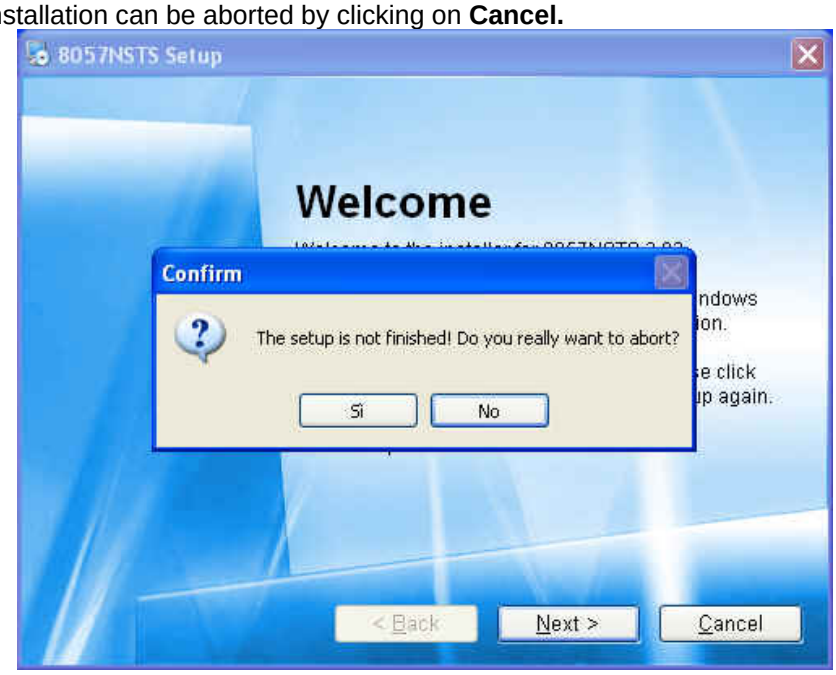
3.3 Software installation

To install the 8057SW-02 on PC from the supplied CD-ROM proceed as follows:

Insert the 8057SW-02 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 **8057NSTS Setup** icon.

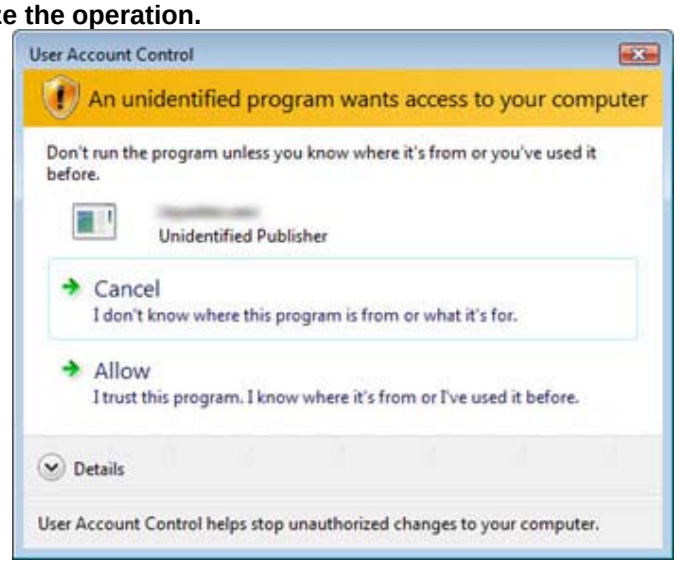


The installation can be aborted by clicking on **Cancel.**

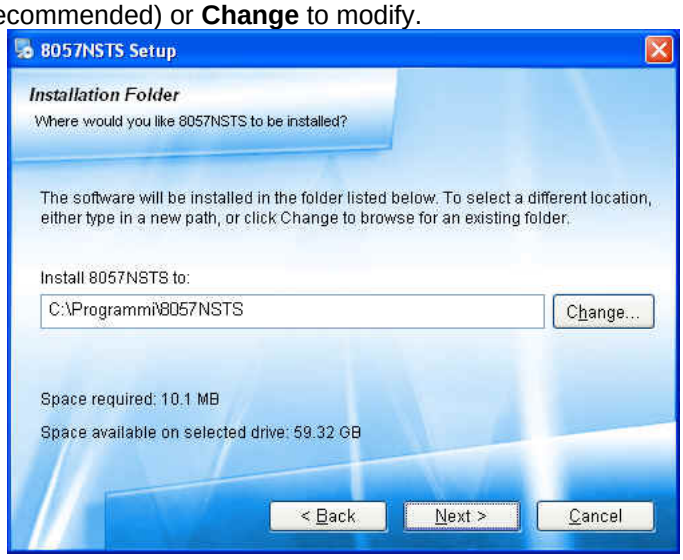


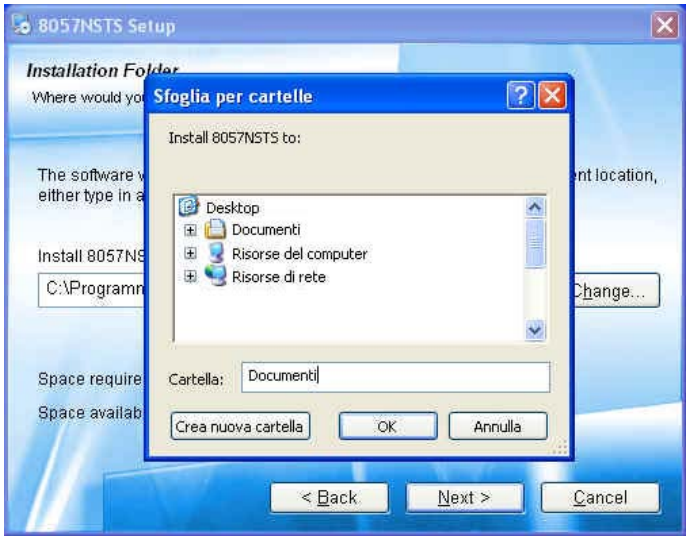
NOTE

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

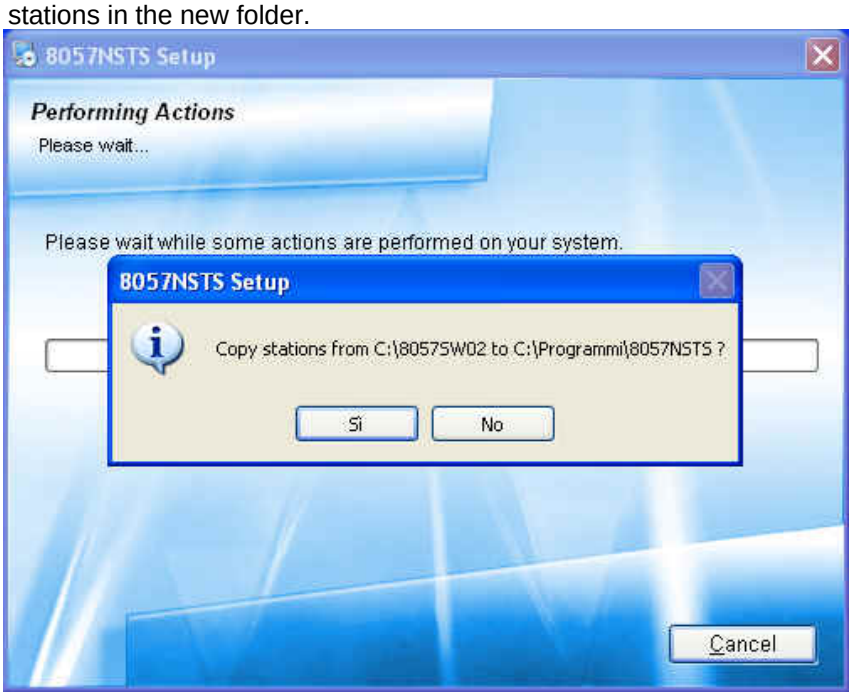


The installation folder must be specified. Click **Next** to confirm the default folder (recommended) or **Change** to modify.

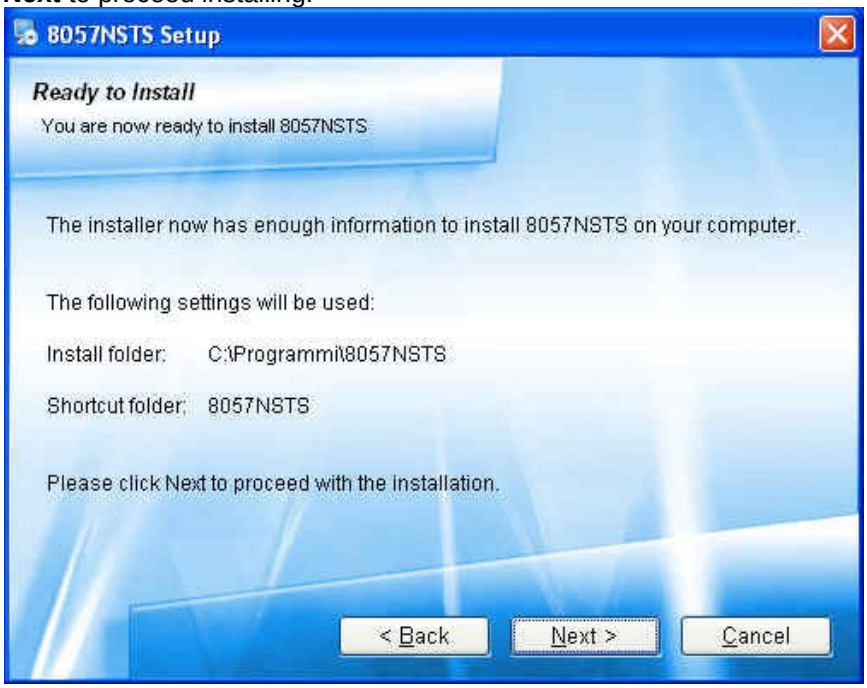




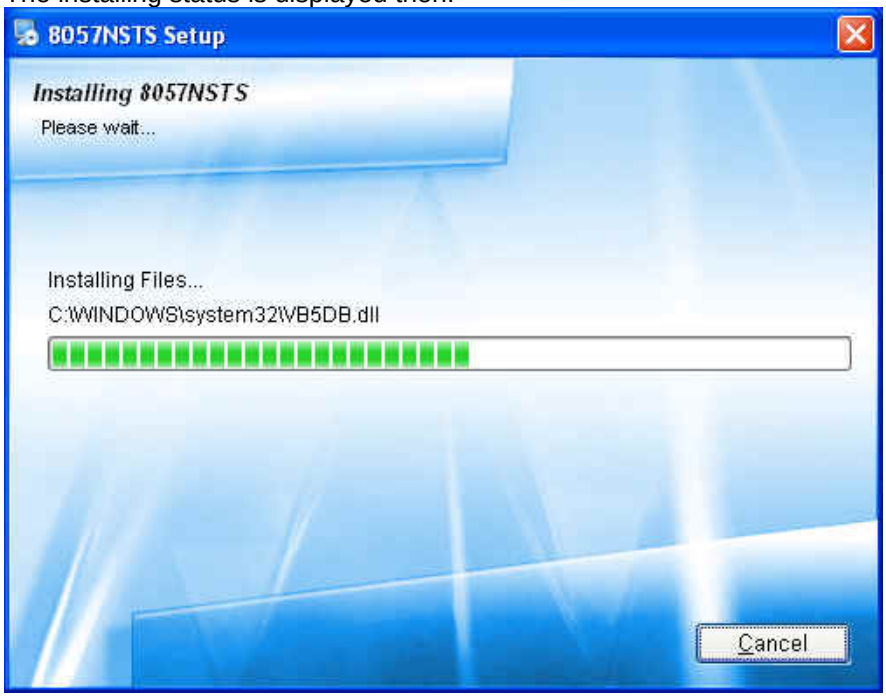
During the installation process the 8057SW-02 is able to detect the old **8057SW02** folder that is used in the previous release; in this case the software will ask to copy all the stations in the new folder.



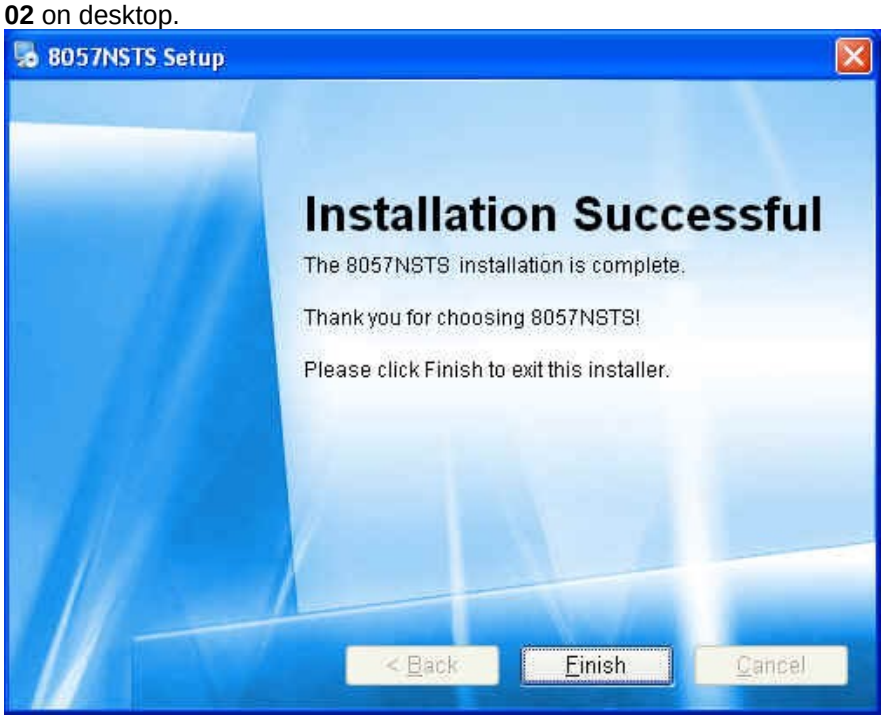
Click **Next** to proceed installing.



The installing status is displayed then:



Click **Finish** to complete and exit the installer.
The folder **8057NSTS** is created under **Programs** with the icon **8057SW-02** on desktop.



3.4 Assigning the serial port

After startup, the program select the first available COM port that will be used for direct RS232 connection or remote CSD communication by means of a PC modem. A specific COM port must be usually selected to drive the control software to some specific device like internal PC modem or RS232-to-USB converter that is needed if no RS232 port is available in the controller PC. To assign a specific COM port proceed as follows:

- Select the icon 8057SW-02 with the right mouse button;
- Select Properties;
- Add the command COMM=N preceded by a space (in capital letters) at the end of the Destination field where N indicates the serial port to be used; for example, if the modem (or the RS232-USB converter) is connected to port 2, add the command COMM=2.

NOTE

The assigned COM port nr. must be between 1 and 9.

NOTE

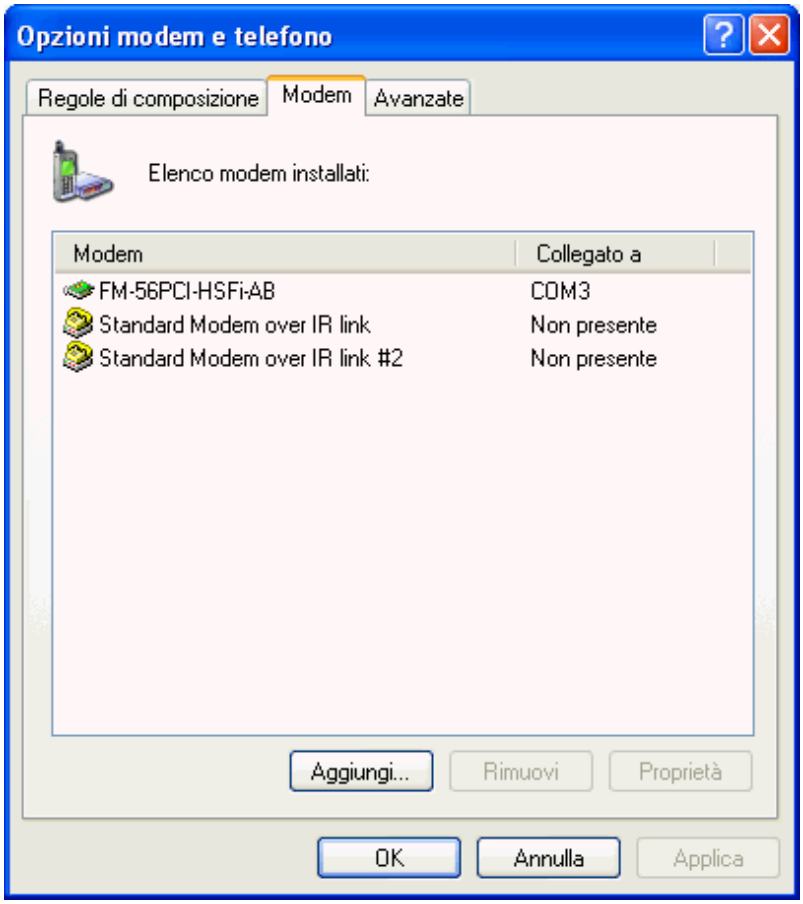
- **In some operating system the Destination field is enclosed in double quotation marks (“); in this case, the command COMM=N, preceded by a space must be outside as in the example below;**

- Then confirm by selecting Apply

3.5 Checking the modem

If you want to use the CSD remote communication but you are not sure about the presence of the modem or its working conditions, proceed as follows using the Windows commands:

- on the **Start** icon, access the system settings and select **Control Panel**;
- on **Control Panel**, click twice on the icon relative to the **MODEM** options. That will open a window with the list of the modems installed;



- move the mouse to the port where the modem is connected;
- click **Properties > Diagnostics > Query Modem** and make sure the operating system detects the modem functioning correctly (the procedure may differ slightly depending on the operating system used).

NOTE

The serial port selected must correspond to the value of COMM=N on the Destination line of the icon properties of the software 8057SW-02. In the example shown above, for the modem FM-56PCI-HSFi-AB write COMM=3 (in capital letters).

NOTE

Preferably, a GSM PC modem should be used for calling remote stations in CSD mode. A line modem can be used but it should be connected to a direct phone line (the same connection used for a fax machine). Sometimes, if there is a switchboard system, it may only be possible to place outgoing calls but not to receive incoming calls (where an extension may be needed, etc.). Contact your switchboard operator for guidance.

3.6 Starting the program

Click twice on the 8057SW-02 icon to start the software. First a windows appears displaying the software release and, if the previous time 8057SW02 was closed from the CSD section, the presence and the status of the modem will be checked .

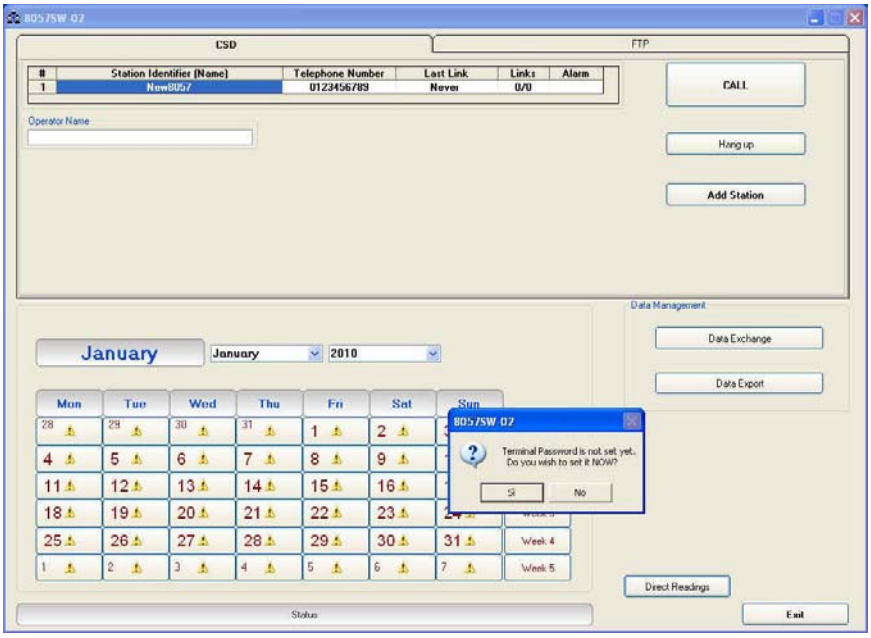
In case the software doesn't detect any modem the message MODEM NOT FELT will be displayed.

In case a modem is detected, the message **MODEM OK** will appear.

3.7 Password management

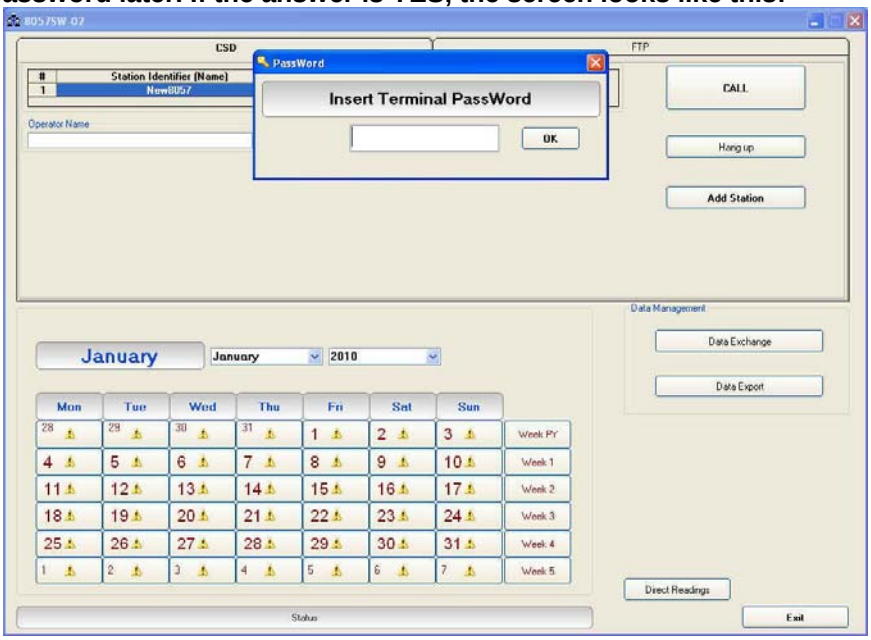
3.7.1 Entering the Terminal PASSWORD

8057SW02 allows the user to create a list of all stations that are going to be used. The list include parameters, like telephone number, station name, ecc. needed by the software to access every single station. To avoid any improper modification of parameters included in the station list by non admitted personnel a **Terminal password** is needed. Running the software for the first time after installation the user is allowed to define the password. The screen looks like this:



NOTE

If the answer is YES, a window will be opened where it is possible to enter the Terminal PASSWORD for the management of the Station list parameters. If the answer is NO, the program will allow to enter the password later. If the answer is YES, the screen looks like this:

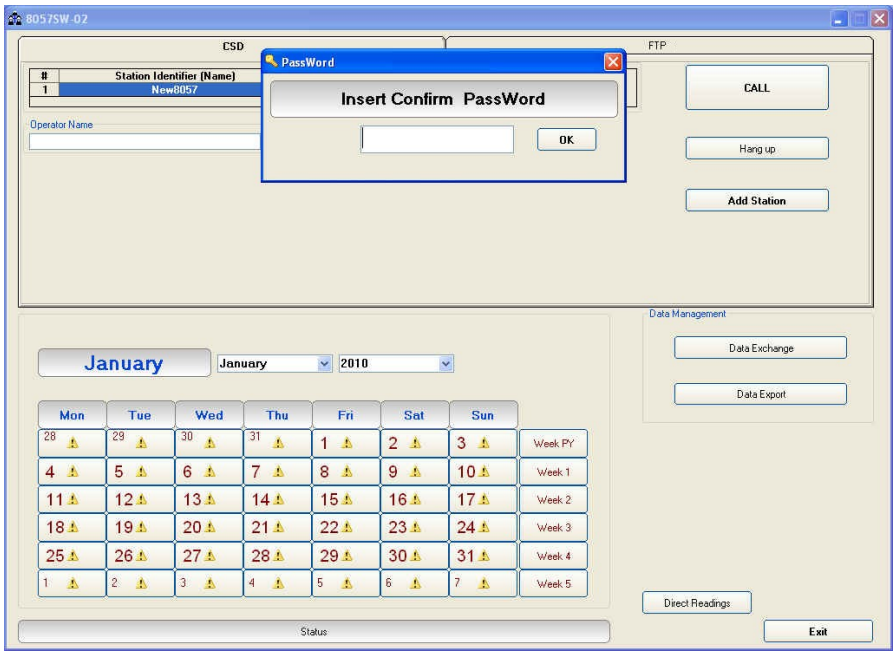


NOTE

The User can enter any sequence of alphanumerical characters. We recommend to take note of the Terminal PASSWORD entered.

After entering the **Password** with **OK**, the software will request confirmation of the password before registering it into the system.

The next screen will therefore look like this:

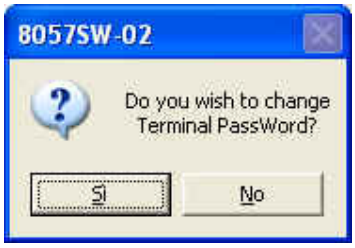


At this point, type the same **Password** again. In case of any mistake, the software will display the following message:

After the answer **YES** it is possible to re-enter the correct password; answering **NO** the procedure for the assignment of a new password starts over again.

3.7.2 Changing a Password

If it is necessary to change the Terminal Password, just press function key F10 while the software is displaying the main window that includes the station list. The software displays the message:



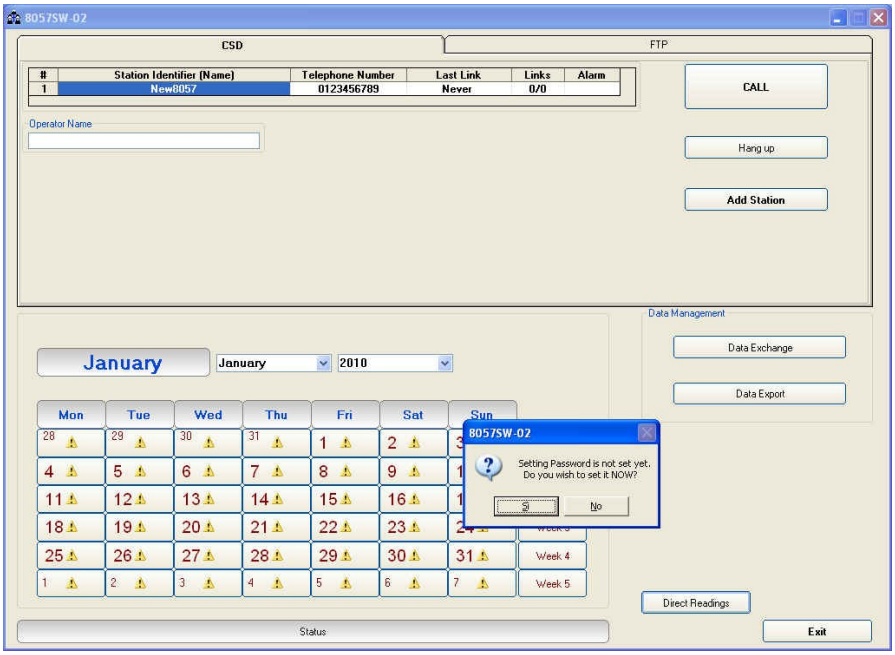
If the answer is **YES**, first enter the old **Terminal Password,** then enter the new one.

If a wrong **Terminal Password** is entered, the following message pops up:**:**

Press OK and try again.

3.7.3 Entering the Setting PASSWORD

After entering the **Terminal Password** needed to ensure the secure management of the Field Monitors, the software asks to define a **Setting PASSWORD** which is needed to edit functional parameters of stations like storing Rate, station clock, thresholds for alarm, ecc.. The **Setting Password** screen looks like this:



If the answer is **YES**, the User will be asked to enter and confirm a new **Password** (which may be different from the Terminal Password).
If the answer is **NO,** it is also possible to enter this Setting Password later on, at the time of the first call to the Field Monitor.

NOTE

Always take note of the Setting Password entered.

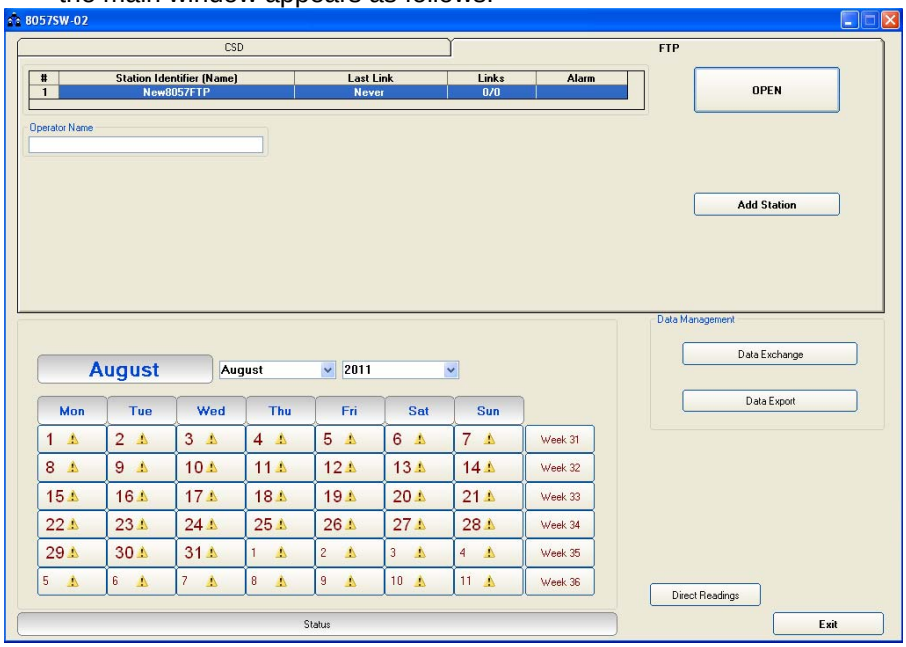
3.7.4 Setting stations to CSD/RS232 communication mode

Stations equipped with GSM/GPRS modem are initially set, at the factory, for GPRS/FTP communication mode.
Stations set for FTP communication are intended to be configured by means of the user's FTP server through the Internet connection but can be accessed, locally, by connecting the RS232 cable and, even if not recommended, by means of CSD calls too.

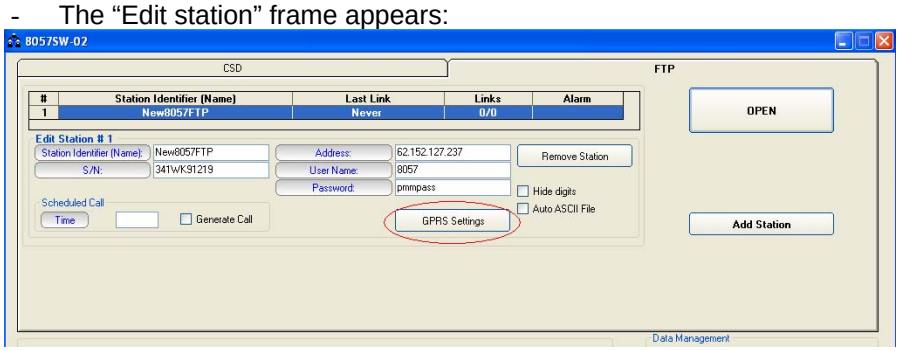
Some commands, specially related to the modem activity, are not enabled for the real time setting that can be done in RS232 and CSD if the station is set for FTP communication.

AMB-8057/02 and AMB-8057/03, if intended to be normally accessed for programming and data downloading in CSD or RS232 communication mode must be set accordingly the following steps:

- connect the station to the controller PC by means of the provided cable for RS232 communication and assign the correct COM port as described in 3.4.
- run 8057SW02 and, if not already active, select the FTP section by clicking the FTP area on the right, upper side of the main window
- the main window appears as follows:

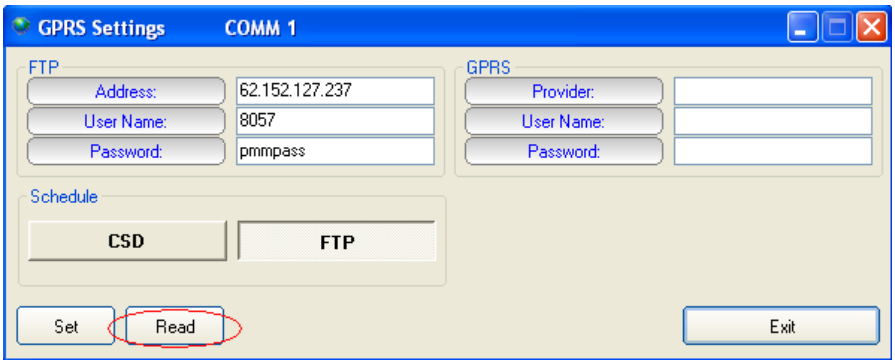


- double click the first station listed in the FTP station list (new software installations show the "New8057FTP" station, on the list, as an example).
- The "Edit station" frame appears:



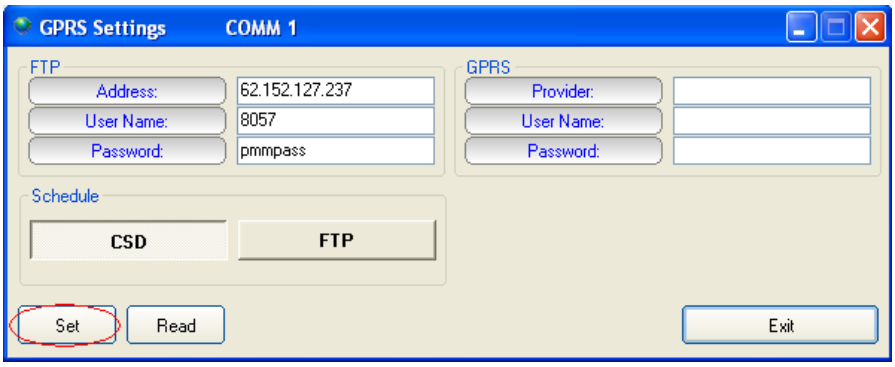
- click the button "GPRS Settings"

- The GPRS Setting window allows to set stations for FTP or CSD



- click the “Read” button and type the Terminal password when requested.
  The “Read” buttons queries the station connected by RS232 and displays, in the “Schedule” frame, which communication mode is enabled.
  The above picture shows a station set for FTP communication mode.

- To set the station to the CSD mode select “CSD” in the “Schedule” frame, click the “Set” button and type the Terminal password when requested.



- the “Read” button can be used to check that the CSD mode has been correctly enabled in the station connected to the controller PC.
- Click the “Exit” button to go back to the main window and select the CSD section.

3.8 Main window

After entering the Passwords, the program displays the main window:

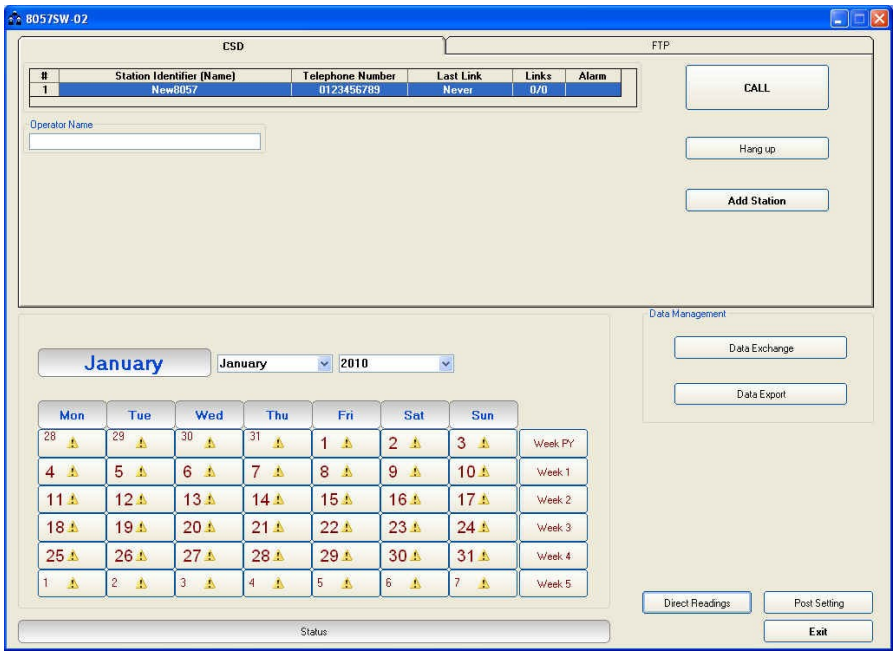
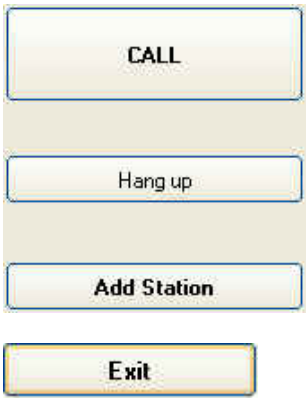


Fig. 3-1 CSD Main window

The first part of the main window is used to select from the list the Field Monitor to be queried. The 8057SW-02 software automatically installs, as an example, a dormant station called “New8057”.



The following commands are also available:

- **CALL** to make a CSD call or start RS232 local connection to the station selected;
- **Hang up** to end the call/connection in progress;
- **Add Station** to add a new AMB-8057 Area Monitor to the list;
- **Exit** to exit the program**.**

A “Data Management” window contains the following commands:

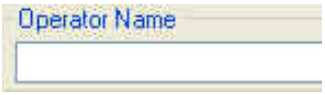
- **Data Exchange** to exchange data with other control centers (i.e. other PC’s)
- **Data Export** to generate .txt and .bmp files of measurement results related to user selectable time periods.

The list of remote stations contains the following information:

#	Station Identifier (Name)	Telephone Number	Last Link	Links	Alarm
1	CENTRALINA DI PROVA	0123456789	Never	0/0	CALL
2	CISANO SUL NEVA	0123456789	/ /	0/0	Several
3	SEGRATE	0123456789	/ /	0/0	Several

- **Station Identifier (Name):** the name of the monitoring station;
- **Telephone Number:** the phone number (CSD) of the station SIM card;
- **Last Link**: date of the latest connection made;
- **Links**: number of completed connections/number of trials;
- **Alarm**: alarm status relative to latest link;

The status of alarms relative to latest link, in the last column, is normally empty if there are no alarms. A red dot is displayed, followed by a description of the type of event causing the alarm in case of just one alarm. If more alarms occurred, to avoid overcrowding the column the word "**Several**" is displayed: simply click on the field with the mouse to display the list of all the alarms.

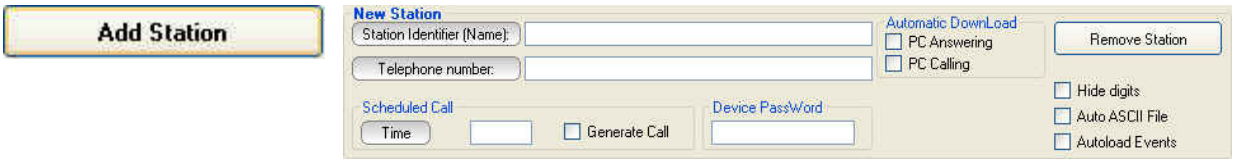


The name of the operator can be entered in the “Operator Name” field, so as to maintain a log of the operations performed and who requested them.

3.9 Station management

3.9.1 Entering a new station

To make a call or download data from an existing Field Monitor, it is necessary to use the **Add Station** command and add the station to the list. The screen looks like this:



The procedure to add a station is as follows:

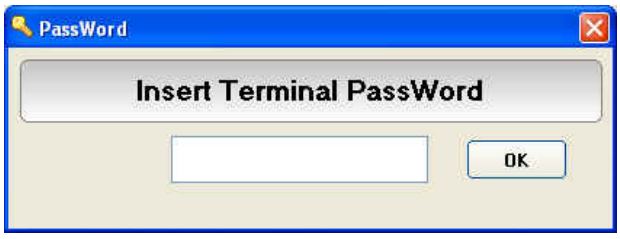
- Enter the station name (alphanumeric ASCII characters only) on the **Station Identifier (Name)** line. This name will be recorded in the station memory the first time it is queried. It will also appear on the display of your mobile phone every time the station is queried via SMS or when that station sends its daily Reports;
- Enter the **Telephone number** of the SIM card installed in the station (SIM cards allowed for CSD data communication are generally provided with three different numbers: Voice call, Fax, Data. Be sure to type the number assigned for CSD data communication); **the field Telephone Number must be filled even if the CSD communication mode is not desired or provided. Type a number string like "12345678" to add the new station to the station list.**

NOTE

- Enter the **Device Password** identifying the station to allow CSD remote communication;
- If necessary, select one of the **Automatic Download** functions to start downloading data automatically every time a remote station calls the controller PC (**PC answering**) and /or every time the controller PC calls a remote station **(PC calling**).
- Select **Auto ASCII File** function if you want a data txt file to be automatically generated after any data download has been completed;
- In the **Scheduled Call** field, enter a **Time** when the PC, if enabled with the **Generate Call** function, automatically calls the station in CSD mode.

NOTE

The Terminal password will be requested for every operation.



If a wrong **Device Password** is entered, the following message appears when trying to access the remote station in CSD mode:

NOTE

Entering the Device Password prevents the station from being queried by any unauthorized person who might in some way to know its telephone number.
This Device Password is unnecessary only when connection is make via serial cable (RS232).

Device Password is request for every access through Modem or SMS, while it is not necessary when a direct connection via RS232 is implemented. However, in particular conditions listed below, the Monitoring Station becomes inaccessible with direct RS232 connection, even if the Password is entered), while it remains normally accessible, of course with Password authentication, via Modem.

These conditions are:

- Spontaneous call from the monitoring station (upon appointment or alarm) not successfully completed. In this case the station is not accessible via RS232 for all the period in which the station try to make a connection. This period may last at most 30 minutes.

- Spontaneous transmission of SMS from the station (upon appointment or alarm). In this case the station is not accessible via RS232 for additional 2 or 3 minutes after a successful sending of the SMS.

NOTE

The first 8 characters of the Station Identifier (Name) must differ from those of any other stations already entered. If they do not, the following error message will be displayed:

3.9.2 Removing a station

To remove a station from the list, click **Remove Station**. The message is:

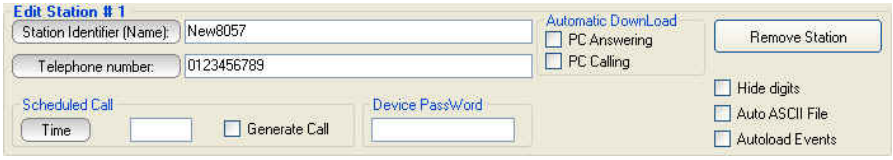
If the answer is **YES**, the software will require to enter the Terminal Password, and the station will be deleted; if the answer is **NO**, the operation will be aborted.

NOTE

Removing stations from the station list does not erase measurement results that will be still available if the same Station Identifier (Name) is added again to the station list.

3.9.3 Editing a station

To change the name or telephone number of a station, click twice on the line relative to the station to open the following window:



It is now possible to edit the necessary data, enable or disable automatic download functions or automatic creation of .TXT files, or change the status of the function relative to data display (name and telephone number). For each of the above operations the program will require to enter the security *Terminal Password*.

3.9.4 Automatic data downloads

The window for editing or adding the stations also provides an **Automatic Download** function which makes monitoring fully automatic, with transfer of the data from the station, generation of the .TXT file, etc..
Therefore some stations can be programmed for manual connection and others, after being called, will automatically transfer the data, while others again will automatically call (or be called by) the control PC at a certain time of day and download their data by themselves.

It is possible to enable every station for automatic download by selecting the flag **PC Answering** or **PC Calling** or both.
In this case three symbols appear at the left of the station name:

Arrow up = PC Answering
Arrow down = PC Calling
Both = both flags selected

#	Station Identifier (Name)	Telephone Number	Last Link	Links	Alarm
1	CENTRALINA DI PROVA	0123456789	Never	0/0	CALL
2	CISANO SUL NEVA	0123456789	/ /	0/0	
3	SEGRATE	0123456789	/ /	0/0	

If no command is enabled, data can only be downloaded manually.

NOTE

If the function “Hide Digits” is selected, the telephone numbers and Device Passwords of the stations to call, edit or add will be encrypted and no longer displayed on the window screen.

#	Station Identifier (Name)	Telephone Number	Last Link	Links	Alarm
1	New8057	##########	Never	0/0	

The telephone number will be masked even in the status window.

3.9.5 Answering

By enabling the command PC Answering, at the scheduled time the station equipped with the GSM modem and enabled for CSD communication, calls the modem connected to the PC and automatically downloads all its data.
To program the station to do that, proceed as follows:

- access the station by pressing Call;
- wait for the connection to be established;
- when the software displays the configuration of the station, use the command Enable Setting and enter the Setting Password
- In the window Schedule for MODEM write the telephone number the station has to call (PC modem). 2 different telephone numbers can be entered, that will be called in sequence. The first of these number that will answer and secure a communication will receive the data. This means that the data will be downloaded only on a PC that is switched on with the modem enabled;
- In the Time window enter the time when the call has to be made (of course the PC and modem must be on at that time);
- In the Stand BY (H) window write for how long the GSM modem must stay on. To save battery power, select the shortest possible time. Writing 00, the station switches the modem on, sends the data and switches it off immediately;
- In the window Every (H) enter a submultiple of 24 hours defining the daily rate at which the operation has to be repeated;
- The function Originate CALL should be ON. If OFF is selected, the modem will be switched on but no call will be made.

On receiving a call via modem from a station, the 8057SW-02 software requests that the calling station identifies itself and on the basis of the response string, it proceeds as follows:

1. If the ID (Name assigned to the station) of the calling station is on the list of known stations, the SW02 prepares to receive the data in the corresponding directories;
2. If the ID is not in the list of known stations, the SW02 adds the new station to the list (entering the telephone number as 00000000) and creates the directories to receive the corresponding data;
3. If the ID is not provided or does not respect the protocol (e.g. a call by a telephone), the 8057SW-02 put itself in stand-by.

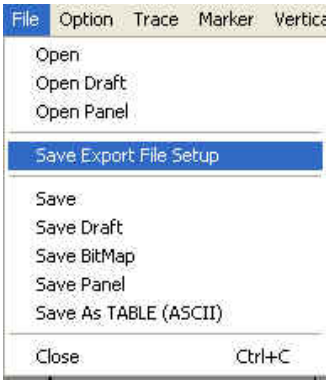
After having identified the calling station, all the parameters are requested in order to trace the call in the proper log, and after that all the field data since the latest successful link are requested, so as to ensure continuity of the downloaded data.
After the download of the data, the software sends the hang-up command to the station to minimize link time and make itself available for another call.

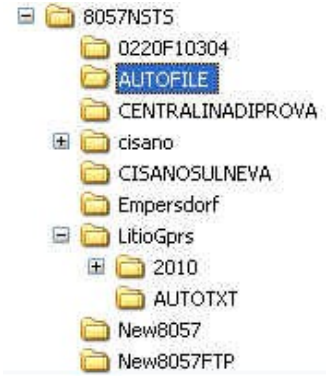
3.9.6 Calling

When the PC Calling function is enabled, every time the station is called using the CALL or "Scheduled CALL" commands, the data present on the station - and recorded since the latest download - will be automatically downloaded to the PC. This can be very useful because it makes unnecessary to remember the time of the latest download. After having completed the automatic download, the station does not hang up immediately but remains linked until either the call is ended manually or for 2 minutes after the last operation.

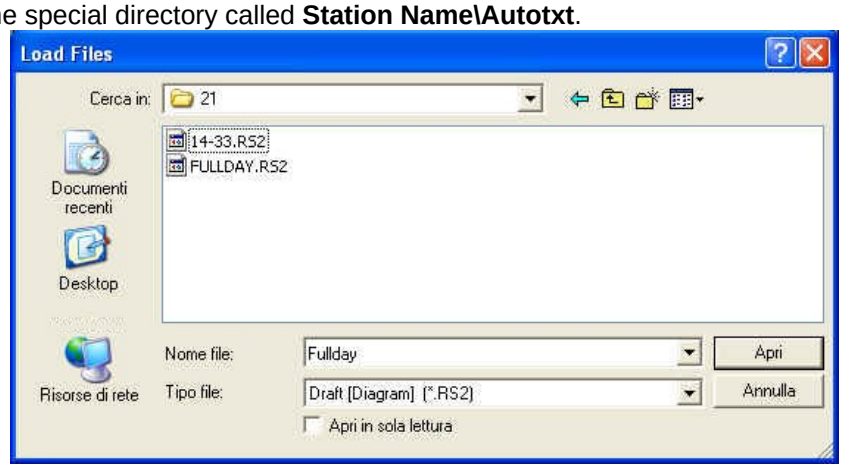
3.9.7 Auto ASCII File

Select **Auto ASCII File** to automatically generate an ASCII file and, if enabled, a .bmp file too, containing all the information relative to the data downloaded; the format will be the same adopted with the "**Save Export File Setup**" function, when displaying monitoring results starting from the calendar.
When displaying results, the function "**Save Export File Setup**" is available on the main menu, under the File Menu command.





When a call, either incoming or outgoing, is reported by the station and the data are downloaded manually or automatically, all the files normally placed in the directory **Station Name\Year\Months\Day** are also copied in the special directory called **Station Name\Autotxt**.



When all the data have been downloaded, the files in the directory **autotxt** are grouped in a single file **.RS2** which displays a graph having as its starting and ending date and time the date and time of the download. This will be used to create the file **.TXT** that, identified with a specific name containing the time and date of the download and the serial number of the station generating it, will be saved in a special directory called **AUTOFILE**, common for all the stations and placed at the same level as their specific directories.
The file name appears in the following format:

STATIONserialnumber_FROM_YYYY-MM-DD_HH-mm_TO_YYYY_MM_DD_HH-mm.TXT

Every time the data are downloaded with the **AUTO ASCII FILE** function enabled, a new **.TXT** file will be created with a specific name, saved in the **AUTOFILE** directory and containing the data acquired by the station from the **Start** to the **Stop** time of the download.

If you enter the command /AUTOBMP in the destination field of the properties with the **AUTO ASCII FILE** function enabled, the software provide a **.txt** and **.bmp** file at the same time. The bitmap is created with the settings used to create the same file for the manual mode.
It will be saved in the **AUTOFILE** directory and placed at the same level of the txt file.

3.9.8 Autoload Events

The NARDA Area Monitor Broadband can save a certain number of events in the permanent memory of the station, so as to ensure traceability (independent from the operations of the control center) with regard to the settings and main activities of the station. These events can be downloaded from the station and copied into the mass memory of the control center to keep updated the station history.

The option **AutoLoad Events** facilitates this task as, every time the station is contacted, it is automatically asked for all events not already downloaded. It is important to know that to increase the reliability in case of sudden interruption of the call, at each connection the events request is made at two separate times. The first request is made at the end of reception of the setting parameters and the second is made immediately before receiving the hang-up command. This ensure that all events are downloaded even in case of problems during the connection (which may be interrupted before all operations have been completed) and at the same time ensures that all events recorded after the connection in progress will also be received.

3.10 Data management

3.10.1 Filing data

The **Data Exchange** key is used to file the data saved, for example on a diskette, to import them later on to other control centers.

Selecting this key the following options are displayed:

When exporting data, after the selection of the type of support, the data are automatically saved in a directory called 8057_EXP.
Select **Selective storing** to enable the program to select which data to export, as shown in the figure below, otherwise all the data found will be exported.

Exported data can be easily imported by the 8057SW-02 control software installed in a different PC by selecting device containing exported data and clicking the “Import” button.

NOTE

Importing data creates a directory which name correspond to the Station Identifier (Name) selected from the station list before exporting data.
If not already present, a new station, with the same Station Identifier (Name) should be added to the station list in order to be able, through the calendar, to display measurement results.

3.10.2 Exporting data

Data Export

The **Data Export** function creates text files and, if enabled, .bmp files related to the time range specified by the user:

After selecting the desired time range (From date – To date) click the **Export** button to create, in the AUTOFILE directory, the following text files:

- A text file reporting the events relative to the control center in the selected period. This file is saved as AUTOFILE**PC_LOG.TXT**;
- A text file reporting the events relative to the station in the selected period. This file is saved as AUTOFILE**8057_LOG.TXT**;
- A text file and, if enabled, a .bmp file, reporting the data records (field strength, battery voltage, temperature, alarms, etc.) formatted as in the menu for the selected range. Indeed, the file is the same one produced automatically with the option Auto ASCII file except that, instead of referring to the period downloaded, the period can be specified manually. The file name appears in the following format:

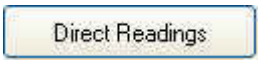
STATIONserialnumber_FROM_YYYY-MM-DD_HH-mm_TO_YYYY_MM_DD_HH-mm.TXT

On opening the Data Export window, the initial date and time shown by default are the date and time of the latest export of the station: it is therefore possible to export in a very easy way all the data collected in the correct chronological sequence without having to remember the latest operation.

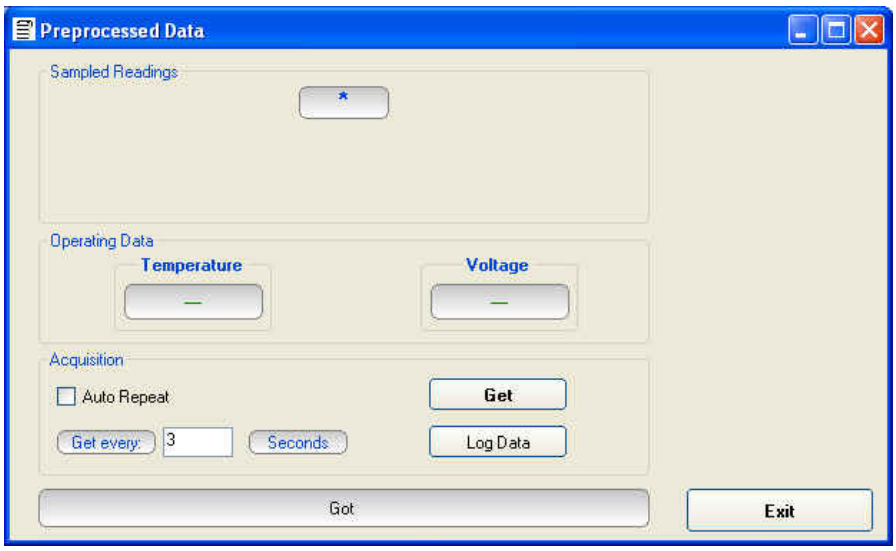
NOTE

The maximum time interval that can be processed by the Data Export function is one month.

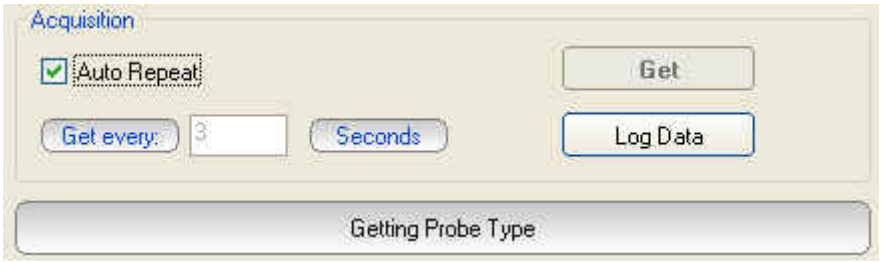
3.11 Direct readings



When the station is connected to the controller PC through the RS232 cable, the **Direct Readings** button is used to open a window where it is possible to immediately read the basic station data.
With this function the User can read the field values acquired by the station without post-processing them; that is, without any RMS or arithmetic average, or maximum. The data, which can be requested at any time, are updated by the station 20 times per minute (every 3 seconds) so a higher reading frequency will produce only redundant data.



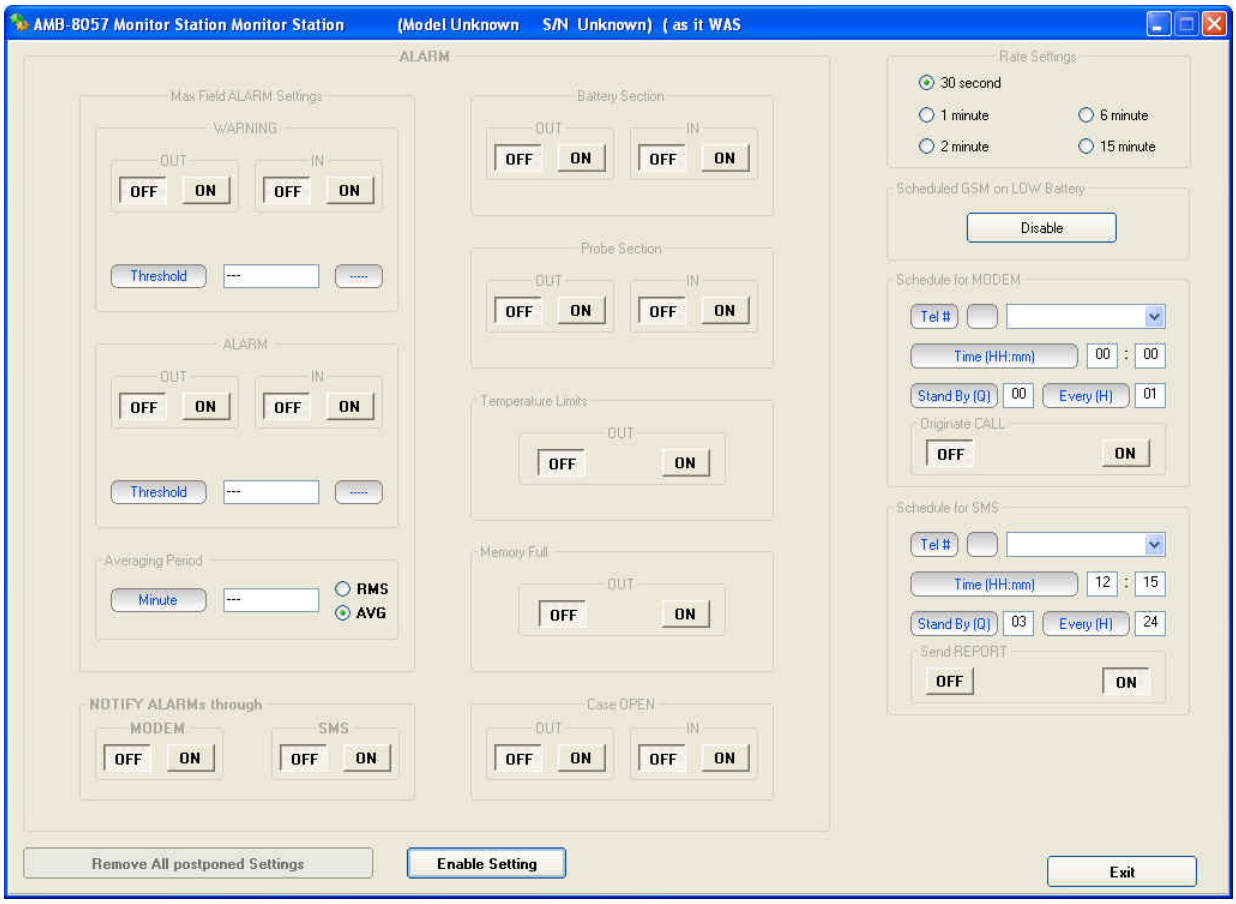
The "**Get**" button is used to request the field value of different frequency bands (depending on the probe), battery voltage and temperature.
The **AutoRepeat** option, with a value **nn** indicated in **Get every,** is used to request the values automatically every **nn** seconds.



The "**Log Data**" command allows to record the set of values read in a text file, in order to save the data to process them, if necessary, at a later time.
To start the save, press the Log Data button.
Press again to stop saving.
The actual status is shown in the window at the bottom (Getting Data)

3.12 Send settings

The **Post Settings** key is used to open a window where settings can be defined for the selected station.
This presetting operation allows to change the settings even if the station cannot be contacted at the specific moment, for any reason. All the settings are saved temporarily and sent to the station during the first link.



The pre-setting window shows the status of the station as it was during the last link or just after the latest modification of the parameters. Every change is saved in the order made, regardless of whether it may be redundant or contrary to the previous one. The command "**Remove All Postponed Settings**" cancels every setting saved and ready to be sent at the first available link. To prevent the data already stored in the memory of the station become meaningless because a change of settings, the presetting commands are sent to the station only immediately before the hang-up command.

3.13 Calendar of measurements

The calendar, created automatically by the 8057SW-02 software, always shows the current month and year and is used to select and display in graphical form the data downloaded from the Field Monitoring station, simply by clicking the button of the desired day or week.

NOTE **Only the buttons with blue characters contain data, which has been previously downloaded from the station.**

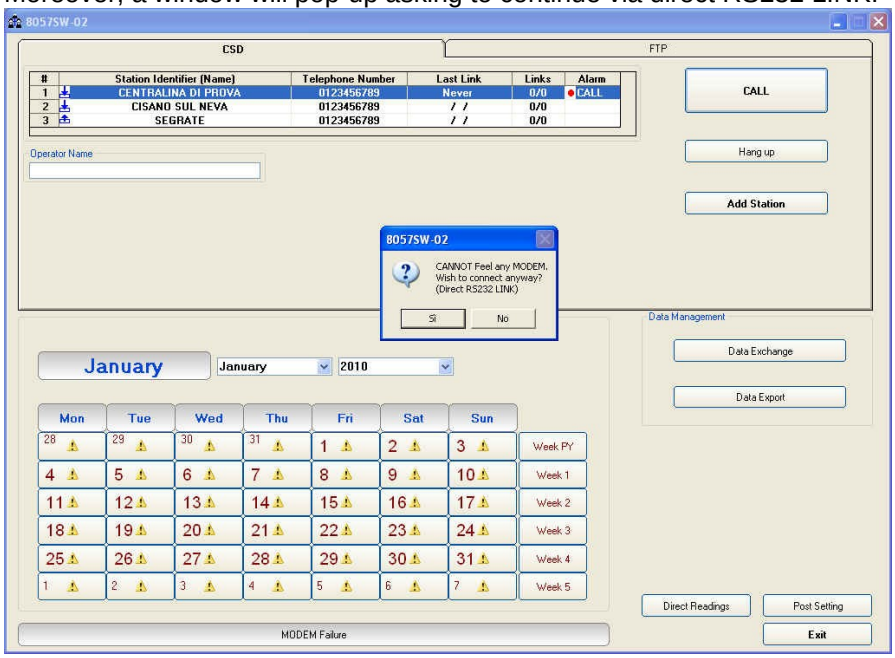
NOTE **Days or weeks with red characters are empty; in this case the symbol ⚠ will be displayed close to the days.**

The last part of the main screen contains a status bar showing additional information relative to the operations in progress, and the program exit button.

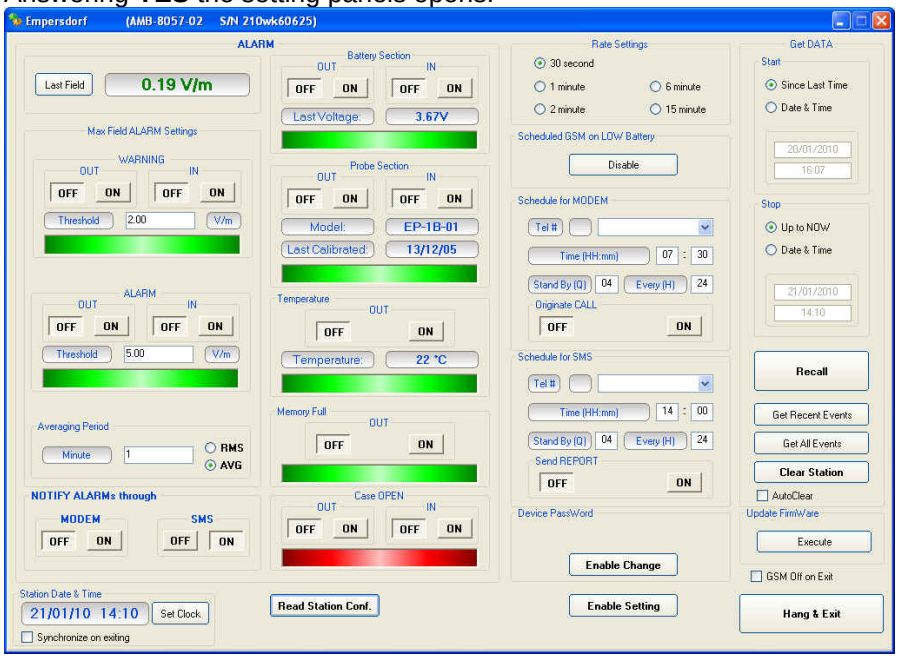
3.14 Calling a station via RS232

After the correct installation and configuration of the program 8057SW-02 as described in the paragraph "Software Installation" in this chapter, select the station to call and press the **CALL** button.
The status bar will show:
- The message “Checking MODEM”
- The message “MODEM Failure”

Moreover, a window will pop-up asking to continue via direct RS232 LINK.

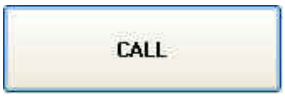


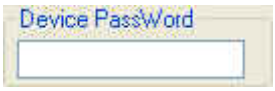
Answering **YES** the setting panels opens:



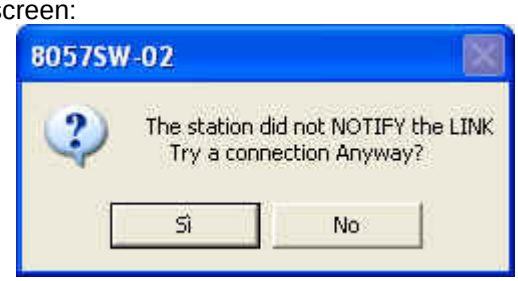
3.15 Calling a station via GSM modem (CSD mode)

After installing and switching ON the PC GSM or line modem, configure the program 8057SW-02 as described in the paragraph "Software Installation" in this chapter, select the station to call and press the **CALL** button.
The status bar will show the sequence of call/response commands of the ongoing link.

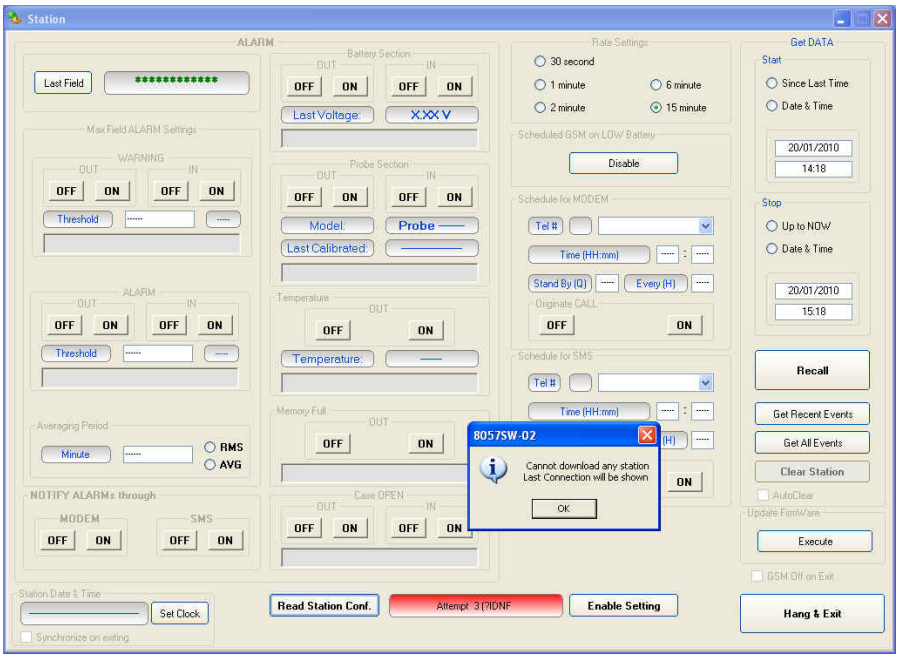




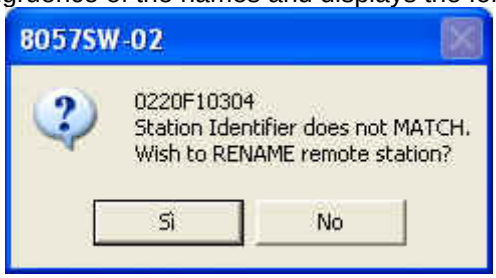
First, the match between the **Device Password** memorized in the PC and the one memorized in the station is checked. If they do not match, the status bar will display the string **#F7DENIED** and the following message will appear on the screen:



If the answer is YES, the connection will not take place but it will be possible in any case to access the station set-up screen to check its status at the time of the latest successful link.

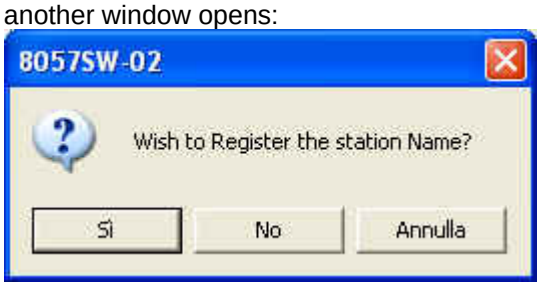


Sometime it may happen to call a station for which the password matches but not the name (Station Identifier), because the one in the station is different from the one recorded in the PC.
If, for example, the name **Test Station** has been entered in the list of the PC and the name in the memory of the station is **0220F10304**, the program detects the incongruence of the names and displays the following message:



If the answer is **Yes**, the software renames the station with the new name **Test Station** already recorded in the PC. Then it downloads the data and saves them in the directory **Test Station**.

Answering **No**, another window opens:



If the answer is **Yes**, the software allows access to the station and then the data download takes place, with these data saved in the relative directory named **0220F10304.** In this case the name saved in the station takes priority and the one in the list of the PC is updated.

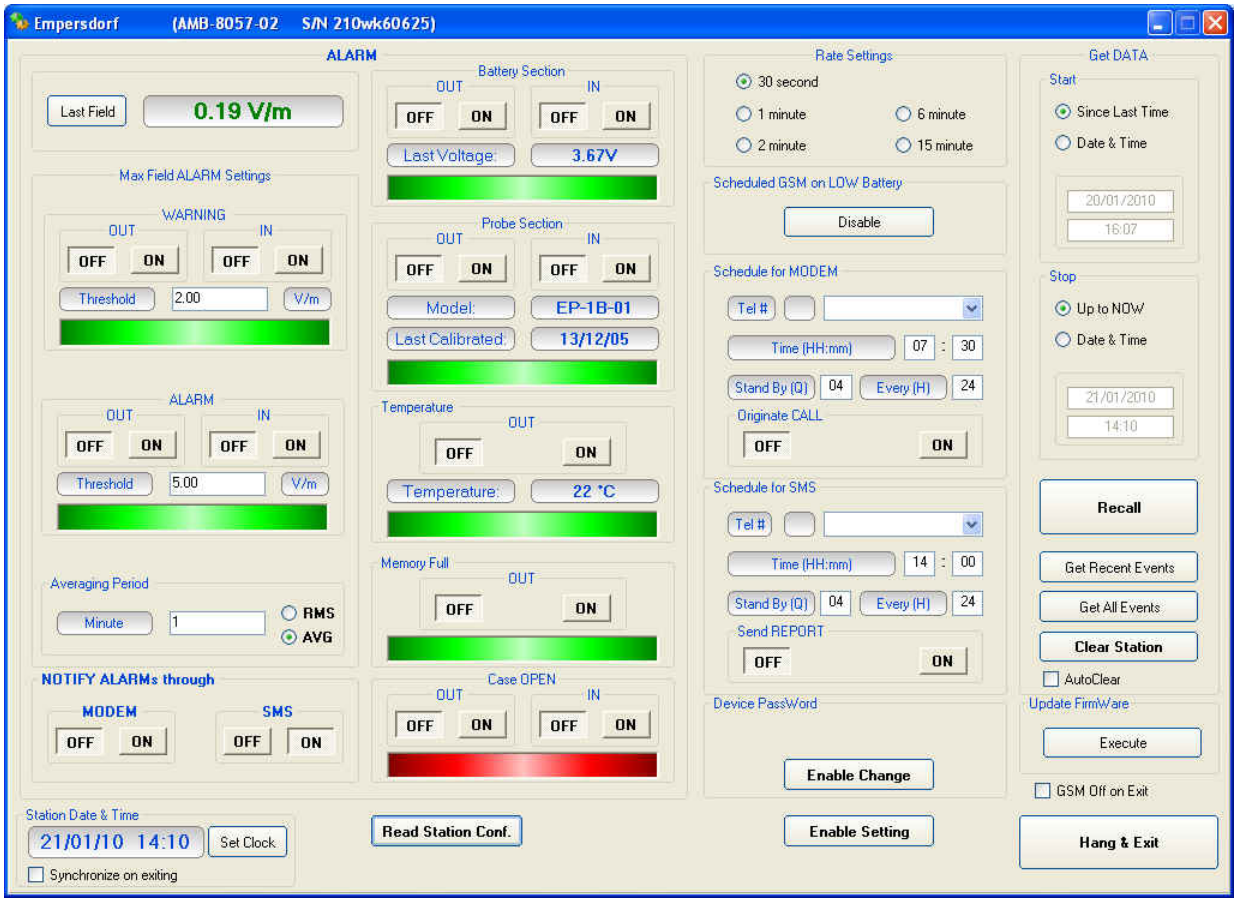
If the answer is **No** the data will be downloaded temporarily in the directory Test Station. Selecting Cancel no operation will be performed.

3.16 Control window

Once a link has been successfully established, in CSD mode or during local RS232 connection, the control window is opened for the selected station and it is possible:

- check the settings and parameters of the station;
- edit the settings (function protected by the Setting Password);
- download measurement results to the PC;
- change the Device Password (needed for calls in CSD mode only).

The control window looks like this:



After two minutes of inactivity, the GSM link will be ended automatically. This will prevent keeping the line open due to a closing error or simple omission.

3.17 Description of controls

The control window is divided in different zones grouping the available commands by type and function. The main zones are:

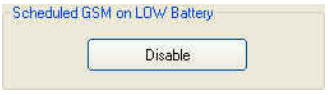
ALARMS divided in:

- Last Field
- WARNING
- ALARM
- Averaging Period
- Battery Section
- Probe Section
- Temperature Limit
- Memory Full
- Case OPEN
- NOTIFY ALARMs through

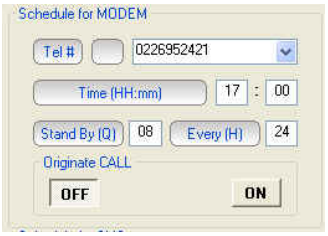
Rate Settings consisting of the options:

- 30 seconds
- 1 minute
- 2 minutes
- 6 minutes
- 15 minutes

The Rate Setting affects use of the memory and battery duration.



In the frame "**Scheduled GSM on Low Battery**" there is a "**Disable**" command. This command serves to disable the entire function of programmed switching on of the modem. If this command is selected, in order to prolong the battery duration all the programmed switches of the modem are disabled in case the battery voltage is lower than the minimum (< 3,9V for AMB-8057/03 and < 3,0 V for AMB-8057/02), without interfering with the relative settings either as regards timing or modem status,. However, this command does not disable sending SMS, if enabled, in case of unmasked alarms.
When the battery alarm status ceases, the command is automatically cancelled.



Schedule for MODEM divided in:

- Telephone number
- Time (HH:mm)
- Stand by (Q) indicated in number of quarters of an hour; this value affects battery duration
- Every (H)
- Originate CALL

Up to 2 fixed phone numbers can be programmed. The first phone number which is free and allows the data download will interrupt the search for the other number.

Schedule for SMS divided into:

- Telephone number
- Time (HH:mm)
- Stand by (Q) indicated in number of quarters of an hour; this value affects battery duration
- Every (H)
- Send REPORT

Up to 2 mobile phones can be programmed.
Both phones will receive the daily report.

Get DATA divided in:

- **Start** with the subcommands
  - Since Last Time
  - Date & Time

  The starting date must be coherent with the Rate selected and not later than the Stop date.
  If measurement results related to a period longer than the capacity of the memory, or data no longer contained in the memory (because overwritten) are requested, the software will show a warning message.

- **Stop** with the subcommands:
  - Up to NOW
  - Date & Time

  The **Stop** date must be later than the Start date otherwise an error message will appear.

- **Recall**
  It is used to start downloading results acquired in the period from Start to Stop settings.

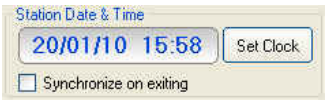
- **Get Recent Events**
  This command manually recalls all the events that have not yet been downloaded, and appends them at the end of the relative file.
  This command shall be considered the manual alternative to the option **AutoLoad Events**.

- **Get All Events**
  The command manually recalls all the events available on the station and appends them at the end of the relative file. Though this does not create any problems, no control of redundancy is made, so repeatedly selection of the command may lead to repetitive information.

- **Clear Station**
  cancels the internal memory of the station linked.
  If there are data which have not been transferred to a PC yet, the function is automatically disabled.

- **Auto Clear**
  enables total cancellation of the data in the station memory after complete downloads. When this option is enabled, after every complete download up to the time and date indicated in **Get Data→ Stop**, the software sends a request of complete cancellation (SCAM) of the data in the memory and, if there are no errors, the request is accepted by the station, which clears its memory. Obviously, once the data have been cancelled they cannot be recalled anymore.

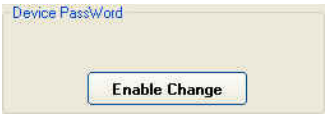
- **Update Firmware** to update the internal firmware of the station.



- **Station Date & Time** with subcommand
  - **Set Clock**, to transfer the current date of the PC to the station
  - **Synchronize on exiting**, to make the above function (updating time and date at the end of every link) automatic.
  -

- **Read Station Configuration** to read the electromagnetic field, status of alarms and configuration;

- **Enable Setting** to edit the setup;



- **Device Password** to edit the identification password saved on the station.
  The device password shall be composed by a number alphanumeric characters from 1 to 32.
  Uppercase and lowercase are considered different characters.

- The option **GSM OFF on Exit** sends to the field monitor the request to switch off the station modem in advance, in addition to the request to end the connection. When this option is enabled, at the end of the link (not made after a line break and not after the maximum time without dialogue) the station switches the GSM modem off after a time ranging from 1 to 2 minutes, regardless of the residual time set.

- **Hang & Exit** to end the link**.**

NOTE

To edit the settings on the station, use the Enable Setting button.

You will be asked to enter the security “Setting Password”.

3.17.1 ALARM

Stations equipped with GSM modem are able to notify alarm condition by sending SMS and/or starting a CSD call to the controller PC. Stations not equipped with GSM modem are not able to notify alarm conditions that are anyway recorded along with measurement results.
Measurement results downloaded from any station include therefore information of any alarm occurred during the monitoring activity.
Depending on the local laws, the place of installation, the climatic conditions, the availability of sunlight and the duration of measurement, certain alarms should be enabled for the control and proper operation of the field monitor. In addition, if the station is installed in what is defined as a "sensitive" locations as regards electromagnetic fields, the alarm for exceeding the threshold defined by law should be enabled to ensure control almost in real time.

Any alarm notification can be set on a dual threshold, with reference to the occurrence of an event (**OUT**): i.e. exceeding a threshold; and upon regaining normal conditions (**IN**).

OUT: enabled (**ON** pressed) or disabled (**OFF** pressed) notifies you of an alarm in the following cases:

1. On exceeding a threshold setting for attention (Warning)
2. On exceeding an alarm threshold (Alarm);
3. When battery voltage is too low (e.g. <3,9 V for AMB-8057/02) or too high (e.g. >5,0 V for AMB-8057/03);
4. When one or more field probe parameters is faulty;
5. On exceeding the temperature limit inside the field monitor;
6. When the data memory is almost full
7. When the external container is opened.

NOTE

Whenever an alarm occurs, the GSM modem will remain on for 30 minutes to enable the operator to send an SMS message and query the station and download the data.

IN: enabled (**ON** pressed) or disabled (**OFF** pressed) notifies you that normal conditions have been restored.

NOTE

Both "OUT" and "IN" must be set to OFF in case of station not equipped with GSM modem (AMB-8057/00 and AMB-8057/01)

NOTE

When the monitoring station is off, the alarms are shown as off when the station is switched on again.

3.17.1.1 NOTIFY ALARMs through

Stations equipped with the GSM modem are able to notify alarm via SMS and/or CSD calls.
Notification of alarms via SMS will be sent to both mobile phones indicated.
Notification via modem will be sent to the first number that answers the call.
When both Modem and SMS notifications are enabled, priority is given to the Modem.

NOTE

Both "MODEM" and "SMS" must be set to OFF in case of station not equipped with GSM modem (AMB-8057/00 and AMB-8057/01)

For each one of the 7 alarms there is a bar in the in control window that shows by its color the current status of the respective alarm, regardless of whether notice via modem or SMS is enabled or disabled:
RED: alarm condition activated;
GREEN: alarm not active.

3.17.1.2 Last Field

Displays the field averaged in the latest minutes as set in the **Averaging Period** field

NOTE

AMB-8057/02 and AMB-8057/03 can be remotely queried for this value at any time from a mobile phone by sending the following SMS message to the station: #F7?LFA*

3.17.1.3 Averaging Period

This command defines the time period on which the average of the field levels will be calculated. The average can be arithmetic (AVG) or quadratic (RMS).

In this example, with **Send REPORT** enabled, all the mobile phones in the list (max 2), will receive, every day, the maximum value averaged on a period of 6 minutes.

NOTE

"Send REPORT" must be set to "OFF" for stations not equipped with GSM modem

3.17.1.4 Max Field ALARM Settings

Field alarm

The field monitor features two warnings: field strength thresholds that can be set to define “WARNING” and “ALARM” conditions.

On exceeding one of these thresholds, a message is sent to the user mobile phone or to the controller PC from stations equipped with the GSM modem. This occurs only if the **ON** function is enabled in the **NOTIFY ALARMs through** window.

Select **ON** to enable the station to notify alarms and select **OFF** when no action shall be taken.

The **OUT** function is used to control the exceeding of the alarm threshold setting; select **IN** to control the return of the electrical field values below the set value.

In this example an alarm will occur when the field exceeds 3 or 6 V/m averaged on the time period defined with the option Averaging Period.
Thus, brief but intense field variations will not necessarily cause any alarms if the averaged value (in this example on 6 minutes) does not exceed 3 or 6 V/m.

3.17.1.5 Battery Section

Battery Alarm.

The internal control system of the Field Monitor features a voltmeter for continuous measurement of the battery voltage. This function ensures constant control of the power situation for correct operation of the system. Settings are made as for all the other alarms.

The minimum and maximum thresholds for the battery alarm can be set using the commands STHA0 and STHA1 (see chapter 7), respectively between 3,0V and 3,9V and between 3,9V and 4,2V for AMB-8057/00 and AMB-8057/02. and between 3,9V and 4,05V and between 4,54V and 5,25V for AMB-8057/01 and AMB-8057/03.

NOTE **For the model AMB-8057/00 and AMB-8057/02, the default values of the battery alarm are 3.2V (Thresold minimun) e 3.9V (Thresold maximun).**

NOTE **For the model AMB-8057/01 and AMB-8057/03, the default values of the battery alarm are 3.9V (Thresold minimun) e 3.9V (Thresold maximun).**

The bar turns red when the value is below the minimum or above the maximum and if the alarm notification is enabled an appropriate message will be sent via SMS.

NOTE **Stations equipped with the GSM modem can be remotely queried for this value using a mobile phone and sending to the station the SMS message: #F7?BAT***

NOTE **Both "OUT" and "IN" must be set to OFF in case of station not equipped with GSM modem (AMB-8057/00 and AMB-8057/01).**

3.17.1.6 Probe section

Alarm for probe in use.

The following section displays the field probe in use and its calibration data. It is also possible to generate an alarm if any parameter does not function properly.

The characteristics of sensor used by a specific station equipped with GSM modem can be read by any mobile phone by sending the SMS message: **#F7?PRB***.

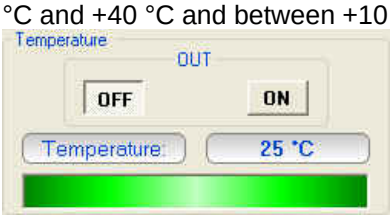
NOTE

Both "OUT" and "IN" must be set to OFF in case of station not equipped with GSM modem (AMB-8057/00 and AMB-8057/01)

3.17.1.7 Temperature limit

Temperature alarm.

The monitoring station also features a thermometer for the measurement of the internal temperature, in order to have constant control upon the environmental conditions affecting the correct operation of the system.
The setting is made as for the other alarms.
The minimum and maximum temperature alarm thresholds can be set with commands STHA2 and STHA3 (see chapter 5), respectively between –20 °C and +40 °C and between +10 °C and +60 °C.



NOTE

The internal temperature of stations equipped with the GSM modem can be remotely queried using a mobile phone and sending to the station the SMS message: #F7?TMP*
The value read on the phone is expressed in degrees Centigrade.

NOTE

"OUT" must be set to OFF in case of station not equipped with GSM modem (AMB-8057/00 and AMB-8057/01).

3.17.1.8 Memory Full

Memory full alarm

When the quantity of data saved into the memory of the station and not yet transferred to the PC exceeds the 75% of the total capacity of the memory, an alarm condition is generated. The residual memory capacity before old data are replaced by new results depends on the storing rate setting. At the rate of one save every 6 minutes the minimum guaranteed residual time before the oldest data are overwritten is over 33 days from notice of the full memory alarm. By downloading the data regularly, at least every 84 days or less, the conditions generating this specific alarm will never be met.

The amount of memory occupied is calculated starting from the latest download.

NOTE

“OUT” must be set to OFF in case of station not equipped with GSM modem (AMB-8057/00 and AMB-8057/01).

3.17.1.9 Case OPEN

Case open alarm.

Whenever the external protective case of the field monitor is opened, an alarm condition occurs. Like it happens in case of other alarm conditions, the status bar shown below the “Case OPEN” frame, when connected to the station, will be displayed in red colour. Similarly to any other alarm frames the “OUT” and “IN” buttons must be set to OFF in case of stations not equipped with the GSM modem.

3.17.2 Schedule for MODEM

Programming the station for modem links.

To query the monitoring station by a remote PC linked to a telephone or to a GSM modem, the Station modem must be on.

In addition, when an alarm occurs, the station can automatically call in CSD mode the telephone number of the modem used by the controller PC.

Programming consists of setting a scheduled time for switching on the internal GSM modem, defining how much time the modem will stay ON (stand-by), repetition interval and whether or not a CSD call to the controller PC must be generated.

The parameter **Time (HH:mm)** specifies what time of day the Station modem has to be switched on and placed in Stand-By condition, while the parameter **Stand BY (H)** determines how long the GSM stays on. The parameter **Every (H)** indicates the frequency of repetition or after how many hours from the latest start the Station modem has to be switched on again.
To prevent the schedule from changing every day, this parameter has to be programmed in submultiples of 24, so that only the following values are accepted: 1, 2, 3, 4, 6, 8, 12, 24.

If the command **Originate CALL** is **ON**, the station will automatically call the remote PC at the first phone number listed in the field “Tel #” at the time indicated in the **Time (HH:mm)** field, if this number does not answer or the line is busy, the station will try to communicate with the second phone number on the list.
The minimum Stand By time is 0; that means that the station makes the call at the time indicated and automatically switches the internal modem off.

NOTE

See chapter 2, paragraph 2.7.2, for the different ways of switching on the modem.

Setting for stations not equipped with GSM modem (AMB-8057/00 and AMB-8057/01) should be as follows:

- Tel # : VOID
- Time (HH:mm) : 00:00
- Stand By (Q): 00
- Every (H) : 24
- Originate CALL : OFF

NOTE

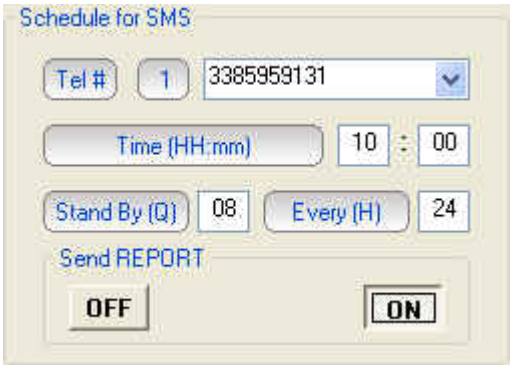
The “Schedule for MODEM” frame is disabled, and therefore cannot be set, if the station is set for FTP communication mode (factory default configuration). See 3.7.4. for instructions to set the station to CSD/RS232 mode.

3.17.3 Schedule for SMS

Querying the station with SMS messages.

Similarly to the “Schedule for MODEM” frame, the “Schedule for SMS” offers the opportunity to define an additional time period during which the station modem will be ON (stand-by mode) and therefore able to receive CSD calls and SMS query and setting commands. In addition, the “Schedule for SMS” frame allows defining two user’s mobile phone numbers that will receive alarm messages and/or daily reports.

Even in this case, the GSM modem switch ON/OFF time can be programmed as described in the previous paragraph.



With the **Send REPORT** command **ON**, at the time indicated in the window **Time (HH:mm)** the monitoring station automatically sends its daily report to all the mobile phones listed.

The minimum Stand By time (expressed in quarters of an hour) is 0; in this condition the station sends the Report via SMS at the time indicated and automatically switches off the internal GSM.

Recommended setting for stations not equipped with GSM modem (AMB-8057/00 and AMB-8057/01) is the following:

- Tel # : VOID
- Time (HH:mm) : 00:00
- Stand By (Q): 00
- Every (H) : 24
- Send REPORT: OFF

NOTE

It is possible to receive and read the daily report on any mobile phone (max field value, minimum battery voltage and status of station, telephone number of station, time and date) by sending the SMS message: #F7?RPT*.

NOTE

The Report shown on the phone display will indicate the highest field value and the time at which it was read, and the lowest battery voltage and the relative time since the last time the report was sent or requested.
Therefore if at 9.00 a report is sent and at 10.00 the station is queried with the request of a new report, the display will show the highest field value and lowest battery voltage between 9.00 and 10.00.

NOTE

Chapter 7 of this Manual describes in detail all the commands and the messages available via SMS.

3.17.4 Rate Settings

Configuration of data memorization.

Data are saved in the station at a frequency (**Rate**) ranging from 30 seconds to 15 minutes.

NOTE

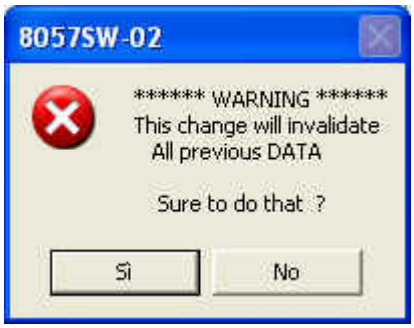
The station always performs 1 reading every 3 seconds and saves the average value and maximum (Peak) at the selected Rate.

Example: if the rate of 1 minute and an averaging period of 1min are selected, the station will take 20 readings and save the average value calculated minute by minute.

If an Averaging Period of 6min and a rate of 1min are selected the indication will represent, minute by minute, the field average calculated on the previous 6 minutes.

The selection of a different Averaging Period as well as a different Rate will invalidate all the data stored with the previous settings that will be no more available for downloading, therefore the software will indicate this risk.

The following message appears:



If the answer is **YES**, the software will show another message asking whether to continue with the new setting, as follows:

Answering **YES** again, the software will allow you to change the setting but all the data previously acquired will no longer be available for new downloads. It is therefore suggested to download any measurement result before changing settings.

In general, great care shall be adopted in changing the timing or type of average or the saving rate.
Indeed, data recorded with the same station, relative to the same day but acquired with different settings will not be compatible. Only results acquired before changing setting will be displayed in the graph or table of the same day. Results acquired with the new setting will be displayed starting from the next day.
If it is really necessary to change the settings, NARDA recommends one of the following procedure:

NOTE

- **Change the station name before making the settings change.**
  In this case the station with the new name is considered a new station with all data and results stored in a new station directory. The old station name will be still available in the station list allowing selection and display of all data acquired previously.

- **Change the name of the directory in which the previous data were saved before the settings change (or in any case before downloading the new data).**
  In this case the station maintains the same name but, even if not lost, no old data will be displayed.
  To display data acquired with the old setting it will be necessary to add a station in the list which Station ID (name) correspond to the changed name of the old directory.

- **Do not download the data acquired in the period of time between the settings change and the midnight of the same day if neither of the above suggestions is adopted and results of the same day are not needed.**

NOTE

The monitoring station has an alarm flag (usually indicated as "C") for the memory that is tripped when, after the latest download, the residual memory space is lower than, or equal to, 2/8 of the total memory capacity.

Since the control is done for eighth of memory with a resolution of 1/8, it means that, to guarantee a good use of memory and an intervention of this alarm flag when the capacity is greater or equal to 25%, this alarm is activated when the residual memory space is smaller of or equal to 2/8 + an entire one eighth that is, in the worst case, the 37.5% of the total memory.
Comparing this value to the memory capacity of the station, it means that at the storing rate of 6 minutes it's possible to have:
a minimum recording time in full autonomy without download and without signalling alarm saturation memory equal to:

NOTE

135,5 * (100 – 37,5) / 100 = 84,4 days

and a minimum recording time due to the residual autonomy of:

135,5 * 25 / 100 = 33,9 days

from the time the memory saturation alarm comes up to the time the first recorded data are rewritten (the memory is circular).

NOTE

The address of the memory's location which is the reference for the calculation of the saturation is updated taking the address of the last downloaded data. Therefore, a regular data download – in any case at intervals shorter than 84,4 days - prevents the saturation alarm memory to ever come up, as, like already said, any download automatically update the position and restore the initial conditions.

If the alarm is active, one of the following operations is needed to clear it:

- Download data;
- Command to reset the memory SCAM (cancel the memory).
- Command setting SAQ_(acquisition mode) ;
- Command SRSTR (Restore default conditions).

3.17.5 Get DATA

Downloading data from the monitoring station to the PC.

The data in the internal memory of the station can be downloaded after defining a Start and Stop event as follows:

The Start and Stop of the data download is done between the following commands, in any combination.

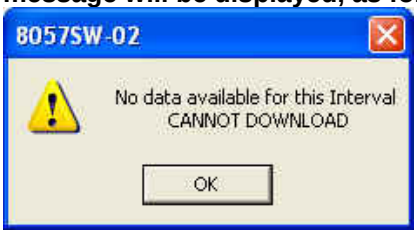
- **Since Last Time**: Automatically enters the time and date of the latest download;
- **Date & Time**: any date and time indicated;
- **Up to NOW**: actual date and time with reference to the station;

The "**Recall**" command starts downloading results to the controller PC.

The data downloaded will be assigned automatically to the relevant days of the calendar and those days will be marked with blue characters.

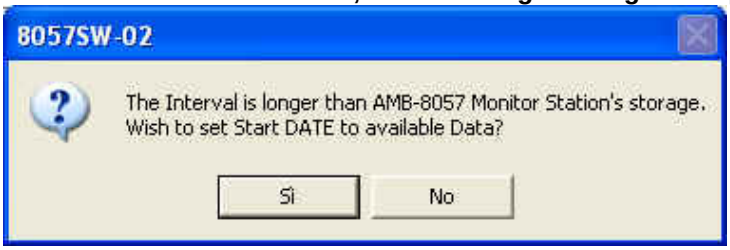
NOTE

The Start event must be earlier than the Stop event otherwise an error message will be displayed, as follows:



NOTE

If the download period is longer than that allowed by the memory available at the rate defined, the following message will appear:



NOTE

After downloading the data, click Hang & Exit to view the data downloaded

NOTE

During the download of the data from the station a window is displayed with two bars indicating the progress of the download.

The vertical bar gives the percentage of the total amount of data to be downloaded while the horizontal shows the progress of the download for each subsequence six hours interval.

During data download in CSD mode, mainly due to poor reception or to poor quality of the GSM signal, some error messages may be received.
In these cases, repeat the **RECALL** command.

3.17.5.1 Examples of error and information messages

Many phenomena can affect good communications between the GSM modem of the monitoring station and the modem of the PC.
The selection of the port on which the modem is connected can generate a series of error messages.

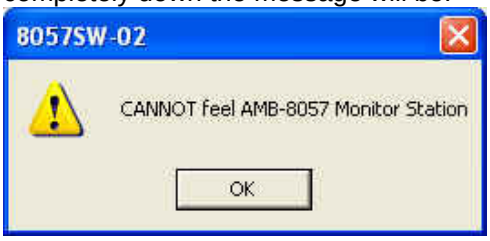
The message in the status window is:

If the PC modem is off or the software is searching for the modem on a different serial port than the one to which the modem is physically connected, the message is:

The same message also appears when the User wish to make a direct RS232 connection to the monitoring station (this is the only communication mode provided by AMB-8057/00 and AMB-8057/01).

Answering **YES**, the software tries to connect the station via serial port, and if there is no connection the next message is:

If the station does not answer because it is off or the batteries are completely down the message will be:



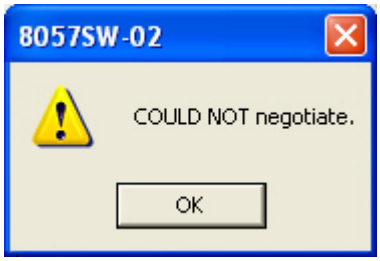
In case of error in data transmission this message will appear:

The control of the checksum guarantees the quality of the data received. When this error occurs, sometimes the 8057SW-02 software closes the application and exits.

No answer from the monitoring station

Message informing that data cannot be downloaded.

Click on Read Station Conf. to try and connect to the station and show its configuration. If the station does not answer, the configuration relative to the latest successful link is shown.



If there are communications problems in CSD mode between the servers of different GSM Service Providers, this message appears. The same message can appear when there is heavy traffic or when the server is unable to perform roaming.

NO CARRIER

If the monitoring station is switched off or if the signal is insufficient for a CSD call, the message NO CARRIER appears in the Status frame of the main window.

If the 8057SW-02 software does not see any available serial port on the PC where it is installed, the following message appears:

See paragraph 3.4

If a COM port is configured in a way that makes it not available on the computer or if there are no free ports, you can run the software in DEMO MODE to read the data already downloaded.

3.17.6 Firmware Update

Update of internal Firmware.

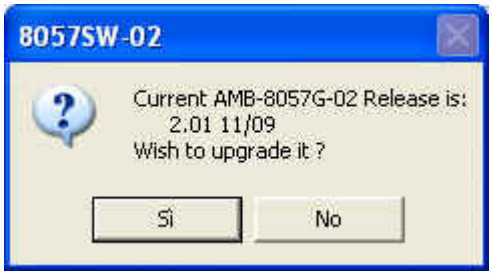
It is important to update the station firmware in order to use all the new functions added and eliminate any bugs in the software.

To update the firmware, use the **Execute** command.

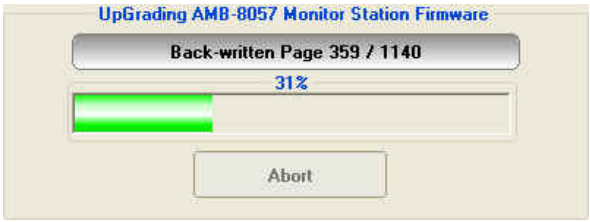
The monitoring station will place the old firmware in its memory and will try to load the new firmware. A window with a colored progress bar appears on the screen and indicates the loading progress of new firmware.

The following steps will be carried out:

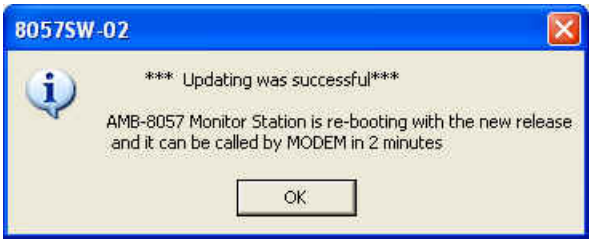
1. Request to confirm transfer;



2. Firmware transfer in progress indicated by the progress bar;
3. Back-up writing (Internal copy of FW);



4. Reset and automatic startup of the monitoring station with new version of Firmware



If any CRC errors occur or if, in CSD mode, there is a poor telephone connection, or if for any reasons the new firmware is not completely and successfully transferred to the monitoring station, the station will automatically restore the old firmware in order to prevent malfunctions or stops.
It is also possible to update the firmware by connecting the PC to the serial port of the station.

3.17.7 Station Date & Time

Used to update or change the internal clock in the monitoring station and synchronize it with the time set on the PC. The operation will be carried out automatically after every connection if the **Synchronize on exiting** option is enabled.

NOTE

The internal clock of the station is extremely accurate and in many cases much more accurate than the clock on the PC. The internal clock is not automatically updated to summer time and/or to standard winter time.
When the internal clock of the station is changed, some readings may no longer appear contiguous and gaps may be found.
For this reason NARDA recommend to use of this function sparingly

3.18 General Commands

Three general commands are found at the bottom of the control window:

Read Station Conf
Enable Setting
Hang & Exit

3.18.1 Read Station Conf.

To read the status of the monitoring station, select **Read Station Conf.** Click on the button to start a new query of the station.

NOTE **This command is similar to RECALL but does not download any data**

3.18.2 Enable Setting

To enable settings on the monitoring station, click on the **Enable Setting** button**.**

The software will ask to enter the security password in a window like that:

3.18.3 Hang & Exit

The **Hang & Exit** button ends the ongoing communication with the monitoring station and returns to the main window.

3.19 Download data via serial port RS232

As already explained, AMB-8057/00 and AMB-8057/01 having no GSM modem inside, make use of the RS232 local communication for settings and downloading of measurement results. The RS232 connector of the above models is immediately available on the lower side of the station base plate avoiding thus the need to remove any cover to connect the serial cable.
RS232 communication mode is provided by AMB-8057/02 and AMB-8057/03 too allowing thus local communication for initial settings or anytime the remote communication is not desired or the GSM service not available.
In some situations where, for example, the GSM signal is very weak or there is no coverage of the network by the GSM Service Providers, it is possible to make an acquisition of long term (max 84,4 days) data without downloading them daily via GSM. At the end of the desired acquisition period, the data can be downloaded on a PC using the serial port in the station and a direct RS232 link.
The procedure to follow is:

- Remove the protective case;
- **AMB-8057/02 only.** Connect the modified serial cable supplied between the User Port connector on the AMB-8057/02 and the serial port of the PC. For more details see § 2.6.1.1.
- **AMB-8057/03 only.** Connect the serial cable supplied between the RS232 connector on the monitoring station and the serial port of the PC. For more details see § 2.6.1.3.
- If necessary, change the properties of the icon of 8057SW-02 entering the command COMM=N; where N is the number of the COM port on the PC where the RS232 is connected. For more details see § 4.3.
- Run the 8057SW-02 software;
- Call the station by pressing the **CALL** button.

With no modem in use, the software will promptly display the message:

Answer **YES** to enter the station menu and download the data or change the configuration of the monitoring station.

3.19.1 Examples of errors

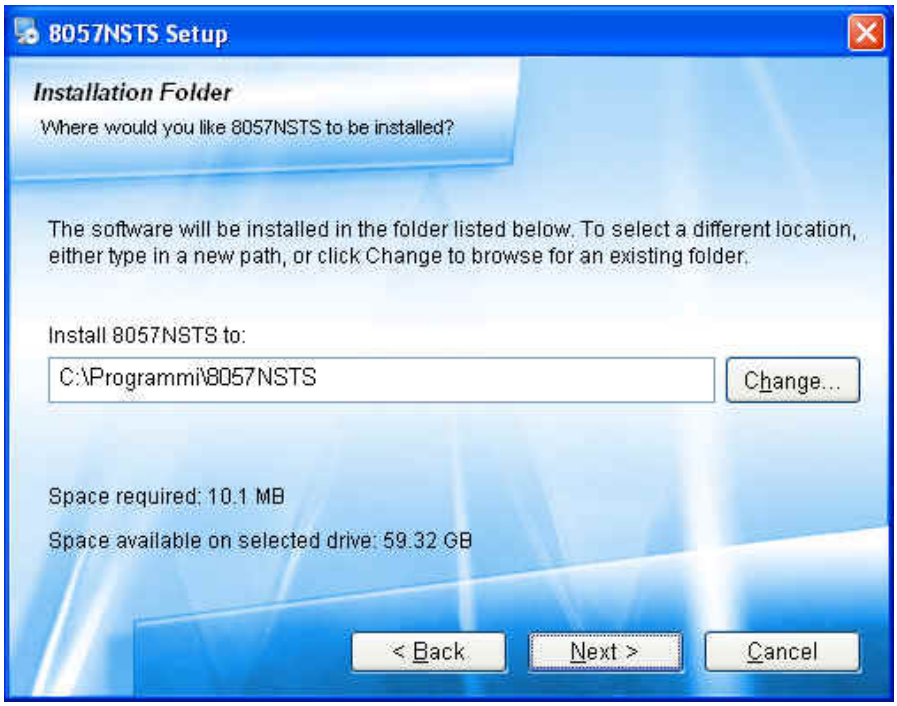
If the station is switched off, the serial communication cannot take place and the error message is:

Answer **NO** and try to solve the problem checking the conditions of the cable and if it has been connected to the port used by the 8057SW-02 software.

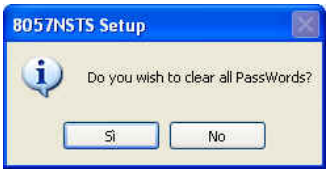
If the answer is **YES**, the software will show the existing communication at the time of the latest data download.

3.20 Software update

To update the software double click on the **8057NSTS Setup.**
After a few seconds the software will ask where to install the program. The default directory is **C:\Programmi\8057NSTS.**



Press **Next** to complete the installation.



During the installation process the software will ask the User if he wants to cancel all the existing Passwords.
If the answer is **YES,** all the stations and measurements already saved will be hidden, but still accessible by adding all the stations used and maintaining the original name (respecting upper and lower case letters) and phone number.
With this procedure, all hidden stations are made accessible to the User.

Answering **NO**, all the stations, telephone numbers and the respective Device Passwords will be immediately visible to the User.

The **8057NSTS** folder and the **8057SW-02** icon will be updated.

3.21 Uninstalling Software

It is possible to remove the 8057SW-02 software from the PC according to the following procedure:

Run the **Uninstall 8057SW-02** utility.

Follow the uninstaller instructions.

The software is now removed from the system, click **Finish** to close uninstaller utility

This page has been left blank intentionally

4 – 8057SW-02 - GPRS communication

4.1 General Information

4.1.1 Introduction

This section refers to AMB-8057 area monitor, equipped with GSM/GPRS modem, used in conjunction with 8057SW-02 control software.

AMB-8057 area monitors can be set to operate using two different remote communication modes, both using the GSM network: CSD (Circuit Switched Data) and GPRS (General Packet Radio Service).
The user should decide in advance the communication mode for each station as CSD communication mode is not allowed while a station is set for GPRS and viceversa.

This section provides operating instructions and suggestions to correctly use AMB-8057 area monitor set for GPRS communication mode.

NOTE

Please refer to chapter 3 of this manual for remote CSD and local RS232 communication.

4.1.2 Brief description of GPRS communication

When a GPRS modem switches on it links up with the GPRS network.
Assuming that parameters such as Access Point Name, User Name and Password are correctly set by the user, the modem accesses the Internet to establish packet data communication towards other devices identified by their IP address.

Unlike CSD data communication there is no need to establish a direct connection between two devices by means of a call to a telephone number. Each data packet put in the network includes the receiver IP address so that any packet can be delivered efficiently.

In GPRS mode the telephone channel is not engaged continuously but only when some data have to be transmitted. In this way a single telephone channel can be shared between users or more channels can be used at the same time to improve the communication speed.

Usually there is no need to ask the provider for specific data service as SIM cards are often already enabled for GPRS.
An evident advantage using internet for data exchange is that it allows access to data from anywhere, at low cost, regardless distance.

4.1.3 Monitoring networks

The monitoring network is a system composed by one to several AMB-8057 remote monitoring stations and a controller PC running the 8057SW-02 control software.

Remote stations continuously perform field measurements and store results in their internal memory.
At programmed time each station downloads the stored results to the controller PC in a different way depending on the communication method that have been decided in advance.
In this section GPRS communication method only is taken into consideration.

4.1.4 System operation in GPRS mode

After initial installation there is no direct communication between remote stations set for GPRS mode and controller PC.
A user's FTP server with a static IP address is always available, presuming availability of the GSM signal at the remote station installation site, for AMB-8057 to download data to the server itself.
When connecting to the server the remote station will check for the existence of any request to modify its setting or to download results related to some specific time interval.
In case, the station will proceed accordingly by changing its setting or by downloading the requested data. If no special requests is found the station downloads all measurement results which have been acquired since the previous access to the server.

To avoid generating undesired electromagnetic fields that would be measured by the station itself, the station GSM/GPRS modem, which allows communication with the FTP server, should be set to be off for the major part of the day.
At the programmed time, set by the user, the modem switches on and the station access the ftp server to download its results.
Depending on the setting decided by the user, various abnormal conditions regarding field strength and station operation, generate alarm events able to immediately switch on the modem to access the server and /or send SMS to the user's mobile phone.
Being the modem a power consuming component, it is advisable to avoid programming the station to access the server more than once a day to avoid, specially during bad weather periods, affecting the energy balance between solar panel and battery backup.

The main interface to the system, from the operator side, is the controller PC.
When desired, through the control software 8057SW-02, the user can select a remote station from the station list and access the station folder opening an ftp connection to the server.
All data not already downloaded from the server to the controller PC are then downloaded and a new setting file, if requested by the user, is transferred to the server to be read by the station when it will access the server.
The controller PC needs a full internet connection allowed for File Transfer Protocol.

☞NOTE **Due to the GSM network signal quality it may happens, sometimes, that the station is not able to access the ftp server at the scheduled time. No data will be anyway loss being downloaded at the next time connection.**

4.1.5 Some advantages

Any remote unit (AMB-8057 area monitor) downloads its data to the FTP server, at scheduled time, according to the user setting.
The controller PC is able to retrieve them whenever desired without any need to establish a direct connection to the remote station.
Integrity check of transmitted data is automatically performed by the remote station.
In case of bad GSM signal quality, remote stations automatically try several times to access the network and download measurement results.
The small dimensions of data files normally transferred by our systems make it convenient to chose telephone charges based on data volume usually available for GPRS service.

4.2 General Requirements

4.2.1 Remote station

Remote station:

- A SIM card enabled for GPRS communication must be provided by the user and inserted in the SIM card slot according to instruction provided by this manual.
- The SIM card PIN code must be disabled using a mobile phone

Information required for GPRS communication:
- **APN** (Access Point Name)
- **UN** (User Name)
- **PW** (Password)

The above parameters are specific of the SIM card provider, it often happens that User Name and Password are not required.

Some examples:

Italy: APN for a Vodafone SIM card is: web.omnitel.it
User name and password are not required.

Greece: APN for a Cosmote SIM card is: internet
User name and password are not required.

China: APN for a China Mobile (Shanghai) SIM card is: cmnet
User name and password are not required.

Configuration of the above, as well as ftp server parameters must be done in advance, before on site installation, using the controller PC running the provided 8057SW-02 control software or, as an alternative, by means of specific messages (SMS) to be sent to the station telephone number.

A Narda STS ftp server is available to our customer for preliminary tests:

IP address: 62.152.127.237
User Name: 8057
Password: pmmpass

4.2.2 Minimum requirements of the controller pc

Minimum requirements of the controller pc
- Operating system: Windows XP, Vista, Win7
- Pentium processor;
- at least 16 Mb RAM;
- at least 100 Mb of space free on your hard disk;
- Full Internet connection (**the PC and network firewall should not close the ports 20 and 21 normally used for FTP connection**)
- 8057SW-02 provided control software should be installed

NOTE

8057SW-02 control software has been developed to operate properly with different Date /Time formats that can be selected through the Regional Settings of the Windows Control Panel.
Non all the possible combinations has been tested.
A functional test by setting European format (dd/MM/yyyy , HH:mm:ss) is suggested in case a malfunction is noticed.

4.2.3 FTP server requirements

FTP server requirements:

A STATIC IP address is required for the FTP server.

The following information regarding the ftp server must be available to set-up correctly remote units and controller PC:

IP address (it is the static IP address assigned to the ftp server)
User name and Password (to be allowed to exchange data with the ftp server)

4.2.4 Brief operating description and file structure

Basically, at scheduled times, the AMB8057 regularly establishes, via GPRS, a connection to the server through FTP:

- First it loads, if any, all the (new) settings which have been written by the (client) application.
- Then it writes all data that have been requested by the application.
- Finally it erases all previous required settings in order to avoid reloading them at the next connection. Note that data related to field measurements are never deleted by the station.

After that the connection is terminated.

4.2.5 Structure

To avoid having multiple stations that store data in the same directory every data exchange is done on a directory named as the serial number of the monitoring station itself. Here, an example of directory structure:

FTP_Root
- **000WE80201**
  - 8057.CFG
  - 8057.set
  - 8057FLD.TXT
  - 17_08_01_07_09_.D57
- **000WE80202**
  - 8057.CFG
  - 8057.set
  - 8057FLD.TXT
  - 20_00_01_07_09_.D57

NOTE

Directories are created by the control software, at the first connection to the server, after the station parameter set-up has been completed. Remote station will not create any directory. **The user must ensure that the directory have been created before operating the remote station.**

4.2.5.1 CFG File (configuration)

Whenever the AMB8057 connects to GPRS and accesses to FTP server, it looks for a file named **8057.CFG** in its directory (its serial number). If the file is present, the AMB8057 retrieves it and calculates the checksum in order to use it and thus get the new configuration. If the checksum is wrong, the file is discarded otherwise the new configuration is taken.
Is important to note that the new setting will not take effect immediately but only after the connection is closed.

4.2.5.2 FLD File (Read)

After having dealt with the configuration file **8057.CFG**, the AMB8057 check for the presence of a file named 8057FLD.TXT.
This, is an ASCII file which contains the date of the first requested record and the number of them. The syntax is: **FLD HH:mm;GG/MM/YY;n** where:

- HH is hour of the day.
- mm is minute of the day.
- GG is the day.
- MM is the month.
- YY is the year
- n is the number of records required (if n="---" then all records starting from the date/hour up the last recorded record will be uploaded).

For example the string FLD **18:13;23/07/09;100**
Asks for 100 records from the 23th of July 2009 at 18:13 .

If, instead, the string would have been FLD **18:13;23/07/09;---**
It would ask for all records from the 23th of July 2009 at 18:13 up to now.

NOTE

Note that, in case of "---" (up to now option), in order to avoid huge files and long transfer time, the number of records will be limited to about 5000.

Once the AMB8057 has read the file 8057FLD.TXT, it deletes it. It will be replaced later with the newer self created 8057FLD.TXT which reflects the last uploaded record.
This solves the continuity of records even without any external intervention. Indeed, for every connection the AMB8057 uploads the records and writes a new FLD file which reports the date/hour of last record so that next connection will continue from this having thus an uninterrupted series of records.

4.2.5.3 Record File (Write)

After having read the FLD file, which informs the AMB8057 about which records have to be uploaded, it writes a file named HH_mm_GG_MM_YY.D57 where:

- HH is hour of the day.
- mm is minute of the day.
- GG is the day.
- MM is the month.
- YY is the year

This file, in binary format, contains the downloaded measurement results.

4.2.5.4 FLD File (Write)

After having written the record file HH_mm_GG_MM_YY.D57, the AMB8057 writes the file named 8057FLD.TXT which replaces the old one.
This, is an ASCII file which contains the date of the last uploaded record and terminates with the string "---".
The content will be therefore: FLD HH:mm;GG/MM/YY;--- where:

- HH is hour of the day.
- mm is minute of the day.
- GG is the day.
- MM is the month.
- YY is the year

For example the string FLD 20:30;23/07/09;---
Says that the last updated record is related to the date of 23th of July 2009 at 20:30 .

If the user does not need a specific period but, as usual, a simple continuous data logger , there is no need to write any FLD File as the system is self-sufficient.

4.2.5.5 Event File (Write)

After having written the FLD file, the AMB8057 writes a file named HH_mm_GG_MM_YY.TXT where:

- HH is hour of the day.
- mm is minute of the day.
- GG is the day.
- MM is the month.
- YY is the year

Which represents the events file.
This, is an ASCII file which contains all the new events since last connection.
Alternatively, soliciting a connection, by the SMS command, different event history can be retrieved as follows:

- SCGNA : all the stored events are written in EVENT.TXT file
- SCGNL : The last 20 events are written in EVENT.TXT file

The content of EVENT file is the chronological history of all events up to the time of connection (RTC setting assumed to be correct).

4.3 First installation and Parameter setting

First configuration of each station and its functional test should be performed before installing the station on site.
User must ensure that the GSM signal is available in the installation site.
Refer to chapter 1 and 2 for details regarding battery charging, station positioning and other information about installation.

Main steps:

1 – Set-up the remote unit and recharge batteries as explained in the chapter 1 and 2

2 – Install 8057SW-02 control software in the controller PC by running 8057NSTS setup and follow on screen instructions.

3 – Check the COM port number assigned to the PC RS232 port (or USB/RS232 adapter)
It may happen, using USB/RS232 adapter, that the assigned COM port number exceed 09.
In this case change the setting of your USB/RS232 adapter driver in the Windows control panel (advanced setting) to assign a COM port number between 01 and 09.

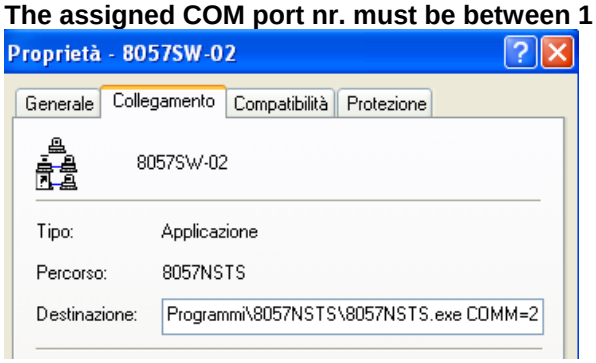
4 – Select the icon 8057SW-02 with the right mouse button;

Select Properties;

Add the command COMM=N preceded by a space (in capital letters) at the end of the Destination field where N indicates the serial port to be used; for example, if the COM port number assigned to the PC RS232 port is 2, add the command COMM=2.

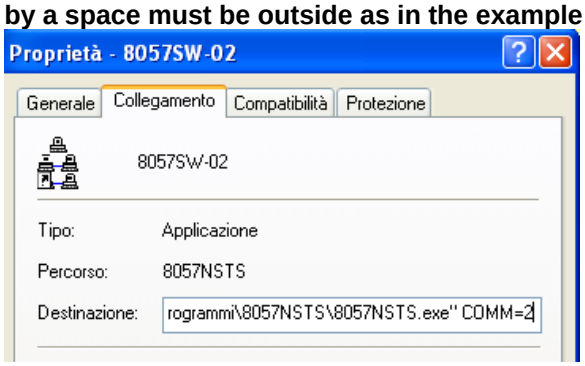
NOTE

The assigned COM port nr. must be between 1 and 9.



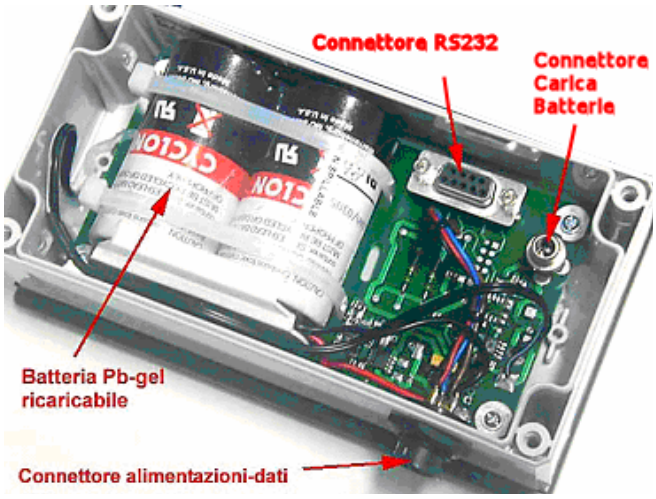
NOTE

In some operating system the Destination field is enclosed in double quotation marks (“); in this case, the command COMM=N, preceded by a space must be outside as in the example below;



Then confirm by selecting Apply

5 – Connect the RS232 cable between remote station and PC, switch the station ON and run 8057SW-02 control software.



6 – Set Terminal and Setting passwords as requested by the software (If desired, Terminal and Setting passwords can be the same word). Take note of your passwords as they are needed to operate the application software.

7 – Select **FTP** section in the top side of the main window

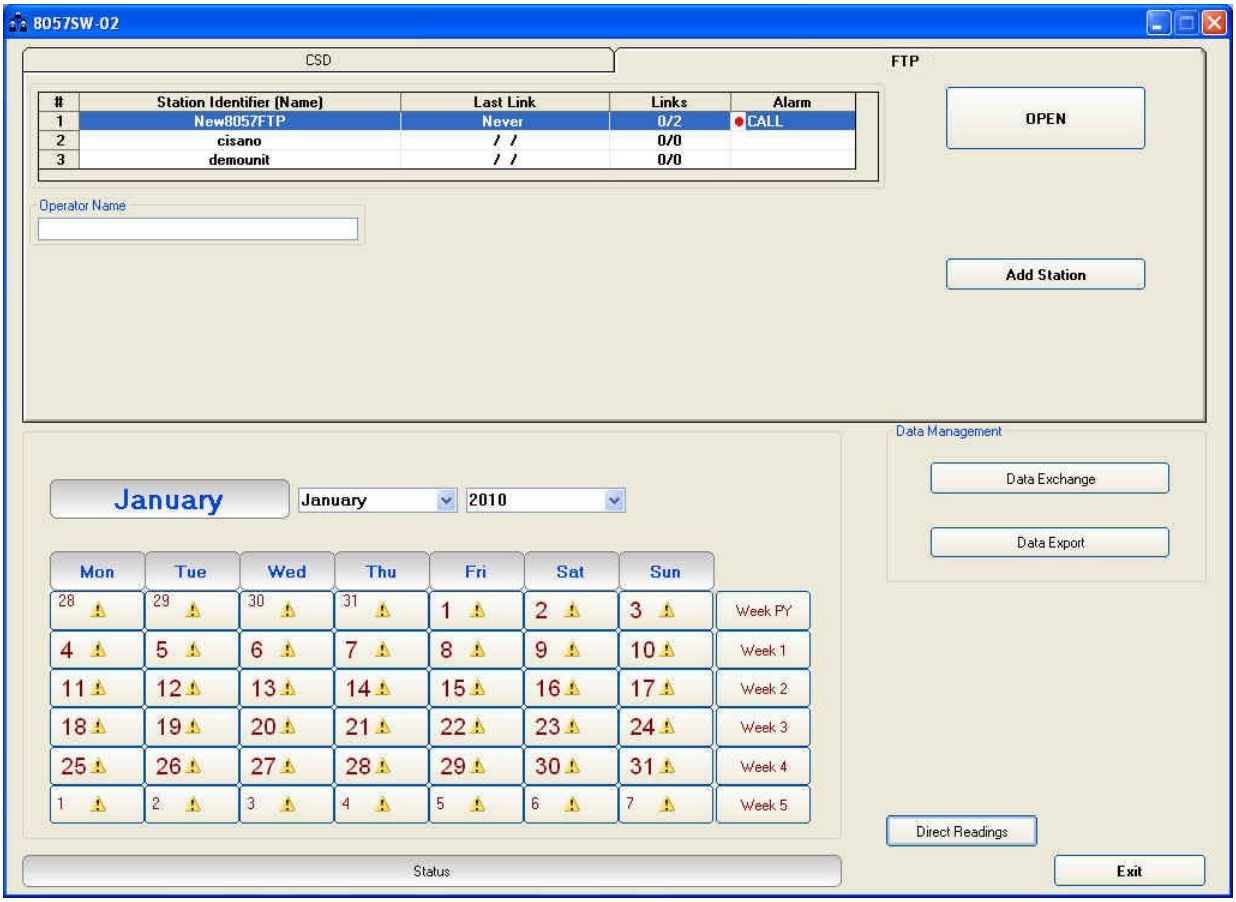
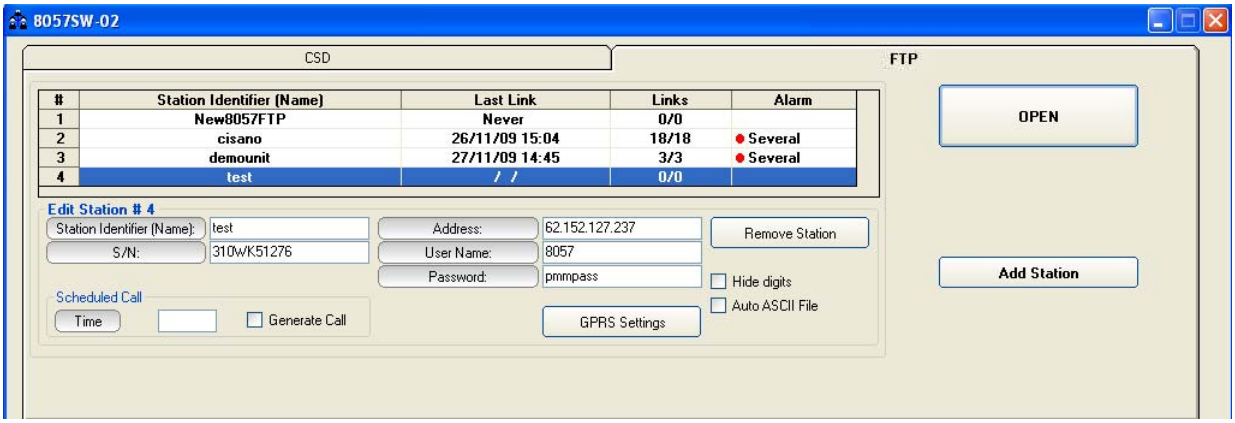


Fig. 4-1 FTP Main window

8 – The station list contains only one station as an example.

Click **Add Station** button on the right side to add a new station to your list and fill the new form with requested parameters:



Station Identifier (Name):
"test" in this example, you can decide for any alphanumeric name.
The station list cannot contain two or more stations with the same name.
The folder containing all information and data of a specific station is created automatically by the control software. The folder name is the same assigned to the station in the station list.

S/N:
"310WK51276" in this example, is the serial number, different for any station.
By means of the control software a new directory with the same name will be created in the FTP server. It will be used for any data exchange between PC-server FTP and station-server FTP related to this specific station.

Address:
"62.152.127.237" in this example Narda STS ftp server IP address that can be used by user for preliminary tests. Be aware that data in this server are periodically removed.
User must set here the **static IP address** of his FTP server.

User Name and **Password:**
Respectively "8057" and "pmmpass" in this example to access the Narda STS ftp server for test.
User must set access parameters for his own ftp server.

NOTE

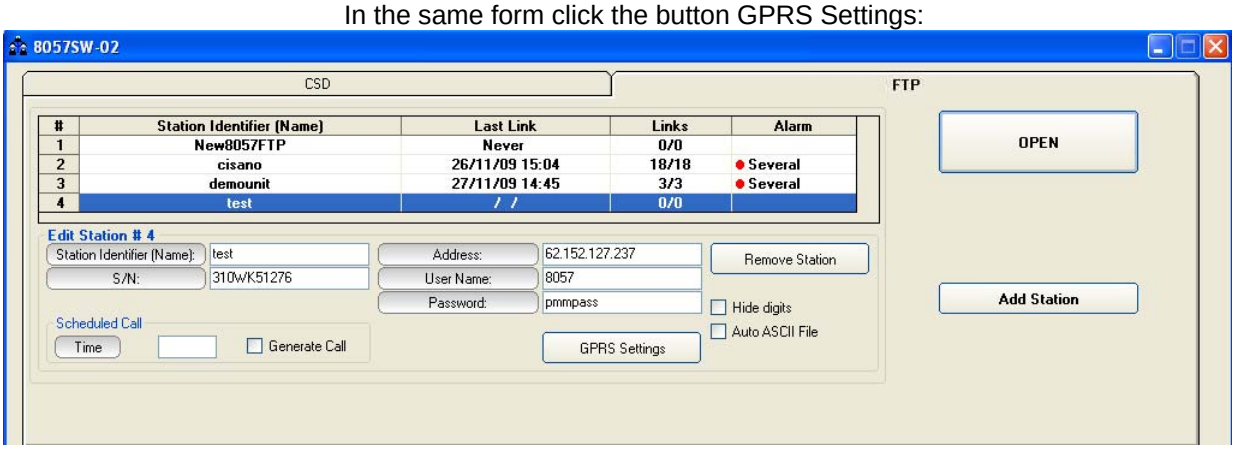
The above information S/N, Address, User name and password are necessary for the controller PC to access the ftp server for downloading station measurement results and change setting to the remote station.

NOTE

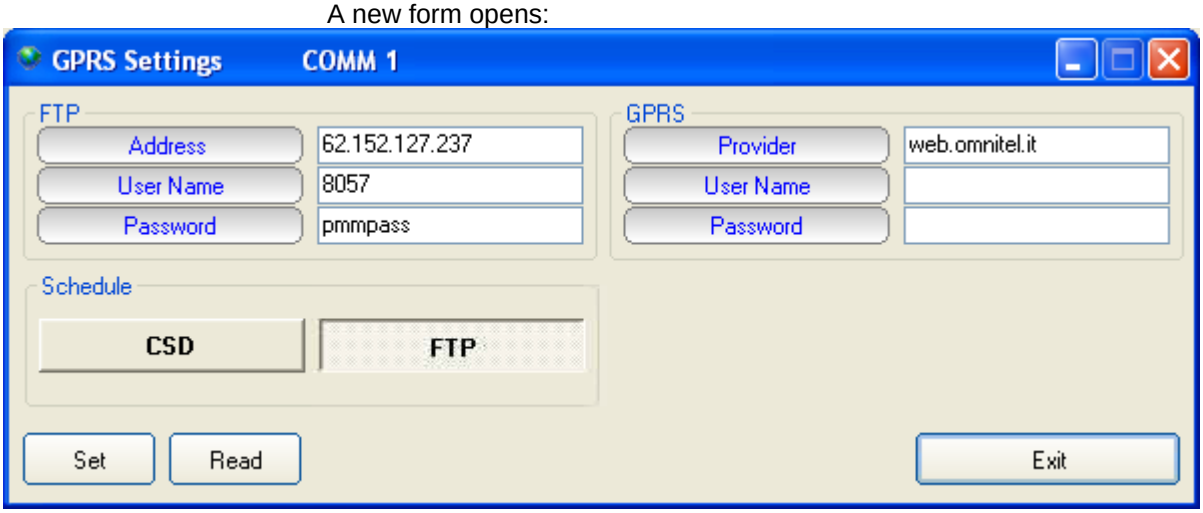
After typing, press "Return" key to set each single parameter. Every time a single parameter is set in this form the user will be asked to type the *terminal* password.

9 - GPRS parameters setting

In the same form click the button GPRS Settings:



A new form opens:



Select the button **FTP** in the frame **Schedule** if not already selected.
Fill the same parameters, Address, UserName and Password for the FTP server. This parameters will be transferred to the station and will be used by the station itself to access the ftp server for downloading measurement results and upload any new configuration file.
In this example parameters for the Narda STS ftp server are set for preliminary test.
User should then set access parameters for his own ftp server.

Fill the **GPRS** section with parameters needed by the station to link the GPRS network.
In this example are set parameters for an Italian Vodafone SIM card (see the above paragraph **Remote station requirement** for details).

Click the button **Set** to store the above parameters in the station memory.

NOTE **Use the Read button to display GPRS parameter of a station connected by the serial cable.**

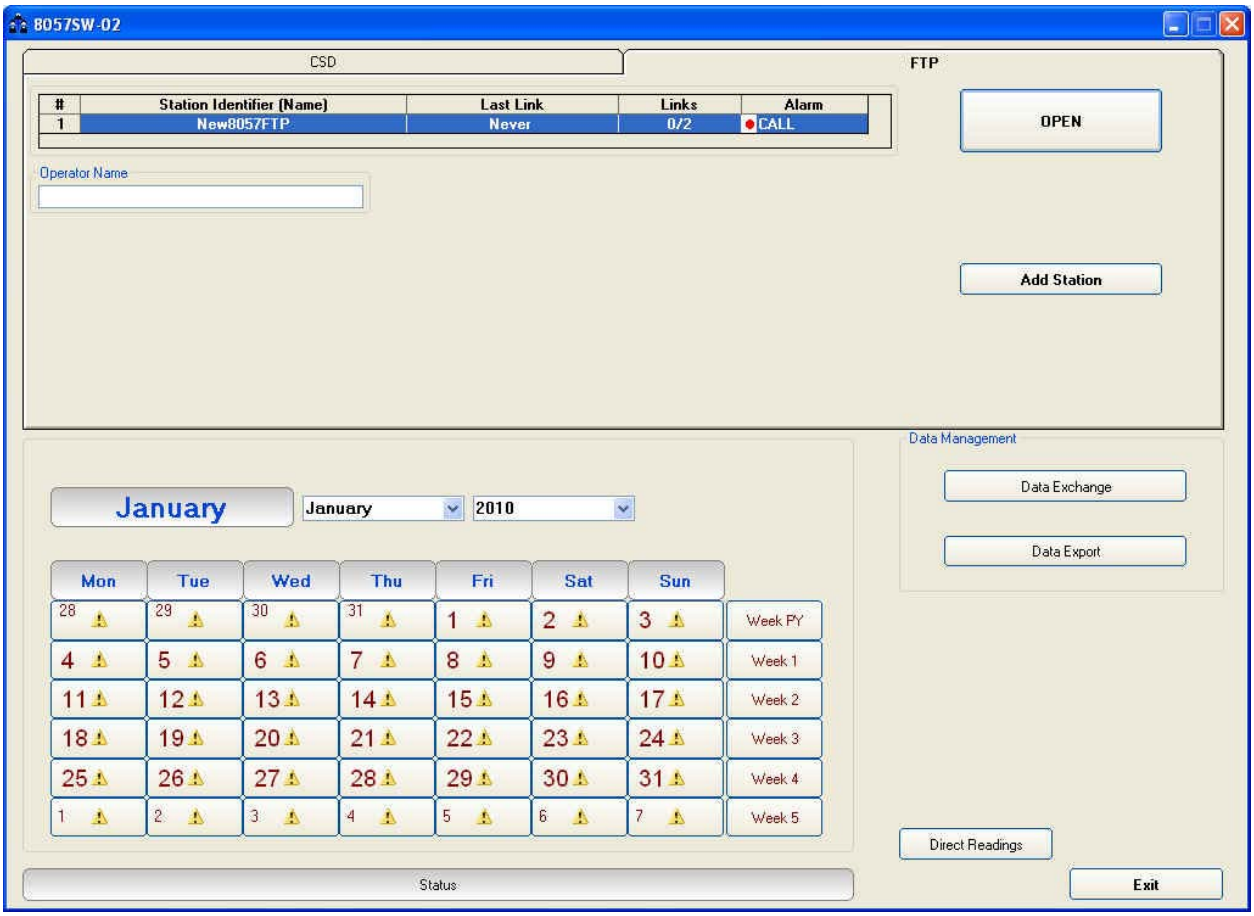
Click **Exit** to close this form.

10 – Setting station RTC (Real Time Clock)

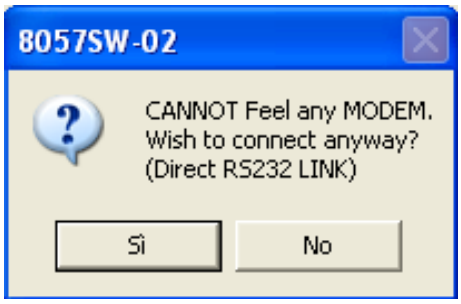
The station clock is very important as every field data stored by the station is related to time taking, as a reference, the station RTC.

Being connected through the RS232 cable the station clock will be set.
After on site installation, having no direct connection between controller PC and remote station, RTC will be set, if required, by means of a cell phone, sending an SMS to the station.

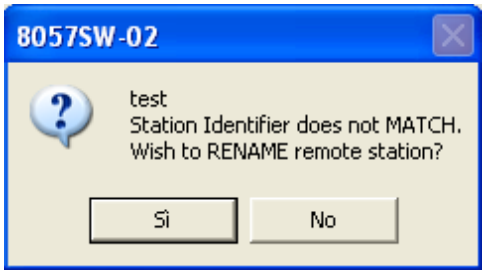
Select the **CSD** section of the 8057SW-02 control software and select one station from the stations list (the first installation will show only one station set by the software as an example:



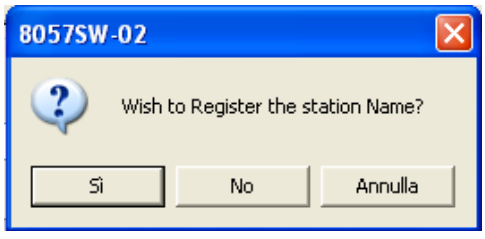
Select the station **New8057** and hit the button Call, on the right, to access the station connected by the serial cable.
As the CSD mode normally operates through a modem, a message will inform that no modem has been detected on your COM port. It will ask whether you wish to access a station connected by the RS232 cable. Being this the case, you will answer **Yes** to access your station through the serial cable:



The station name is always stored within the station and it is expected that it matches the name, in your station list, that have been selected before calling.
The user station have not been added to the CSD station list as the GPRS communication mode has been decided, in advance, for this station.
Answer **No** to the next messages as you neither wish to change the station name, nor add in the CSD station list the station you are using:



Answer **No** as you do not wish to change the name stored within your station.



Answer **No** as you do not need to add this station to the CSD station list, you are going to use it in GPRS mode. This station is in your GPRS station list.

The station Setting window will be shown:

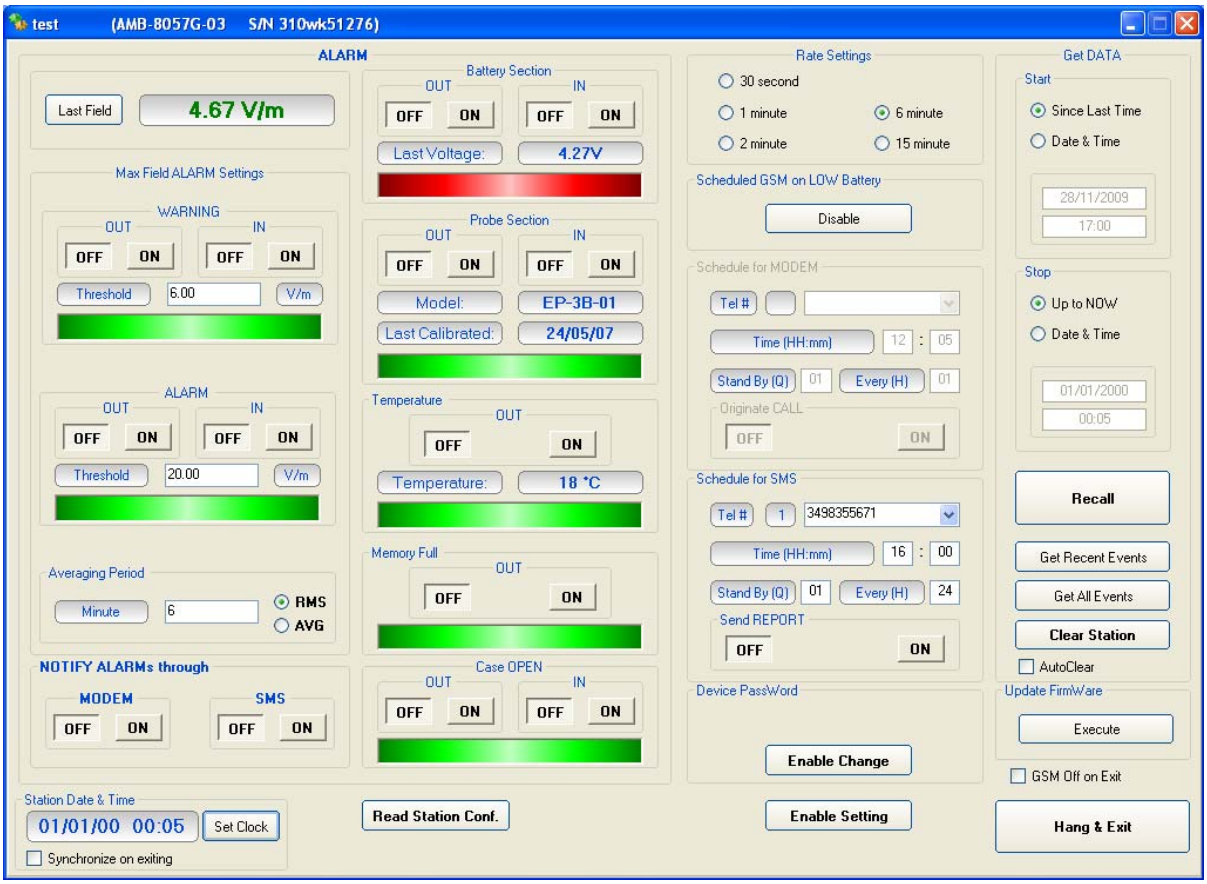
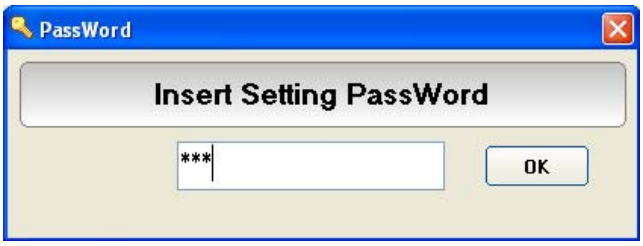


Fig. 4-2 Setting window

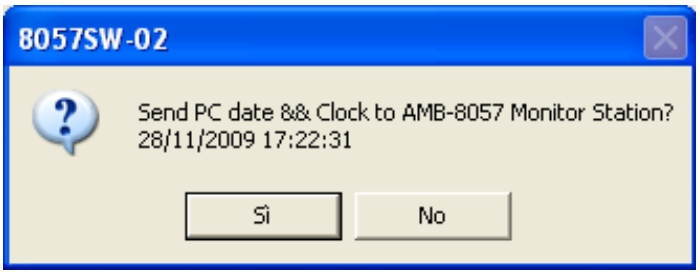
The above picture shows the “test” station. Please note that the station clock (RTC) has not been set as it shows the date, in the “Station Date & Time” frame on the left bottom side, 1st Jan 2000.
Also, the “Battery Section” frame on the top is showing a battery alarm, as the station batteries have not been charged as required.

Hit the button **Enable Setting**, on the bottom right side, to modify the settings of your station.
You should remember the setting password that have been set the first time this software has been run. You will be asked to type it to be allowed to modify the station settings.



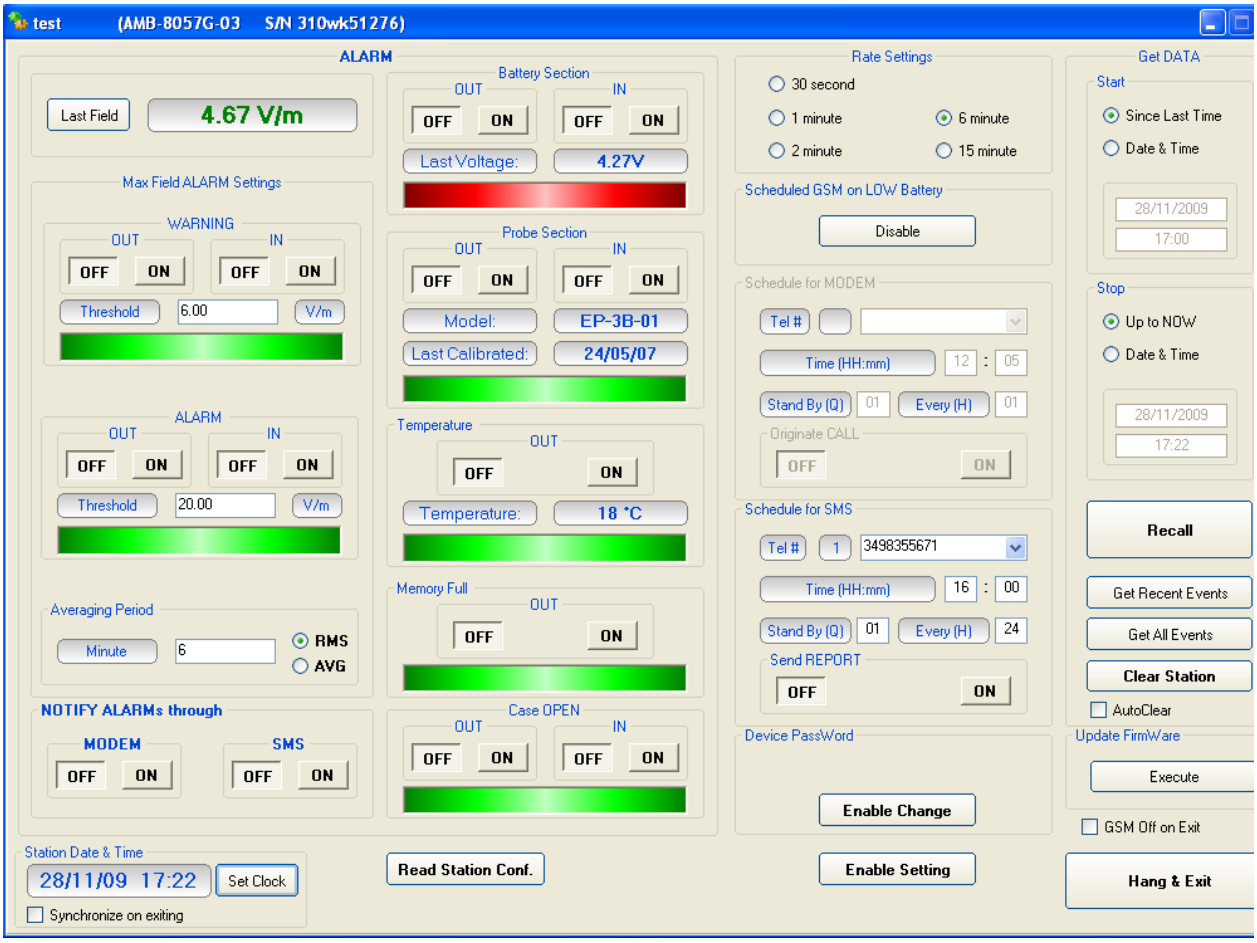
Type the setting password to be allowed to change RTC.

Hit the **Set Clock** button (left bottom side), the following message will be displayed:



Click **Yes** to synchronize the station clock with your PC.

The station clock is now set.

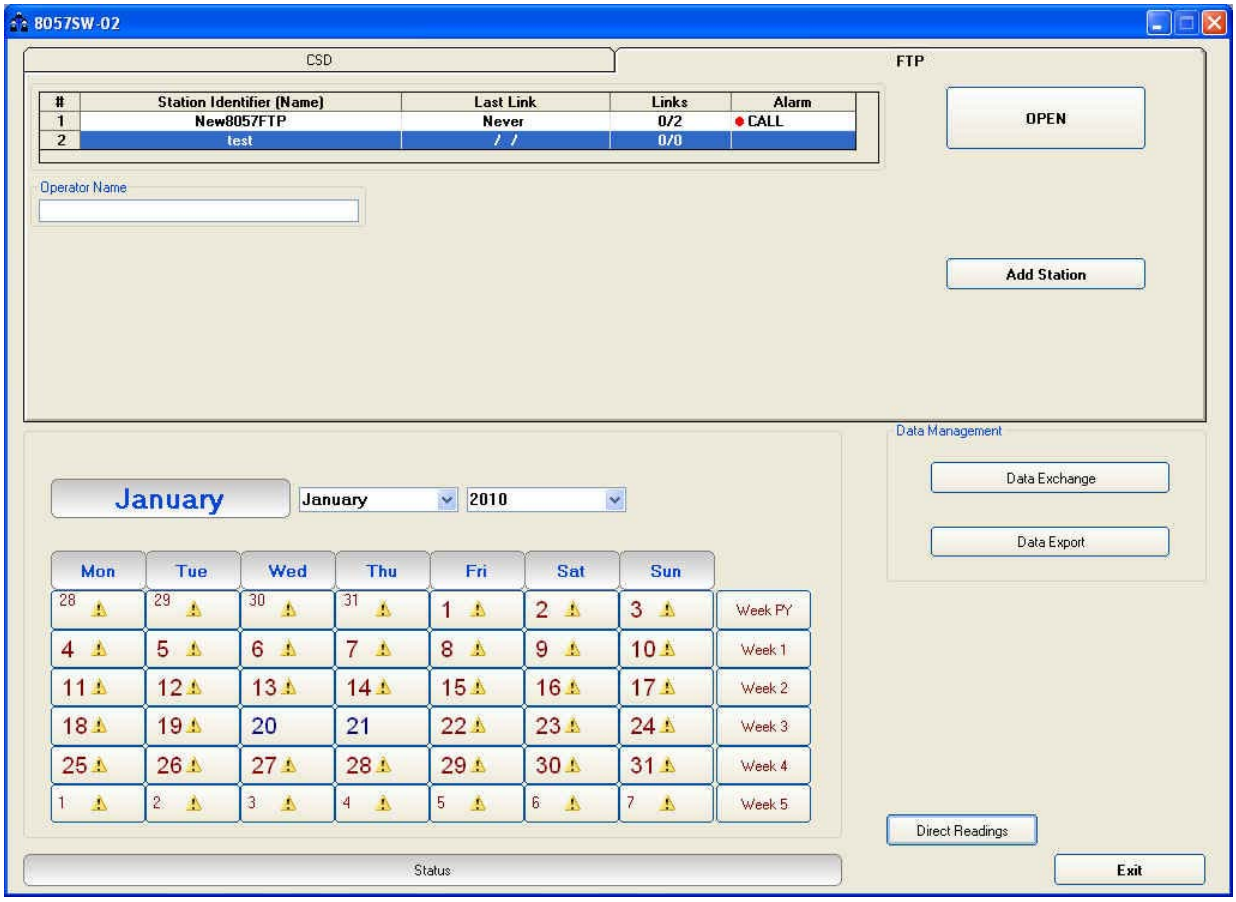


Hit the **Hang & Exit** button on the right bottom side of the setting window.

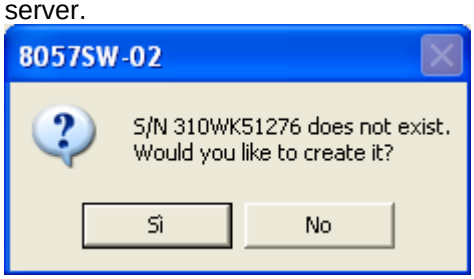
11 – Accessing the FTP server

Be sure a full internet connection is available for the controller PC. The firewall, if active, should not close ports 20 and 21 usually used for ftp communication.

From the 8057SW-02 main window, select the **FTP** label, your GPRS station list will be shown.



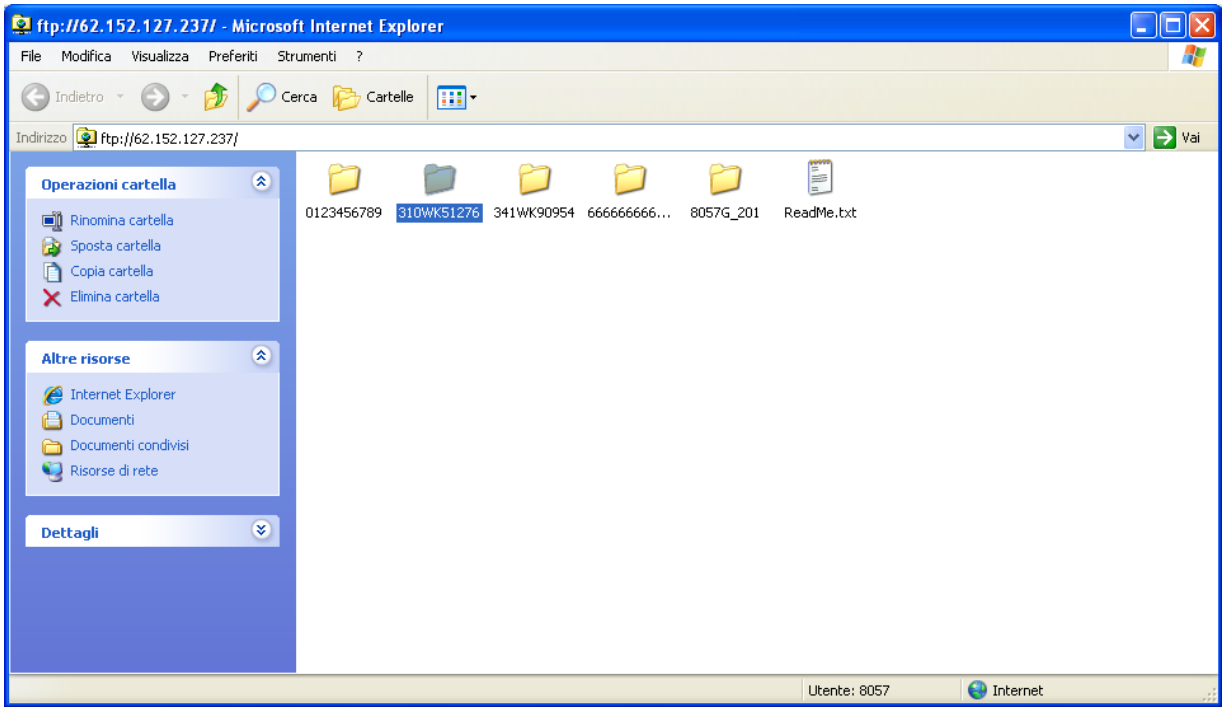
Select your station, “test” in this example, and hit **Open** to access the ftp server.



The station folder, into the ftp server, has not been created yet, answer **Yes** to create it.
The name of this folder will be the same as the station serial number that you already set, it will be used for any data exchange between Controller PC – FTP server and Remote Station – FTP server.

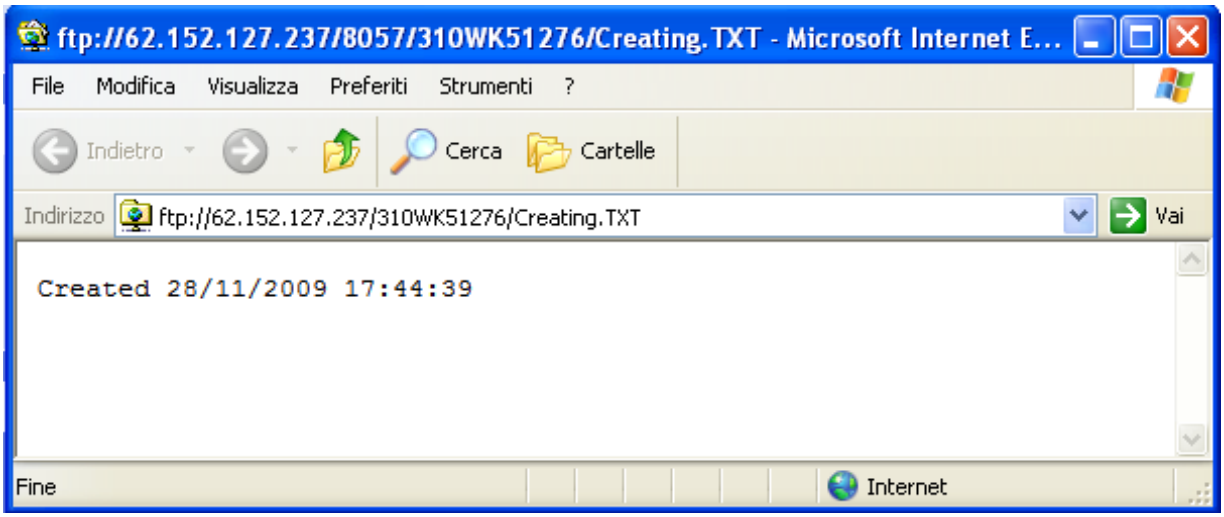
Hit **Yes**, the folder will be created.

NOTE **You can check it just accessing your ftp server using Windows Explorer.**

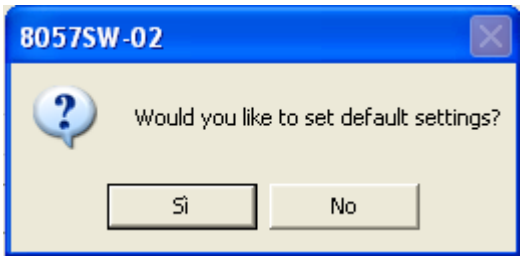


IP address, User Name and Password are to be set to access the ftp server through the Windows Explorer.

The only file you should find within the new folder is the “Creating.TXT” which contains information about creation date and time:

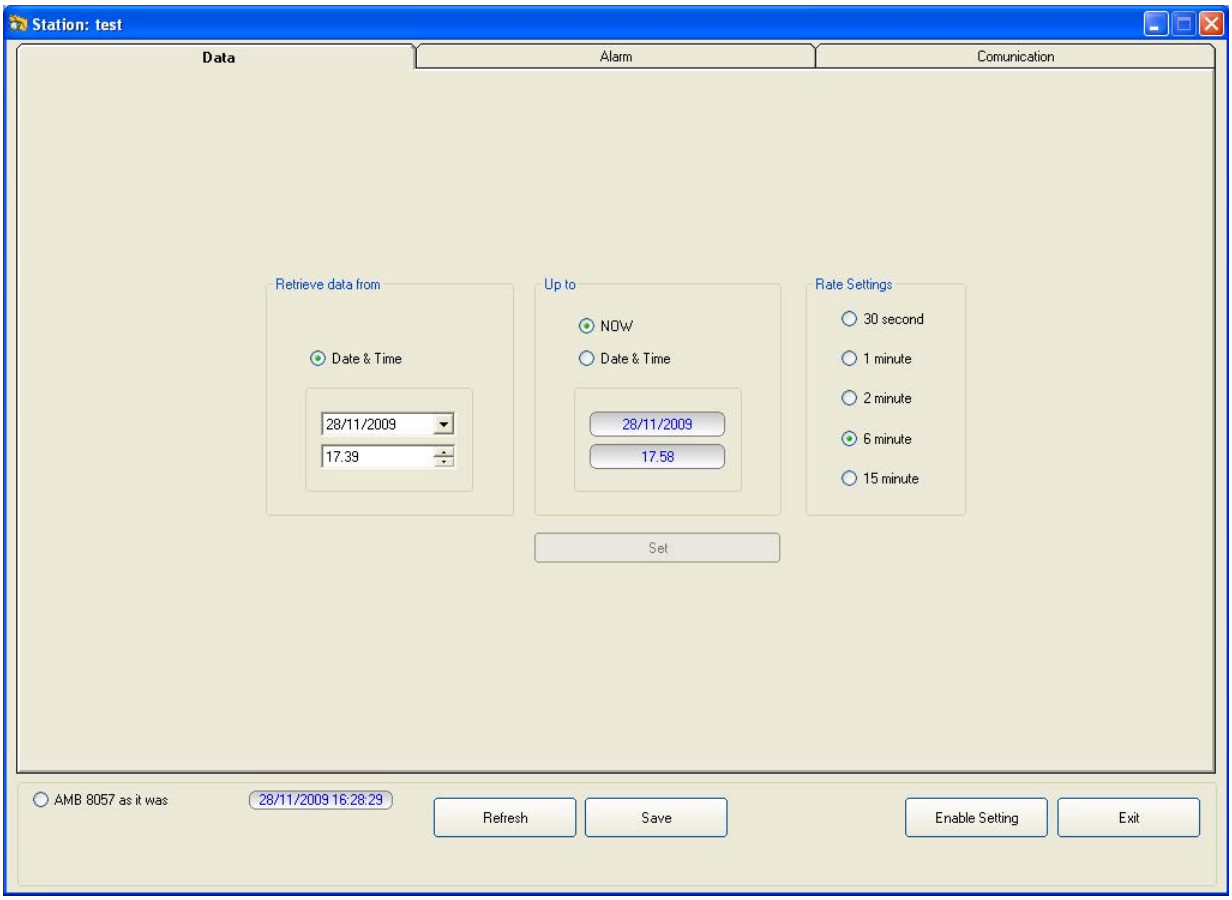


Next message shown by the software just ask you whether you wish to display a default setting which should be saved or modified by the user to save the first setting file ".cfg" which will be read and used by the station at its first connection to the server:



Answer **Yes** to display default setting.

The first section **Data** will show which data will be downloaded by the station at the next connection. The default setting is "Since" date-time (your PC clock) – "Up to" now (when the station will access the server).

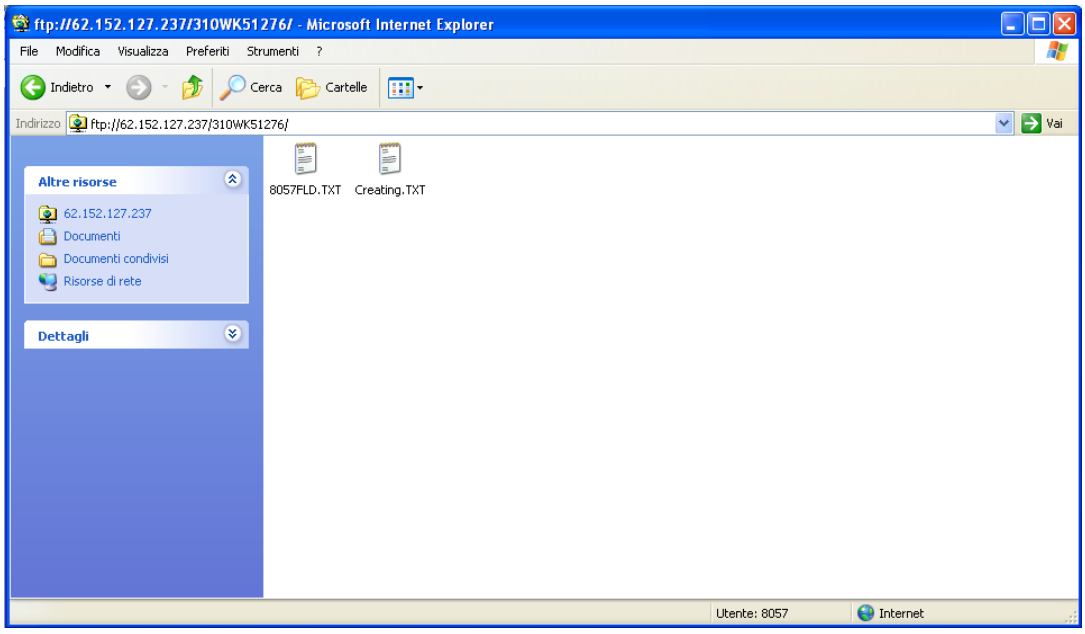


Hit **Enable setting** and type the Setting Password to be allowed to hit the **Set** button to create the first .FLD file that will be read by the station, at its first connection to the server, to know which data have to be downloaded.

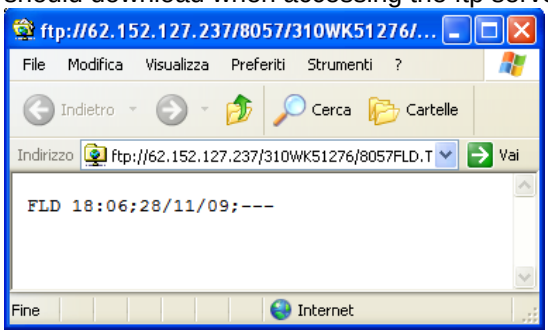
The Rate Setting frame, on the right, allows you to set the rate setting. It is the **storing rate** of the station. In the above example the station will store the field measurement, in its internal memory, every 6 minutes.

NOTE

You can check that the 8057FLD file has been created by accessing the ftp server using Windows Explorer. Open the station folder (the name is its serial number).



8057FLD.txt file contains information related to the next data the station should download when accessing the ftp server:



The above picture shows the content of 8057FLD file. After reading this file the station will download data starting from November 28th at 18:06.
Last information, "---"in this case, shows how many records have to be downloaded.
"---" means "up to now" so: all data that have been acquired since November 28th at 18:06.

A different information, let's say "80" instead of "---" means 80 records.
In which case the time period depends on the **storing rate** that have been set for this station.
If the storing rate was 6min, 80 records means 6 x 80 minutes = 480 minutes that means 8 hours:
Downloaded data will be: "Since" November 28th at 18:06 "Up to" November 29th at 02:06.

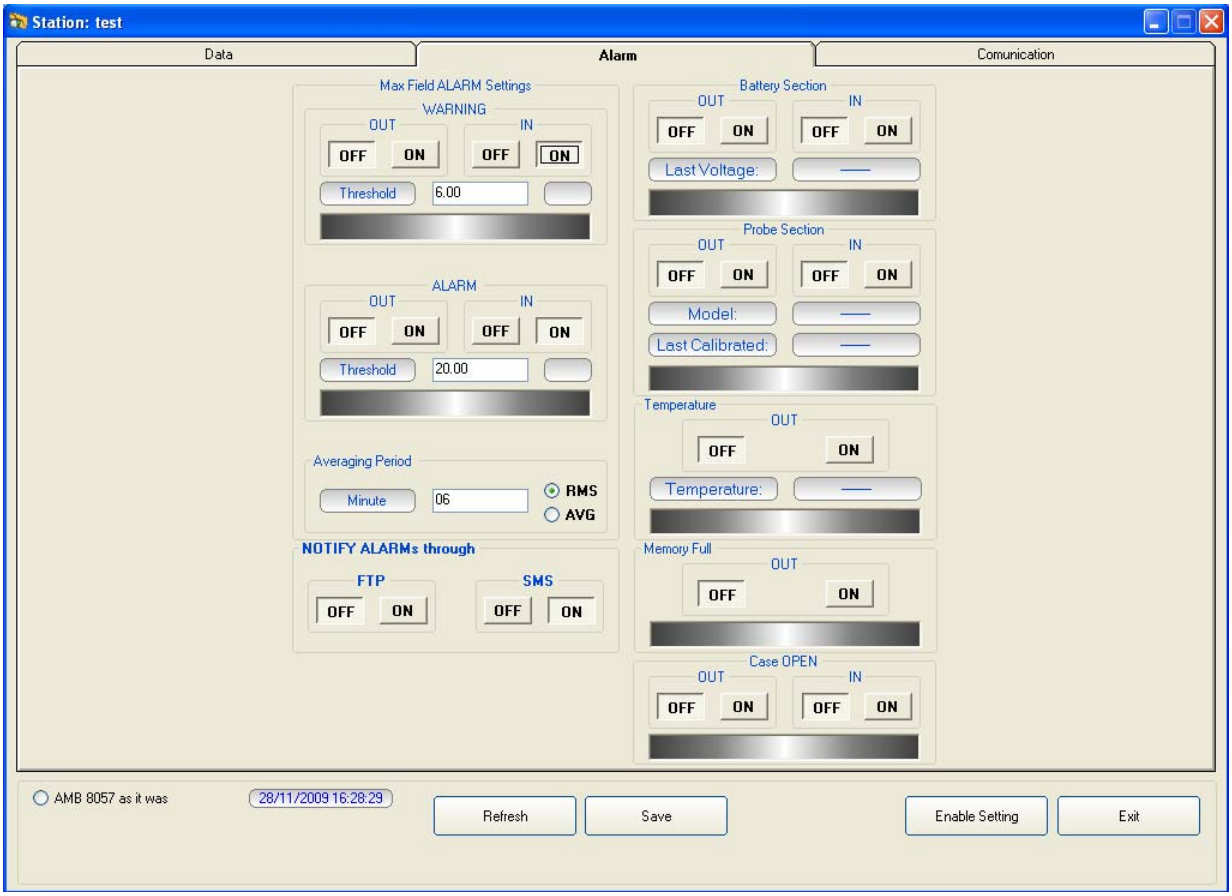
NOTE

It is usual to set any monitoring station to download data "Since last time" – "Up to now" so that everytime the station access the server it downloads all data that have been acquired since the last access to the ftp server.

NOTE

In case, due to some special need, a specific time period should be downloaded by setting the parameters "Retrieve Data From – Date&Time / Up to – Date&Time", continuity of data to be downloaded later cannot be resolved automatically and a gap will be shown since last data already downloaded up to the time of next connection.
After downloading the requested specific time period the parameter "Up to" will be automatically set to "Now".
The parameter "Retrieve Data From – Date&Time" should be then set manually to recover data not downloaded automatically.

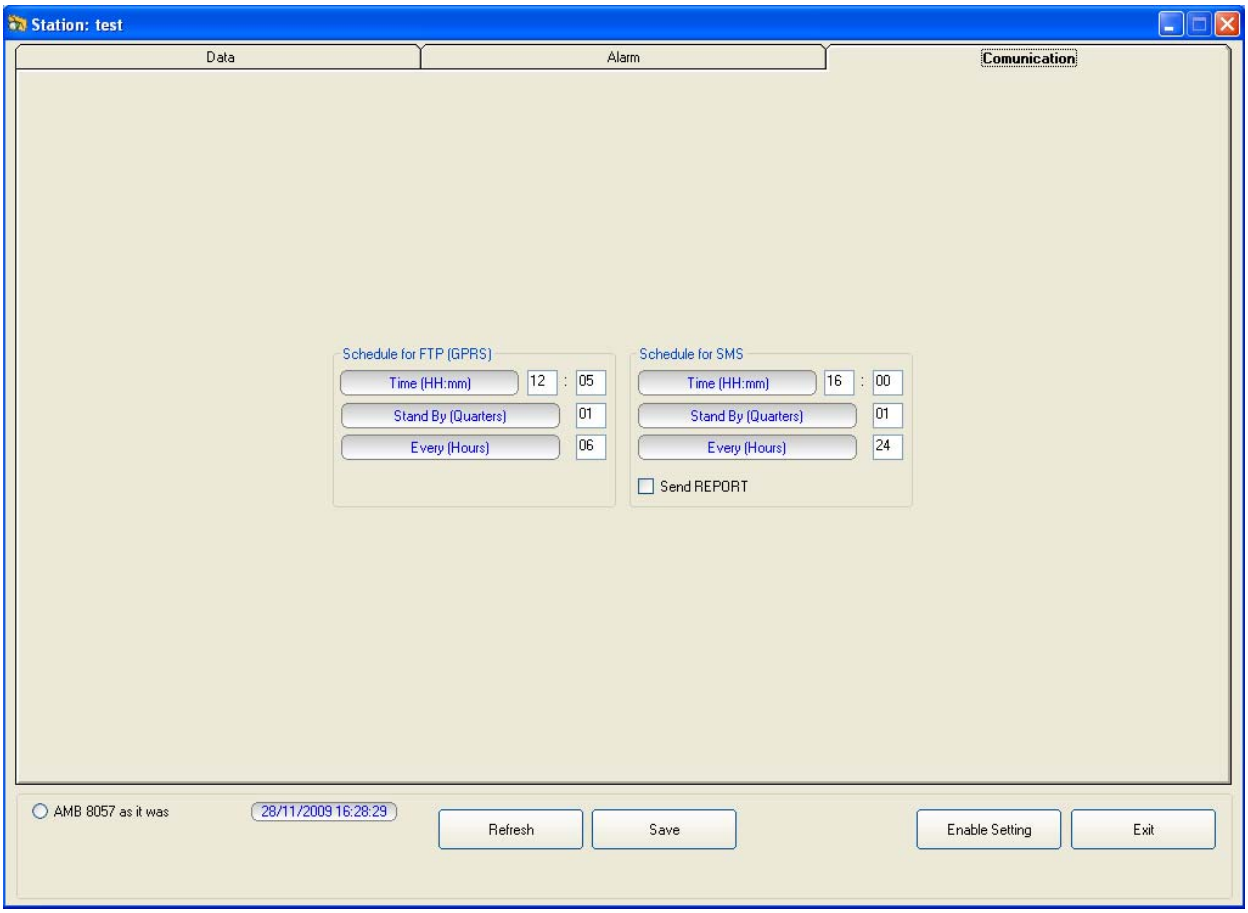
The second section, named **Alarm,** allows the user to set which alarm should be notified, if through FTP connection or SMS to the user mobile phone.



The same windows allows the user to set which average type should be performed on the acquired data, **AVG** or **RMS**, and the averaging period over which the average calculation is performed.
In the above example average type is RMS over 6 minutes time period.

Both **Warning** and **Alarm** thresholds are set to be notified by an **SMS** to the user's mobile phone (telephone number should be set through an SMS sent to the station or, during RS232 connection, through the **CSD** section).

Third section named **Communication** shows the station modem schedule. As explained above, the station modem should be off for the major part of the day. In this window you can decide, in two frames, when the station modem has to switch ON, how much time should stay in stand by mode and every how many hours this operation should repeat.



The above example shows that the station modem will switch ON for an FTP connection to the server at 12:05, it will stay ON for 15 minutes (1 quarter). Every 6 hours the loop will be repeated so that the modem will switch ON, and the station will download its data at 12:05, 18:05, 00:05, 06:05 every day. So frequent connections are set for test purpose only, if the parameter **Every (Hours)** was set to 01 the station downloaded its data every hour.

NOTE

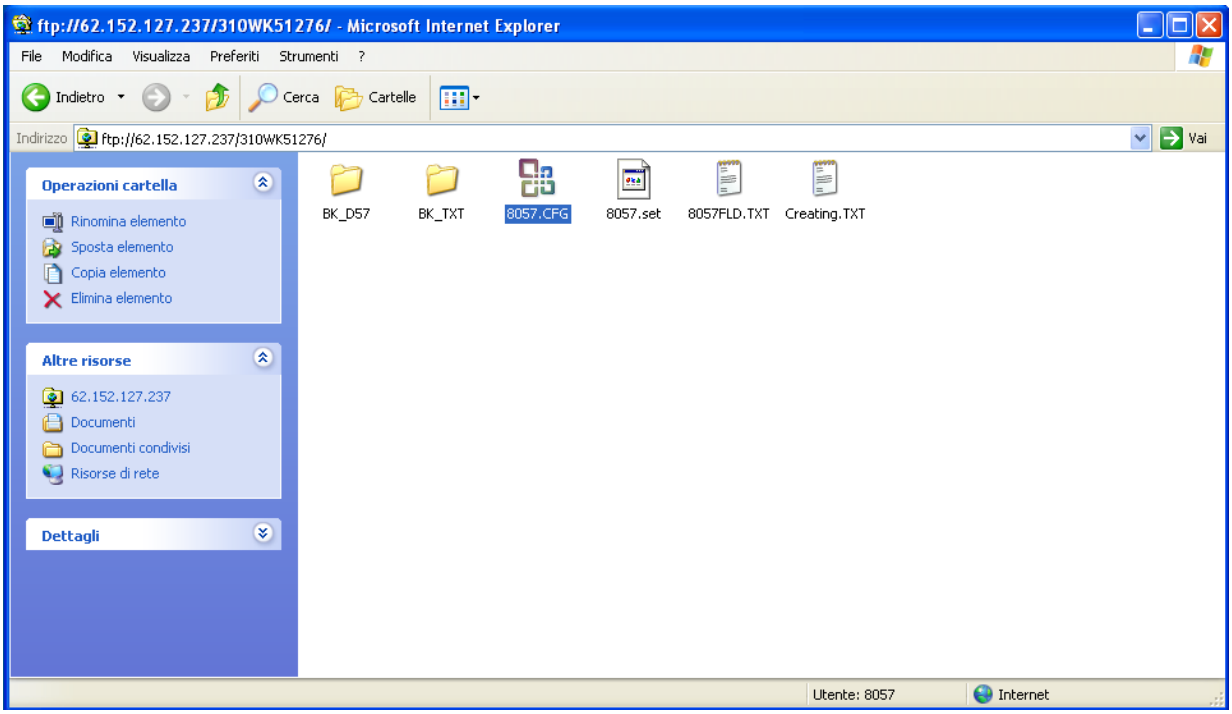
To avoid affecting the energy balance between solar panel, back up battery and station consumption we recommend to set the modem to switch on only once a day, better during day time, for 1 quarter (15 minutes). This configuration assures station power autonomy even during long bad wheather periods when the solar radiation could be not enough to supply the station modem for longer time.

The second frame, **Schedule for SMS,** allows the user to set in the same way a second time period for the modem to be ON. If the command **Send Report** is checked, an SMS informing about maximum field strength measured and lowest battery voltage of the day is sent to the user mobile phone (telephone number to be set by SMS to the station or serial connection during preliminary installation and test.

After all three sections, Data, Alarm and Communication are set as desired, hit the **Save** button, on the bottom side to store your settings. A **.CFG** file will be created in the station folder within the ftp server. It will be read by the station, when accessing the server, to set itself as requested.

Hit **Exit** to come back to the 8057SW-02 main window.

NOTE **The existance of 8057.CFG file can be checked by accessing the station folder, in the ftp server, through the Windows Explorer:**



Other files and folders may be present in case the station already accessed the server.

12 – Switch OFF the AMB-8057 and insert the SIM card as follows:

Fig. 4-3 SIM card installation

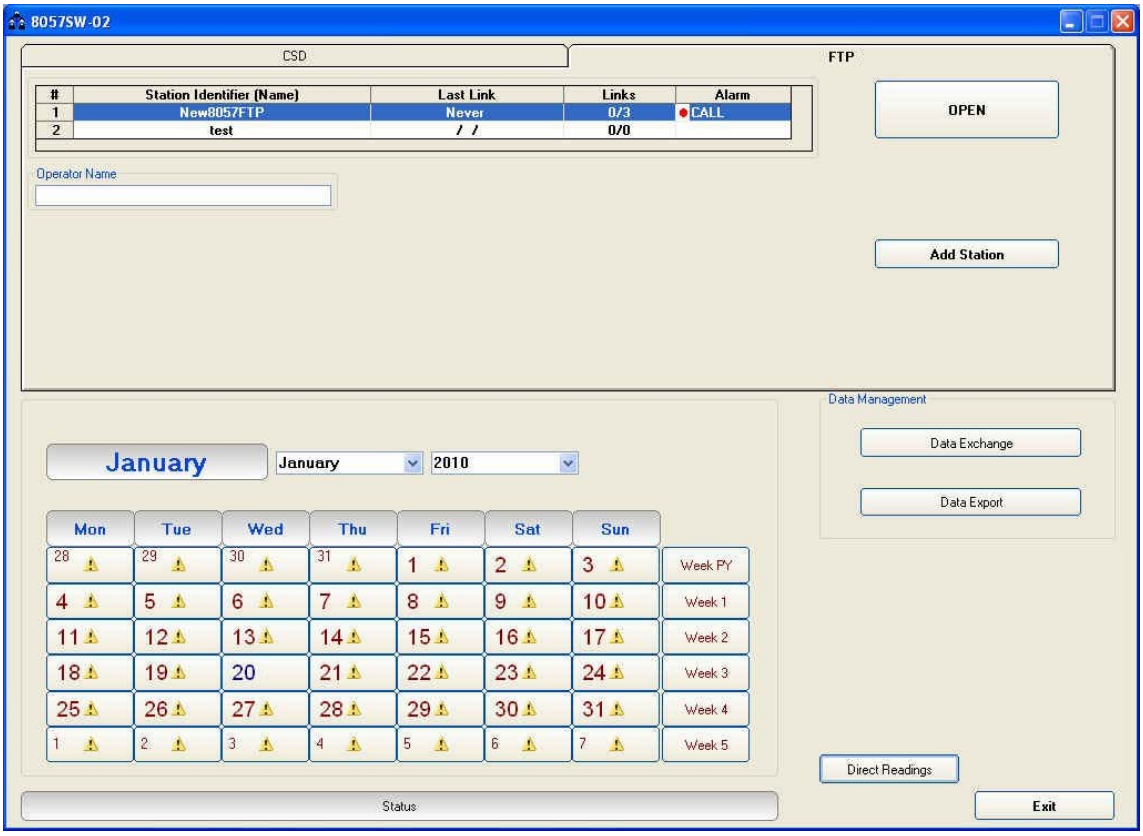
13 - Switch the station ON

14 - Displaying measurement results

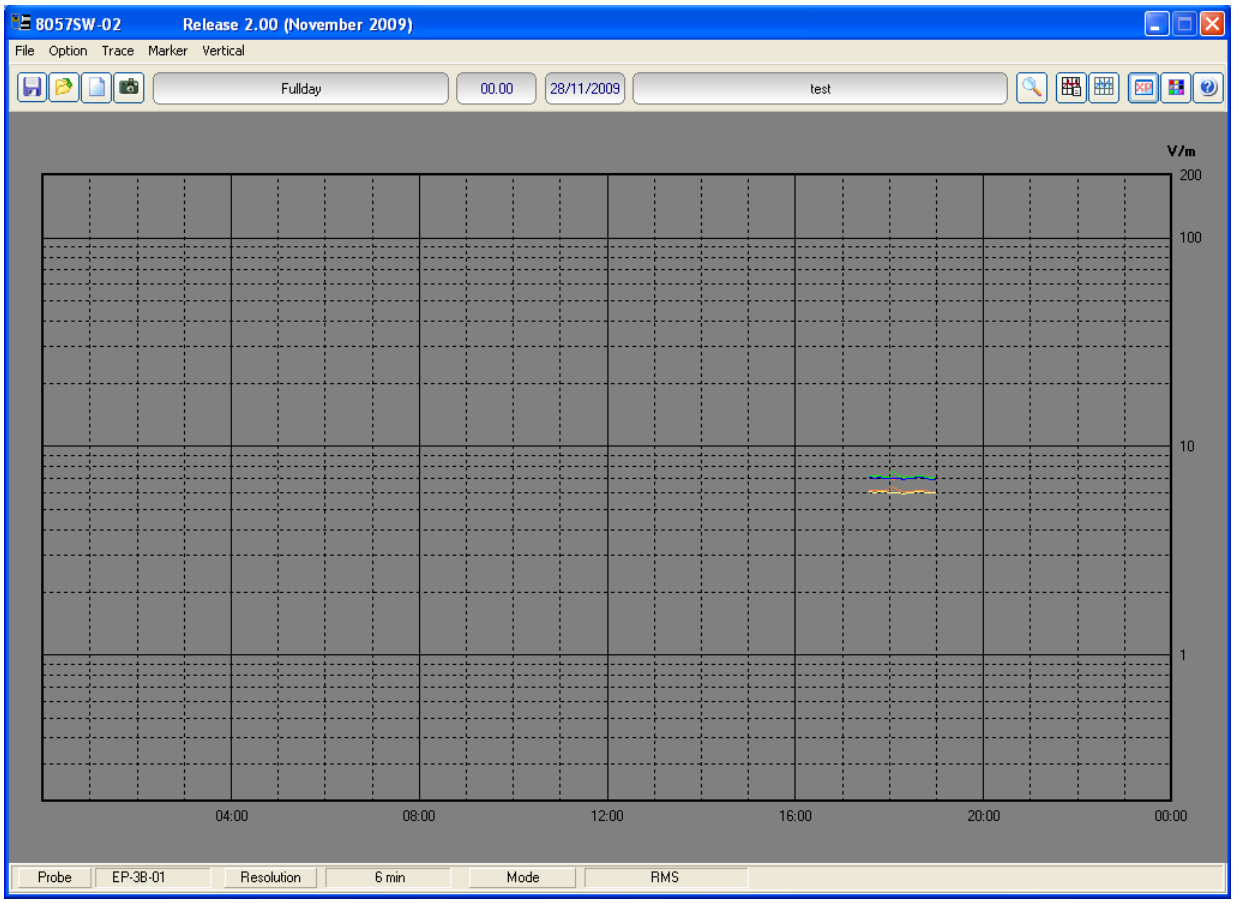
As soon as the station access the ftp server it downloads measurement results.

When desired, from the 8057SW-02 main window, FTP side, select your station and hit **Open** to access the station folder in the FTP server.

New data, if present will be downloaded to the controller PC. After all automatic tasks have been completed and the bottom bar shows no operation hit **Exit** to come back to the main window. If some data have been downloaded, the calendar will show the related day number in blue showing that some data is available.



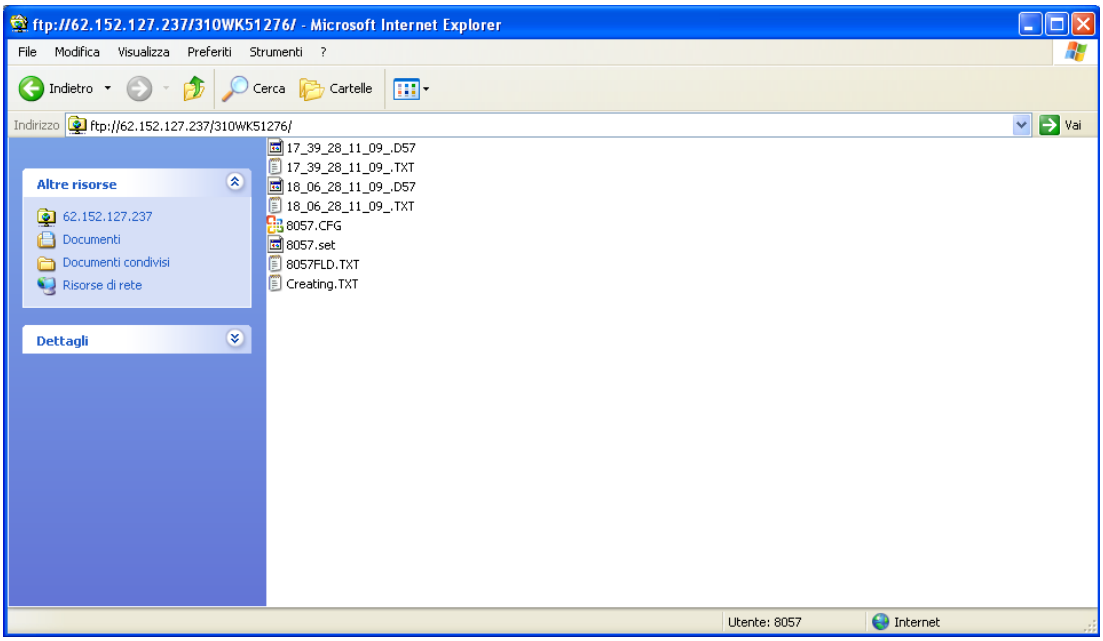
Hit the blue day in the calendar to open a graph showing downloaded data.



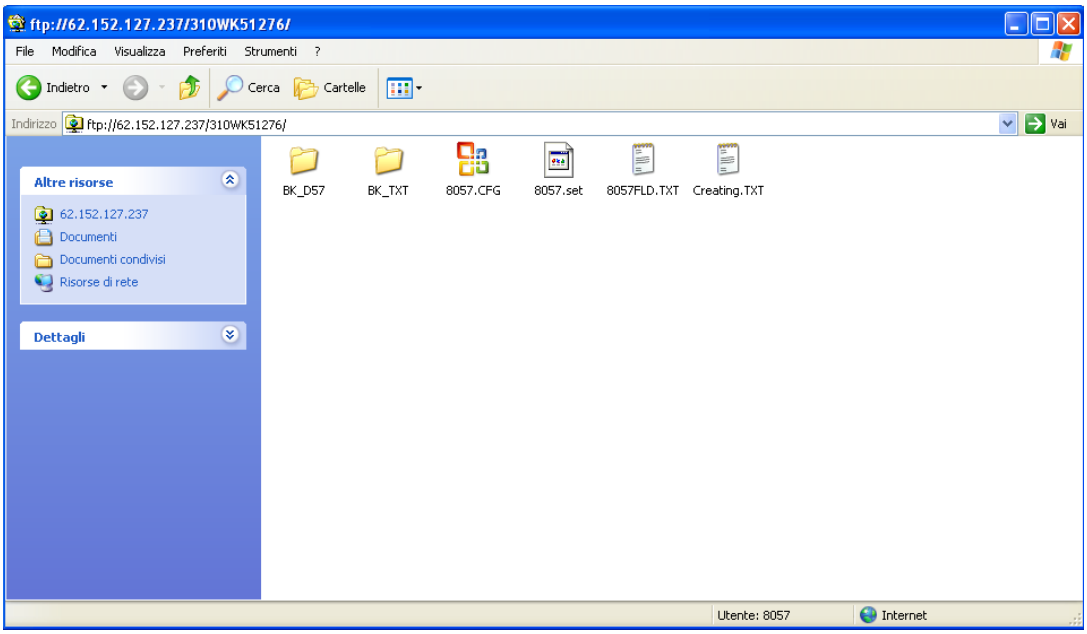
NOTE **Please refer to the chapter 5 of this manual for details regarding data presentation, saving and related commands.**

NOTE

It is possible to check whether some new data is present in the station folder by accessing it using Windows Explorer.
Two different kind of data file are downloaded at each connection: files with .txt extensions contains all Events related to the station, file with extension .D57 contains measurement result in binary format.



All data already downloaded to the controller PC are transferred to back-up folders, one for the .txt files, one for the .D57 ones.



15 - Setting RTC of a remote station

As explained above there is never a direct connection between remote station and controller PC except when an RS232 connection, using the serial cable, is established, generally during preliminary operation before installing the remote monitor on site.

The clock setting of a remote station, if needed, can be performed by means of SMS sent by the user.

As the SMS delivery time is not known, the SMS command sent by the user generate a message, sent by the station, to itself. If, as usual, the station receives its message within 30 seconds it takes the time information coming within the message as the time reference to be used to set its clock.
A confirmation message is then sent to the user mobile phone.

4.4 New commands for GPRS communication

Some new commands are now available for stations operating in GPRS communication mode.
They can be sent to the station by RS232 or messages (SMS) to perform specific tasks like, for example, the SCGN command to ask the station to access the server immediately.
The following is the list of new commands, please refer to the chapter 6 of this manual for details about the command syntax and related information.

GPRS – FTP Settings.

In order to establish a GPRS connection and a FTP transfer, a number of data are required which are divided into 2 main fields as follows. Each fields cannot be more than 31 characters.
These commands cannot be executed via FTP/GPRS (because they would need to be already correctly set).

Table 4-1 Connection Data

Field	Description	Setting command Command to be issued by either SMS or RS232
GPR**0** **APN** Access Point Name	The provider name of the GPRS bearer.	#F7SGPR**0** <apn>* where <apn> is Access Point Name Example: #F7SGPR**0** web.omnitel.it*
GPR**1** **GUN** User Name for Gprs access	The User Name required for logging-in. Sometimes this field might not be required and thus can be left empty.	#F7SGPR**1** <gun>* where <gun> is the User Name of GPRS access. Example: #F7SGPR**1** MyGPRS*
GPR**2** **GPSW** Password for Gprs access	The Password required for logging-in. Sometimes this field might not be required and thus can be left empty.	#F7SGPR**2** <gpsw>* where <gpsw> is the Password of GPRS access. Example: #F7SGPR**2** 1234*

Table 4-2 FTP Connection Data

Field	Description	Setting command Command to be issued by either SMS or RS232
GPR**3** **FUN** User Name for FTP access	The User Name required for accessing to the FTP server. This word is usually issued from the FTP administrator and is nothing to do with the bearer.	#F7SGPR**3** <fun>* where <fun> is the User Name for FTP. Example: #F7SGPR**3** MyFTP*
GPR**4** **FPSW** Password for FTP access	The Password required for accessing to the FTP server. This word is usually issued from the FTP administrator and is nothing to do with the bearer.	#F7SGPR**4** <fpsw>* where < fpsw > is the Password for FTP. Example: #F7SGPR**4** abcd*
GPR**5** **FIP** FTP IP Address	This parameter is the server address for FTP (IP Address of FTP). Normally this is the static IP Address that routes the file transferring process to the wanted server	#F7SGPR**5** <fip>* where < fip > is the IP Address for FTP. Example: #F7SGPR**5** 194.183.2.17*

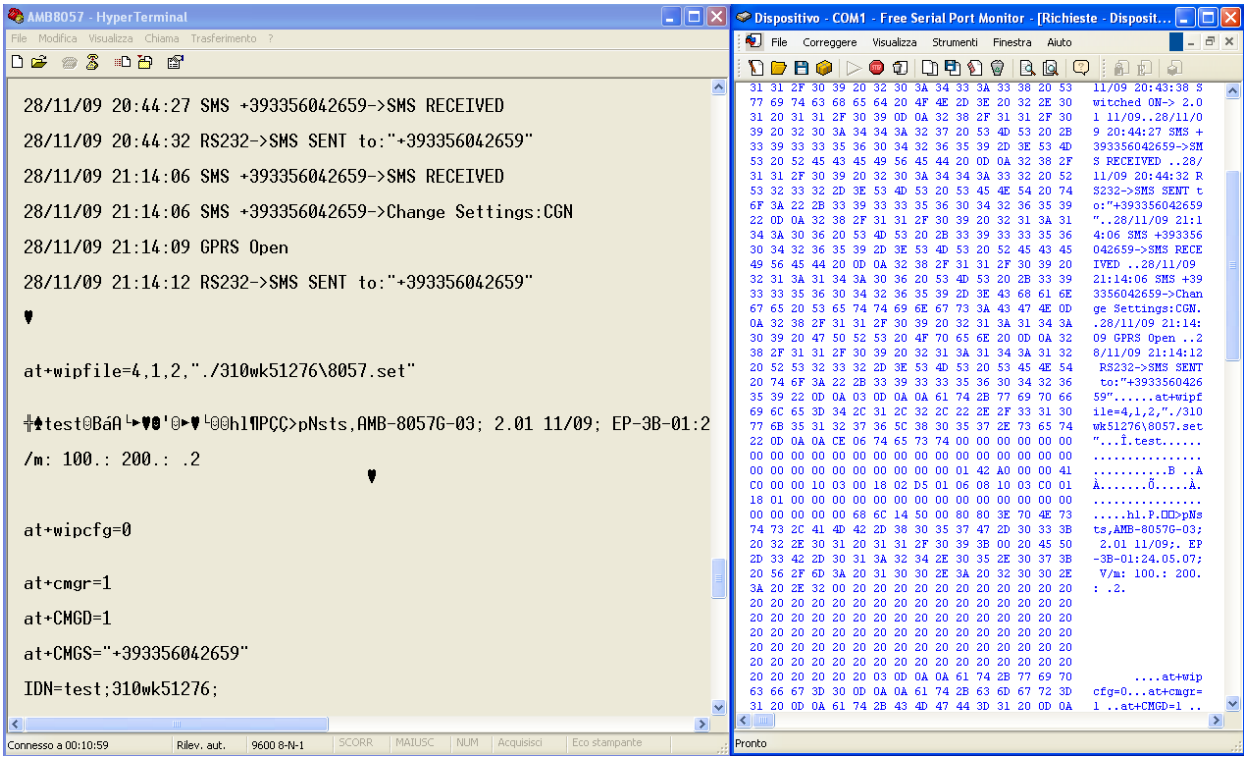
Table 4-3 MISC		
Field	**Description**	**Setting command** Command to be issued by either SMS or RS232
CGN Connect GPRS Now	This command starts a GPRS connection immediately. All the procedures are then the same as it would for a scheduled connection.	#F7SCGN*
CGNL Connect GPRS Now (Last Events)	This command starts a GPRS connection immediately as for CGN but it forces to have a EVENT.TXT file containing the last 20 events instead of the most recent, and not yet loaded, ones .	#F7SCGNL*
CGNA Connect GPRS Now (All Events)	This command starts a GPRS connection immediately as for CGN but it forces to have a EVENT.TXT file containing all the events available instead of the most , and not yet loaded, ones .	#F7SCGNA*
NETE Enable GPRS protocol	This command enables the AMB8057 to connect via GPRS instead of point-to-point GSM-MODEM connection. The reply is the same as for command ?TSM	#F7SNETE*
NETD Disable GPRS protocol	This command disables the AMB8057 GPRS and enables point-to-point GSM-MODEM connection. The reply is the same as for command ?TSM	#F7SNETD*
STS id Set Timedate SMS	This command sets the internal real clock time by using the SMS provider's information. To use it **id** (the AMB8057 telephone number) must be sent. This command works assumes that the SMS provider gives the correct Clock/Date and its feedback is within 30 seconds. The reply is sent only if the real time clock has been updated and is the same as for the command "?CLK"	#F7SSTS nnnnnnnn* where nnnnnnnn is the telephone number of AMB8057

4.5 Additional tests and hints

Windows HyperTerminal and a serial port monitor could be useful tools to check the station operation when connected to the controller PC through the RS232 cable.
You can check attempts of the station to connect to the GPRS network and its operation.

Hyper Terminal and Serial Port Monitor show activity of the station being it connected to the PC RS232 port.

The example below shows that the station received an SMS from the user's mobile phone and, executes the received CGN command by connecting immediately to the ftp server.



Please be aware that GPRS service, as well as, generally, all mobile services, may be sometimes not available depending on the station installation site and on the GSM service condition.
Everytime a station is not able, for any reason, to access the ftp server, no measurement result will be lost, as soon as the station will be able to establish a connection to the server it will download all data that have not been downloaded till then.

NOTE

4.6 AMB-8057 Firmware updates

Whenever a new software / firmware version is released it is available in our Web site for free downloading.
The new software includes the remote station firmware and commands to update it.

The remote station firmware can be updated by connecting the station to the controller PC by the RS232 cable.
Updating procedure is described in the AMB-8057 user's manual.

Unlike in CSD mode, firmware of station set for GPRS communication cannot be updated remotely.

5 – Data display

5.1 Introduction

This section provides information for correct display and interpretation of the data downloaded from the AMB-8057 Area Monitor Broadband using the 8057SW-02 software.
When a new monitoring station is installed, a new folder is created in the main program directory, among those listed in the main window of the program 8057SW-02, which will receive the data downloaded from that specific station.
The new folder is automatically named assigning the first 8 characters of the full name entered for the station (excluding spaces and special characters which should not be used).

Example: for a station called Nuova Centralina Cisano the corresponding folder will be named NUOVACEN.

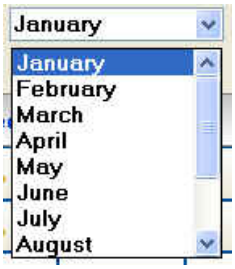
5.2 Calendar

The new folder is created to collect the data every time the AMB-8057 station is queried, dividing them by day, month and year. The data are then automatically called up by the program on the basis of the day or week chosen in the Calendar tool in the main window of the 8057SW-02:

WARNING

To ensure the program runs correctly it is important not to rename or move the saved files.

Using the Calendar it is possible to select the day or the week to be presented in graph form, simply by pressing the corresponding key.
The month and the year are selected using the pulldown menu.



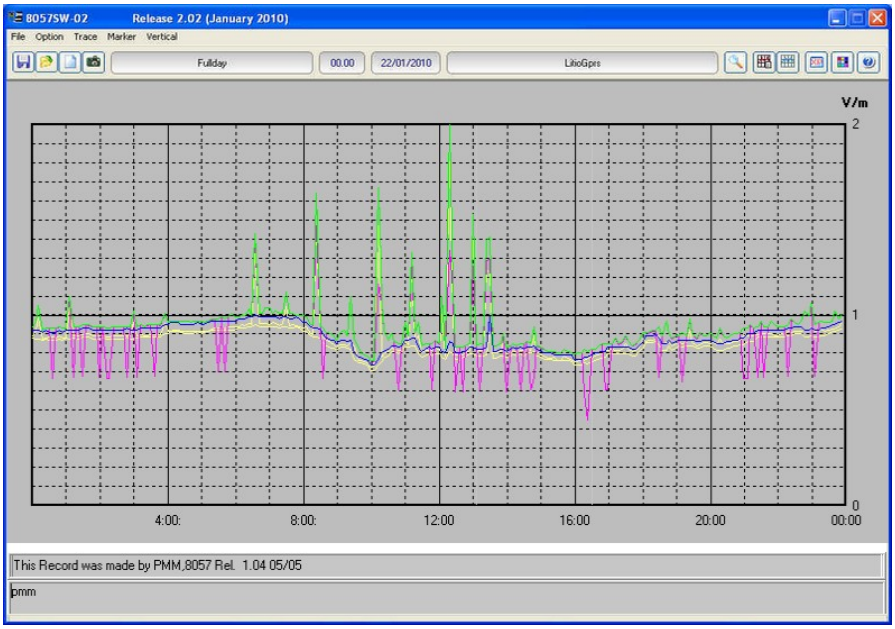
NOTE

Days and weeks containing data have the characters displayed in blue color, while those for which data have not been downloaded are shown in red color (the symbol ⚠ is displayed close to the days).

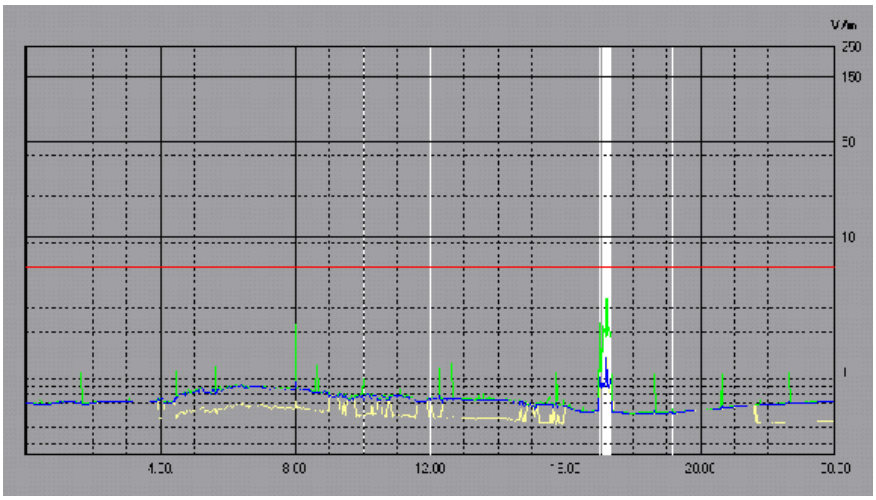
5.3 Data window

By selecting a day or a week shown in blue, the User can access the main menu for graphic representation. Using this menu it is also possible:

- Display any graphs belonging to any stations (using **Open Files**);
- Select the colors and the order of display for the different traces (using **Option**);
- Save the graphs (using **Save Files**);
- Save the graphs displayed as a BITMAP image on the clipboard for insertion in other applications such as a Word Processor or Image Editor (using **Clipboard**);
- Add or amend a comment (using **Comment**);
- Modify the appearance of the status window and the icons (using **Appearance**)
- Select the limits and the colors (using **Setup**);
- Highlight or remove the highlight for the time the GSM is on, or when any of the alarms is active, or select traces to be displayed (using **Trace**);
- Position the marker (using **Marker**);
- Expand graphs horizontally (using **ZOOM**);
- Expand graphs vertically (using **Vertical**);
- Display a table containing the data shown in the graphs (using **Show Table File**);
- Display the software release(using **?**);



The data window presents the data for the selected day or week in a graphical form.
In the example below, it is possible to notice the narrow white vertical bands (the color can be set by the User), indicating that the internal GSM modem was transmitting either on the provider request (periodical querying of the phone number), or by the User request, calling the station to make any queries. This indication is used to discriminate fields generated by the internal GSM modem from any environmental field.

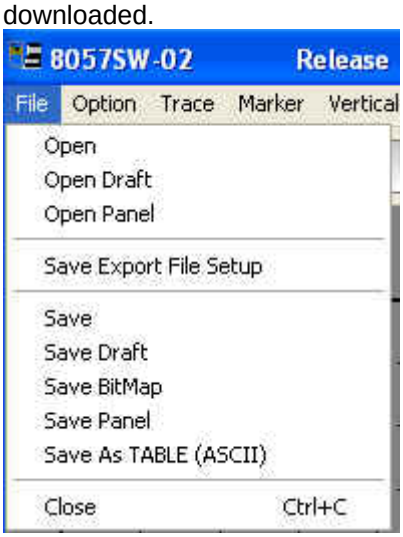


5.4 Main commands

The main commands of the 8057SW-02 are:

5.4.1 File

This command is used to open any files of any stations or to save the files downloaded.

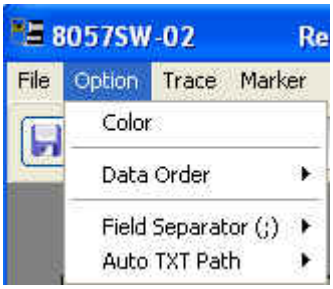


For a detailed description of its use see the paragraphs relative to the specific icons **Save Files** and **Open files** here below.

5.4.2 Option

This command is used to define the colors of the traces (**Color**, as well as **Setup** described below); the order of priority for display of traces (**Data Order**); the character used as data separator when required by the form of table (**Field Separator (;)**); ~~the~~ path and the name that are used for the **AUTO ASCII FILE** (**Auto TXT Path**).

The screen will show:



5.4.3 Trace

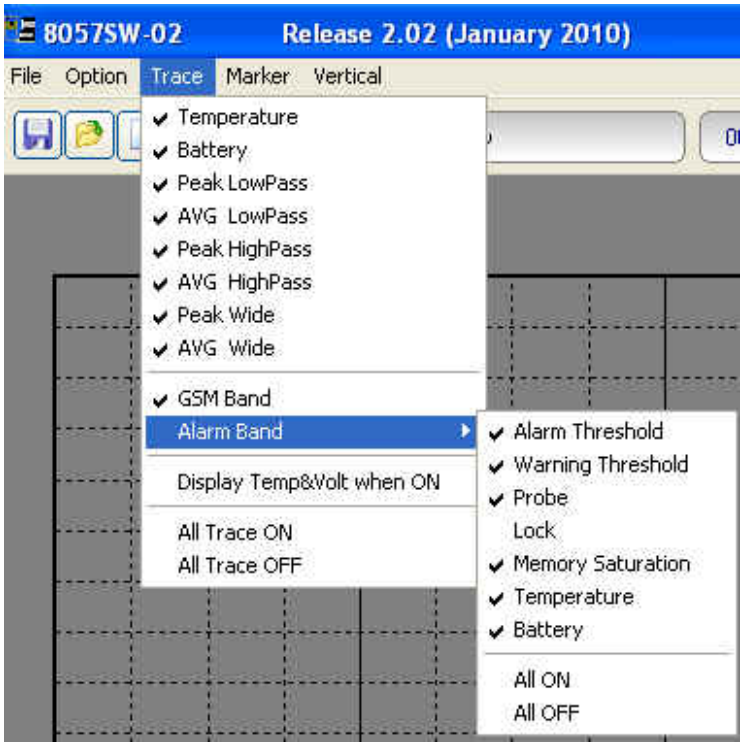
The **Trace** command allows to select which traces will be displayed in the graph.
The possible choices are:

- **Temperature**; indicates the temperature of the environment for each data reading;
- **Battery**; provides the voltage of the batteries whenever the field data are stored;
- **Peak LowPass**; shows the peak value measured in the low band;
- **AVG LowPass**; shows the average calculated, in this example of the AVG type, in the Averaging Period (set in this example as 6 minutes) of the signal read by the low band sensor;
- **Peak HighPass**; shows the peak value measured in the high band;
- **AVG HighPass**; shows the average calculated, in this example of the AVG type, in the Averaging Period (set in this example as 6 minutes) of the signal read by the high band sensor;
- **Peak Wide**; shows the peak value measured in the wide band;
- **AVG Wide**; shows the average calculated, in this example of the AVG type, in the Averaging Period (set in this example as 6 minutes) of the signal read by the wide band sensor

NOTE

The above Labels refer to EP-3B-01 probe, different probes will show different Labels according to the probe frequency bands.

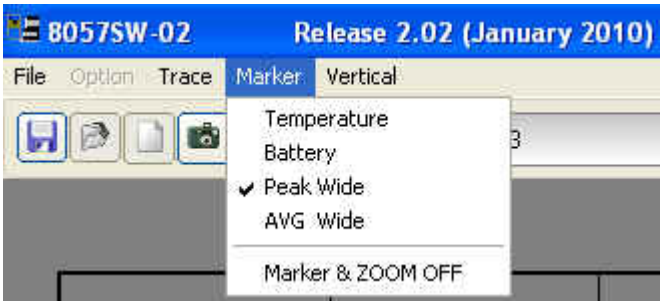
- **GSM Band**; used to hide or display GSM activity using vertical bars;
- **Alarm Band**; used to hide or display any activity of alarms with vertical bars (which can be selected individually);
- **Display Temp&Volt when ON**; shows traces of the temperature and voltage on the graph when enabled;
- **All Traces ON**; shows all traces;
- **All Trace OFF**; hides all traces.



5.4.4 Marker

When the field monitor has been set up to display all data, the graph contains many traces. To ensure accurate measurement of each trace it is possible to enable a marker that will show the value of the electrical field, or temperature, or batteries, depending on the trace for which it is selected.

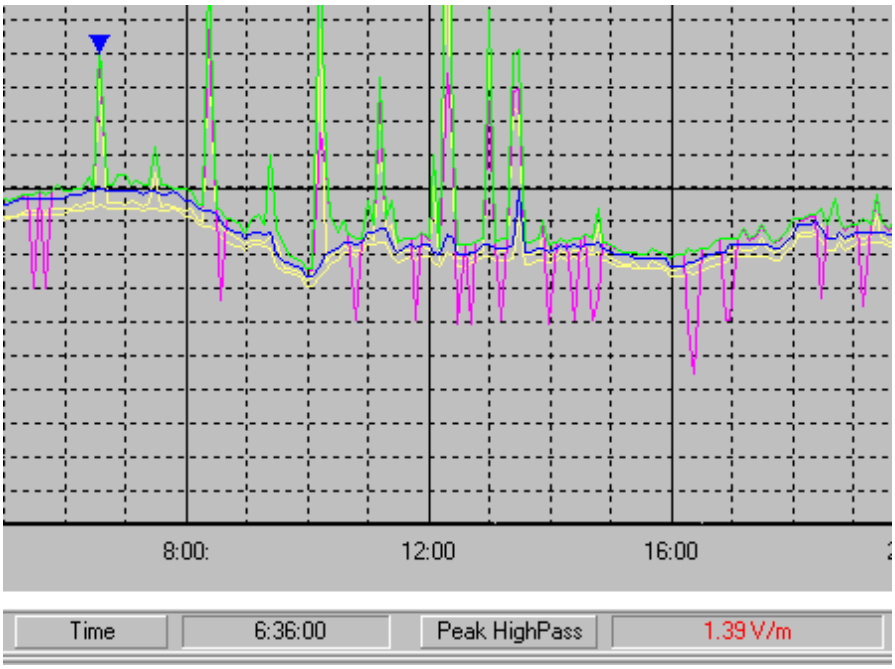
The screen will look like this:



NOTE

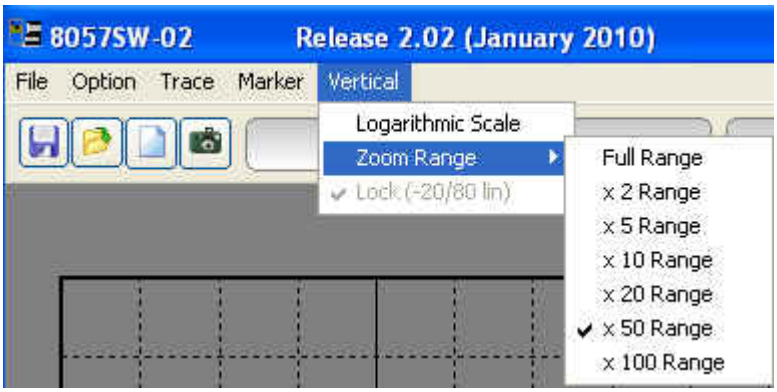
The marker is made visible also by activating the ZOOM function.

Using the mouse it is possible to scroll the entire time axis and stop on the trace and in the point for which the exact value is desired.



5.4.5 Vertical

This function is used to select the vertical scale with a linear or logarithmic view and also serves to define the scale range. The screen looks like this:



Selecting **x 100 Range** the maximum sensitivity is displayed (scale range equal to 1 V/m).

The function **Lock (-20/80 lin)** is activated when the User want to display on the graph both the temperature and the field trace. It forces the scale between -20 and 80 and shows everything in linear mode.

5.5 Secondary commands

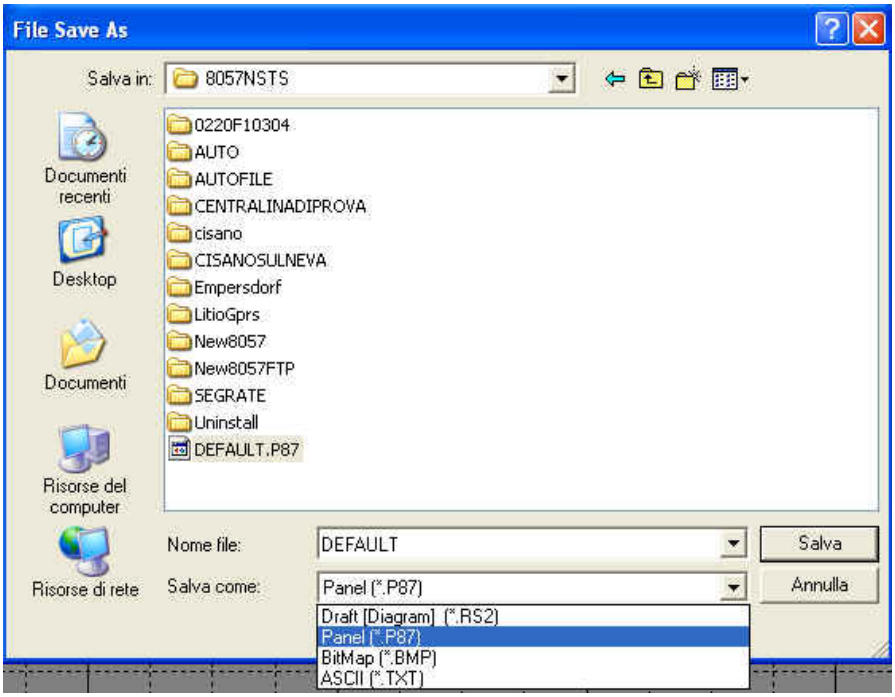
Description of command bar:

5.5.1 Save Files

Used to save files of measurements in the following formats:

1. **Draft (Diagram) (*.RS2)** (Default) Archive for future processing of readings;
2. **Panel (*.P87)** A file with the extension ***.P87** is saved, containing the current settings selected with the **Setup** key, so that the operator can readily restore the preferred settings at a later date. (Normally the program starts with the setting in the file **default.P87**)
3. **BitMap (*.BMP)** A graphic bitmap file is saved which is identical to the diagram displayed on the screen at the time of the request.
4. **ASCII (*.TXT)** A text file is saved containing the data of the configuration, saved with the function **Save Export File Setup**.

The screen looks like this:



Measurements can be saved in any directories. During this procedure the software shows a list of the previously saved files.

5.5.1.1 Saving File in ASCII format

Files in ASCII format with the .TXT extension contain an ***** (asterisk) marking any data, and averaged value, considered affected by the internal modem activity.
The structure of data tables saved in the default .TXT format is as follows:

- All traces enabled;
- All alarms enabled;
- Marker of GSM-ON enabled;
- Separation character: ";" (semicolon);
- Data sorted according to "**Wide, Low Pass, High**" mode, first average and then peak.

NOTE

This structure can be changed with the Save Export File Setup function. This also applies to alarms and to the GSM modem marking.

The actual settings can be viewed by pressing **Show Table File**. This function automatically creates the table of data relative to the graph on view, and reflects the default settings listed above or those saved with the **Save Export File Setup** function.
Lastly, columns are shown indicating all the active alarms.

8057SW-02
Firmware: 1.30 04/09

Station: 210WK60625 (Nsts,AMB-8057-02 S/N 210wk60625)

Date: 02/05/2011 Time: 09:00 (RMS 6 minute)

Probe EP-4B-01 (Last Calibrated:15.04.11)

Date;Time;TxOn;RMS W.;RMS 2140;RMS 1842;RMS 942;Peak W.;Peak 2140;Peak 1842;Peak 942;Battery;Temp;Alarms;
;;;V/m;V/m;V/m;V/m;V/m;V/m;V/m;V/m;V/m;V;C°;AWPLCTV;

02/05/2011;9:54;*;LOW;LOW;LOW;LOW;1.498;0.066;0.036;0.122;3.638;25;...L...;
02/05/2011;10:00;*;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.638;23;...L...;
02/05/2011;10:06;*;LOW;LOW;LOW;LOW;0.263;LOW;LOW;LOW;3.638;21;...L...;
02/05/2011;10:12;*;LOW;LOW;LOW;LOW;0.257;LOW;LOW;LOW;3.638;20;...L...;
02/05/2011;10:18;*;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.600;20;...L...;
02/05/2011;10:24;*;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.600;23;...L...;
02/05/2011;10:30;*;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.638;25;...L...;
02/05/2011;10:36;*;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.638;26;...L...;
02/05/2011;10:42;*;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.638;26;...L...;
02/05/2011;10:48;*;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.638;27;...L...;
02/05/2011;10:54;*;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.675;27;...L...;
02/05/2011;11:00;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.675;28;...L...;
02/05/2011;11:06;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.713;28;...L...;
02/05/2011;11:12;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.713;28;...L...;
02/05/2011;11:18;;LOW;LOW;LOW;0.037;LOW;LOW;LOW;0.064;3.713;28;...L...;
02/05/2011;11:24;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.713;28;...L...;
02/05/2011;11:30;;LOW;LOW;LOW;0.029;LOW;LOW;0.047;0.050;3.713;28;...L...;
02/05/2011;11:36;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;0.031;3.713;28;...L...;
02/05/2011;11:42;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.713;30;...L...;
02/05/2011;11:48;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.713;33;...L...;
02/05/2011;11:54;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.713;34;...L...;
02/05/2011;12:00;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.713;35;...L...;
02/05/2011;12:06;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.675;36;...L...;
02/05/2011;12:12;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.675;37;...L...;
02/05/2011;12:18;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.638;37;...L...;
02/05/2011;12:24;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.675;37;...L...;
02/05/2011;12:30;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;0.038;3.638;37;...L...;
02/05/2011;12:36;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.638;37;...L...;
02/05/2011;12:42;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.675;33;...L...;
02/05/2011;12:48;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;0.029;3.638;28;...L...;
02/05/2011;12:54;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.638;26;...L...;
02/05/2011;13:00;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;0.086;3.638;24;...L...;
02/05/2011;13:06;*;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.675;23;...L...;
02/05/2011;13:12;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;0.044;3.675;21;...L...;
02/05/2011;13:18;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;0.046;3.675;21;...L...;
02/05/2011;13:24;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;0.042;3.675;20;...L...;
02/05/2011;13:30;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;0.040;3.675;20;...L...;
02/05/2011;13:36;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.675;20;...L...;
02/05/2011;13:42;;LOW;LOW;LOW;LOW;LOW;0.039;0.046;0.033;3.675;20;...L...;
02/05/2011;13:48;;LOW;LOW;LOW;LOW;0.263;LOW;LOW;0.152;3.675;20;...L...;
02/05/2011;13:54;;LOW;LOW;LOW;LOW;LOW;LOW;LOW;LOW;3.675;21;...L...;
02/05/2011;14:00;;LOW;LOW;LOW;LOW;0.925;0.096;0.073;0.133;3.675;22;...L...;

NOTE

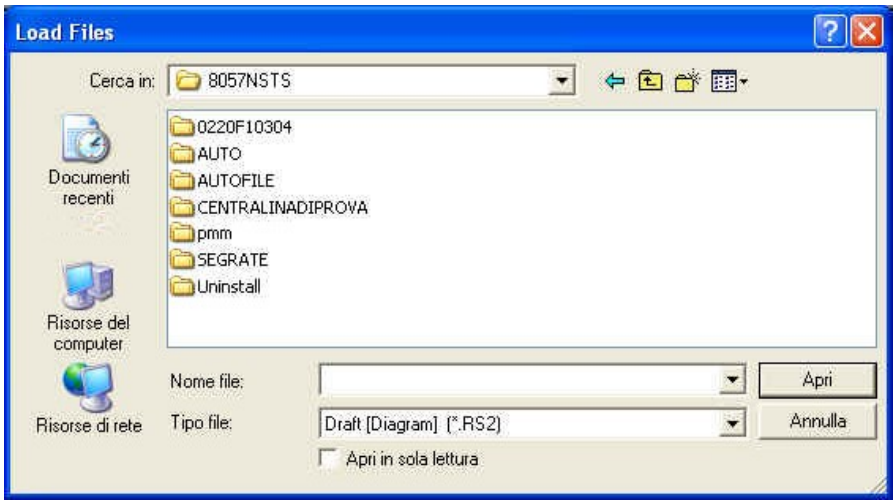
Like every other item listed in the table, the asterisks (*) of the GSM Band on will not be shown if the Trace Menu has this item disabled at the time of activating the Save Export File Setup function.

5.5.2 Open Files

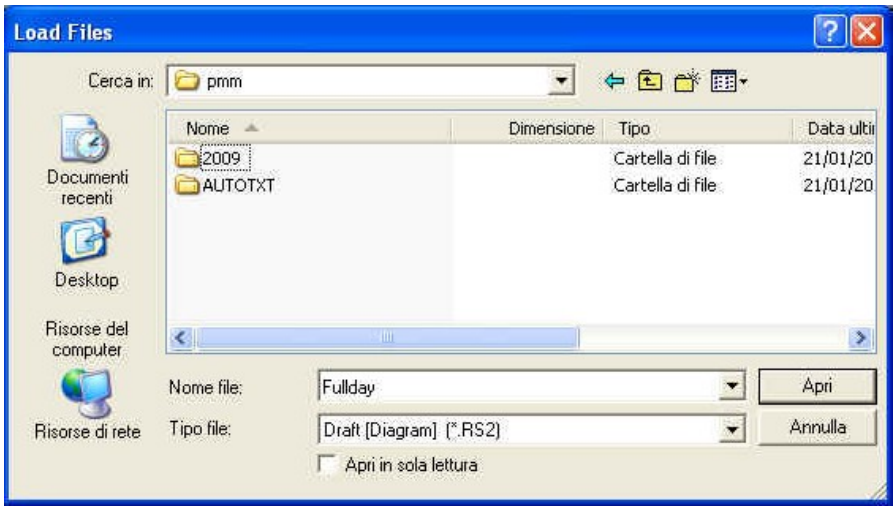
:

Used to download and view measurement files previously saved (*.RS2). Also serves to load files of settings (*.P87).

If the software is already in graph mode, clicking on **Open Files** will display all the stations available and also the directory **AUTOFILE,** containing only the **.TXT** files created automatically with the **AUTO ASCII FILE** function.

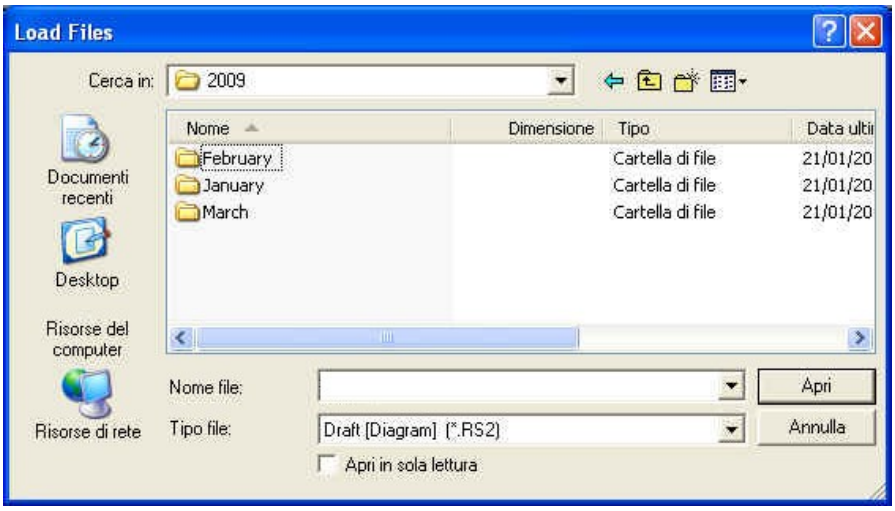


Selecting, for example, station **PMM**, it will display all the years relative to downloads and the directory "**autotxt**":



Associated with the name of each station, the software creates the directory of years (in this example 2009) and the directory "**autotxt**" which contains all the data relative to the **Auto ASCII File** function.

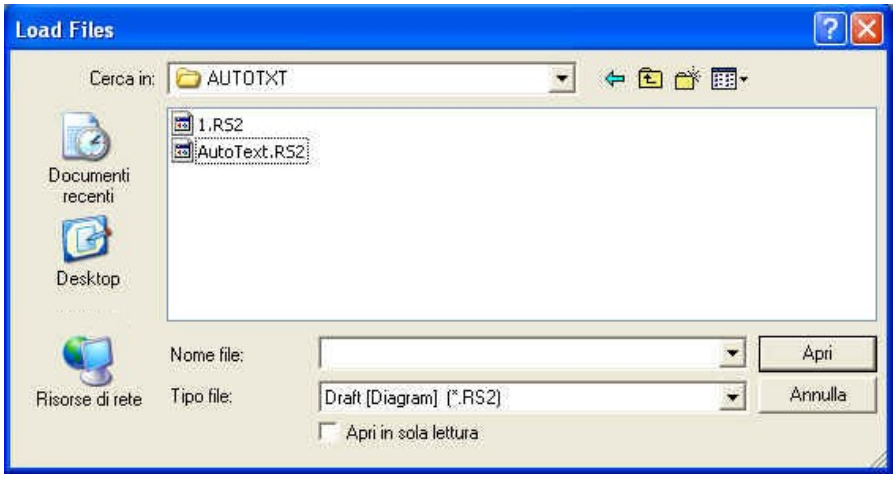
Selecting the desired year, the menu will display all the months and weeks available:



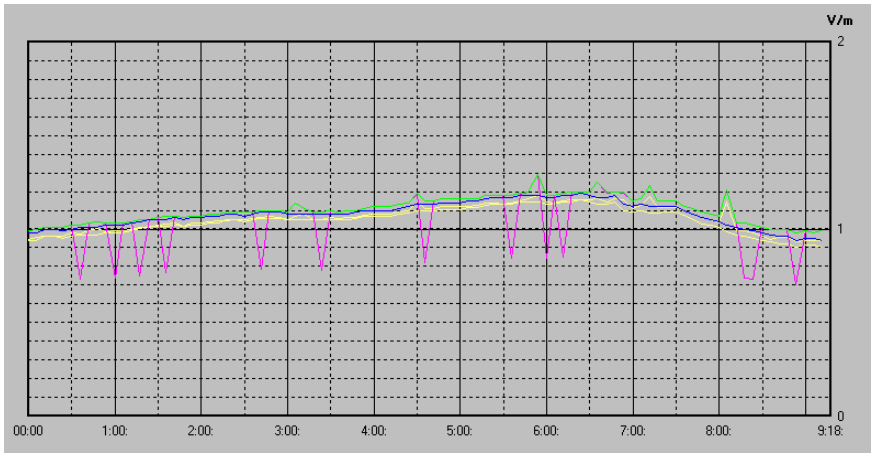
Selecting the month, the software will display the list of all the days containing data.
Selecting the desired day and clicking **OK** the data will be displayed; pressing **Cancel** to interrupt the operation.

5.5.2.1 Open Autotext file

The files in the **AUTOFILE** directory are saved in .TXT format, while the files in the **AUTOTXT** directory are saved in **.RS2** format. The former are created so as to be readily exported into Windows Office programs, and cannot be opened using SW02 software. The latter can be viewed because they are saved in the proprietary graph form of AMB-8057 (.RS2).

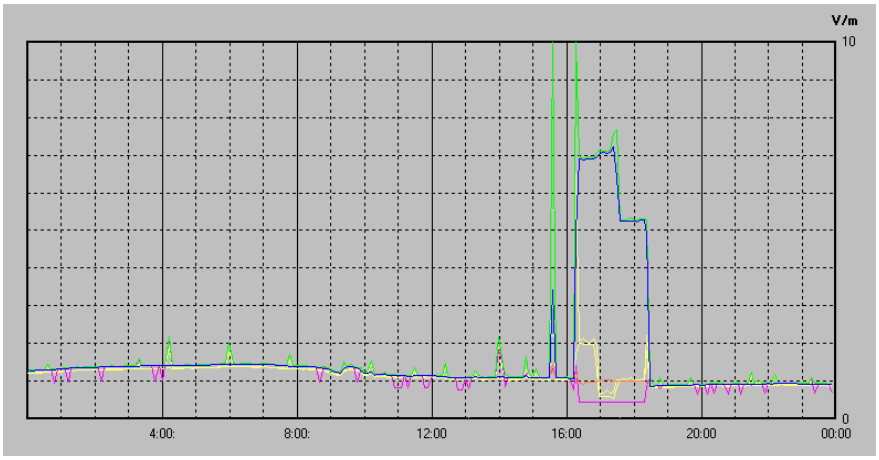


The time window between Start and Stop is defined by the conditions used during download.



In this example, the software shows the graph from 00.00 to 09:18 of autotxt file .RS2.

If, however, you open the file Fullday.RS2 (created automatically in the Month/Day directory), the same graph displays the data for the 24 hour period, from 00.00 to 24.00.



Therefore, with the function Auto ASCII File it is possible to create any graphs with a start and end period of measurement defined in any desired way. For example, from Friday to Monday, or between two months, etc.

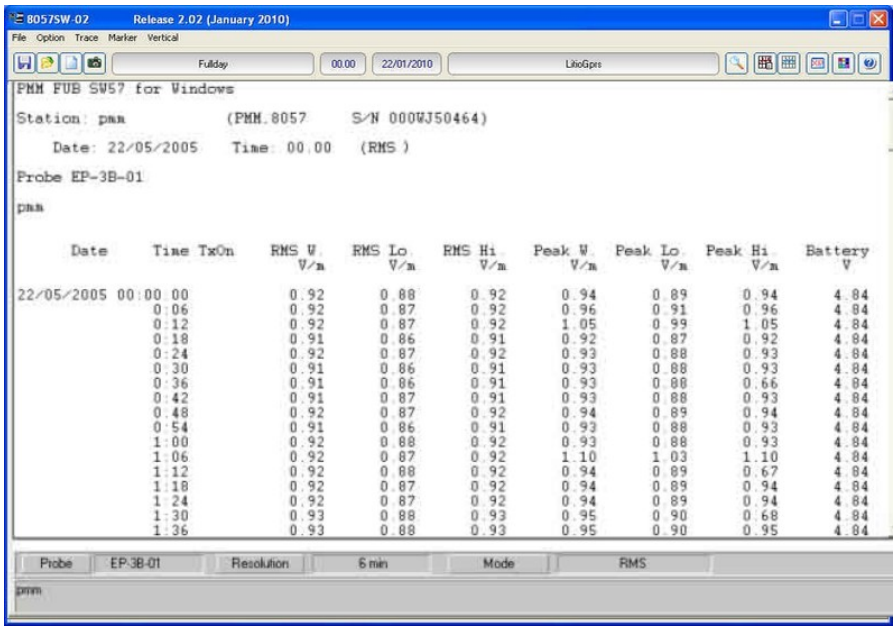
NOTE

Of course, this time period must be selected in the download data procedure.

5.5.3 Show Table File

This is used to automatically display a table report containing the data relative to the set of traces saved with the **Save Export File Setup** function.

When the **Show Table File** function is enabled, every other function is disabled. The screen looks like this.



5.5.4 ClipBoard

Used to make the bitmap corresponding to the actual measurement displayed on the Windows Clipboard. That makes it possible to perform operations of cutting and pasting images directly on other programs without constructing exchange files. This operation can be useful to integrate test reports or other documents written with a Word Processor, such as Word for Windows™, inserting the graphic image of the taken readings.
Each single trace is converted into bitmap format and copied with the colors taken from the palette selected in **Setup**.

The **File Name** field contains the name of the file displayed.
This is normally updated automatically with the **LOAD** command.

Fields **Status 1** and **Status 2** show the time and date of start of the display.

The next field contains the name of the Field Monitor unit.

5.5.5 Zoom Mode

This is used for horizontal expansion of the actual measurement displayed (ZOOM) to observe the measurement with better definition. When the ZOOM function is on, the **Marker** function is enabled as well. A small blue triangle appears on the display and can be moved with the mouse to any point on the graph. The window at the bottom will show the amplitude marked and the time of occurrence.

To enable the **Zoom** function proceed as follows:

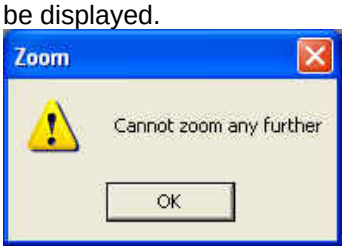
- select the **Zoom Mode** key;
- position the mouse on the **Marker** triangle at the starting point;
- holding the left mouse key down, drag the **Marker** to the point at the end of the trace you wish to expand. Release the mouse key and the selected trace will be expanded immediately.

During this operation an orange cross and two vertical bars are displayed to aid in selection of the area to expand. To return to normal display unselect **Zoom Mode**.

WARNING

The smallest selectable trace is 120 seconds (2 minutes). A greater enlargement would only put more space between the two measurement points without adding any significant information.

If you try to zoom on a trace of less than 2 minutes an error message will be displayed.



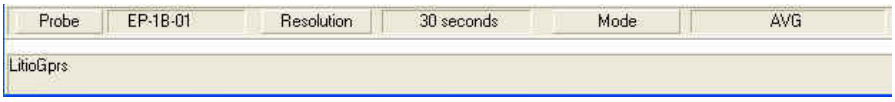
As already mentioned, the **Zoom Mode** key is used to enable the **Marker**, represented by a colored arrow which, using the mouse, can be positioned anywhere along the displayed trace. In this case, the time values will be reported on the status bar at the bottom of the screen (time from start of measurement) and the amplitude will be displayed with respect to the actual position of the **Marker**. This function is used for a detailed analysis of the graph and of the relative values saved.

NOTE

When the Zoom Mode key is enabled, the other commands are automatically disabled except Save, ClipBoard and Help.

5.5.6 Comment

When this icon is selected, it is possible to enter or display the field containing the comment, which can be written or edited up to a **maximum of 1024 characters**. The screen looks like this:



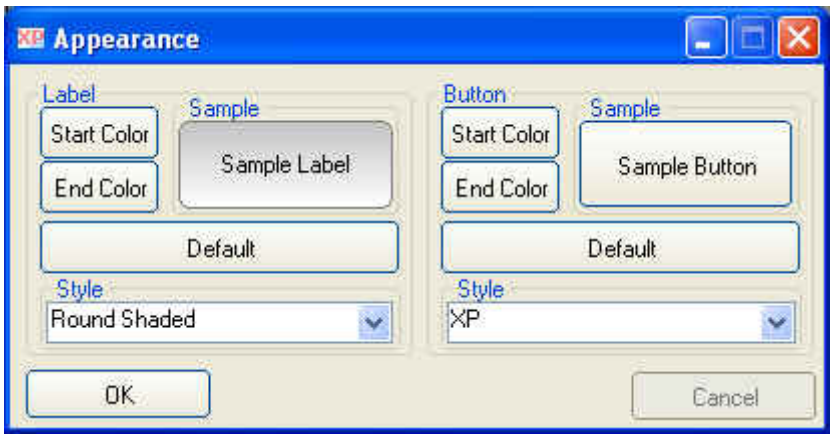
NOTE

In the bitmap, the comment is shown only when the Comment key is enabled.

5.5.7 Redraw

Used to refresh the screen and redraw the diagram.
This operation is necessary in particular when the PC does not have much memory and/or many applications are running at the same time.

5.5.8 Appearance



Button and label style can be selected from a **Style** list

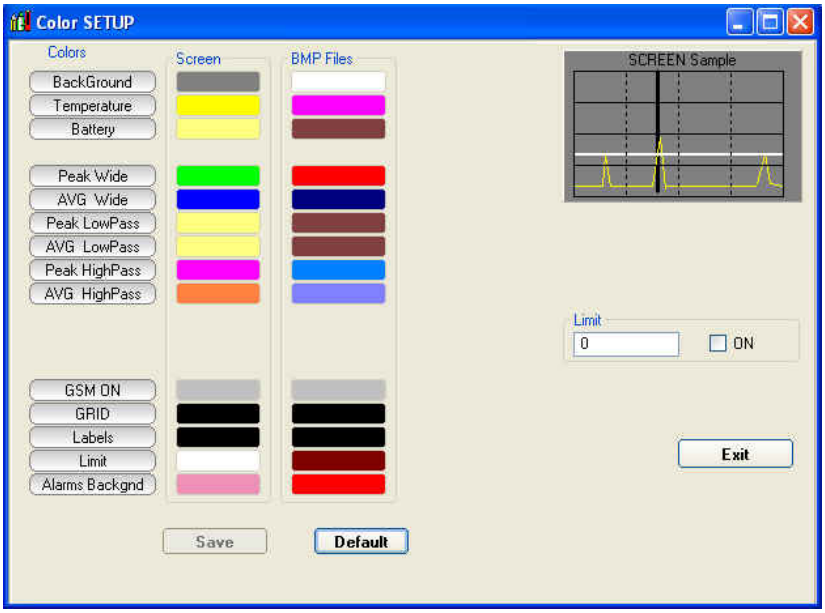
Start and **End Color** button allow selection from a color palette

Sample Button and **Sample Label** show the appearance preview

Default button to set appearance to the default parameters

5.5.9 Setup

The use of the **Setup** key allows to access the window for setting the colors of the graph.
It is possible to change the current settings at any time, and the new settings can be saved in a file and restored later.
The **Setup** window looks like this:



For each trace of the graph listed under **Colors**, the desired color can be selected, and these colors can be different for the **Screen** and for the **BMP Files** to better adapt to the viewing and printing needs of the User.

5.5.9.1 Color Palette

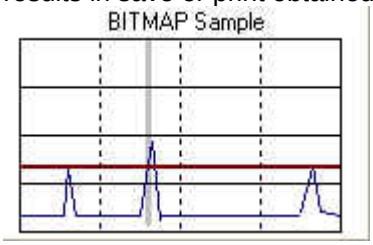
The choice is made by moving the mouse to the color to be changed and then using the Color Palette window.

5.5.10 Limit

The **Limit** field is used to set and enable a reference trace on the current screen.

5.5.10.1 SCREEN Sample

The small graph on the upper right of the display gives a preview of the results in save or print obtained with the colors selected.

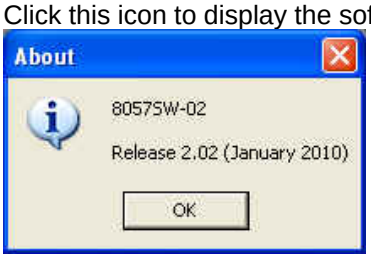


NOTE

Click Exit to close the Setup window without saving the new setting, to maintain the current settings for the graphs displayed after opening the program again. The new configuration can be saved in a relevant file by clicking Save.

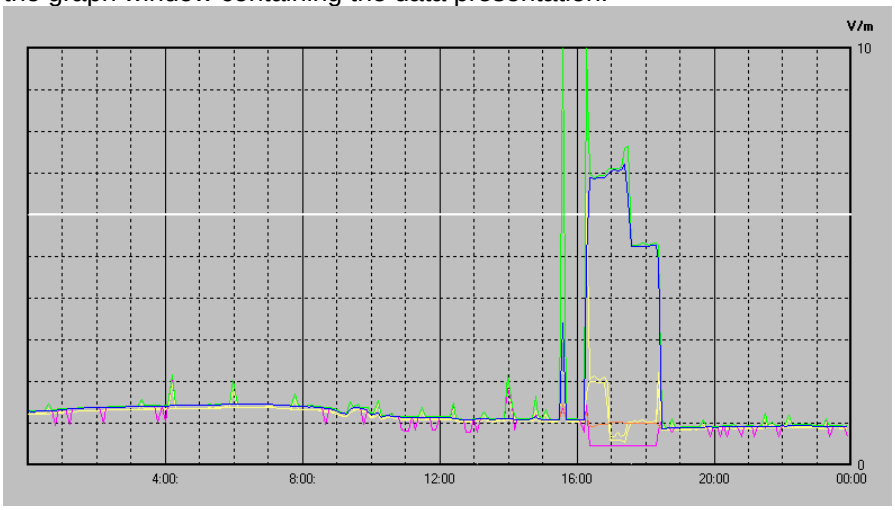
5.5.11 Software release

Click this icon to display the software release currently installed on the PC.



5.6 Graph window

The central part of the data window for the 8057SW-02 program displays the graph window containing the data presentation.



The graph window displays the traces saved on the basis of the settings made in the main window of the **Storing Settings** section.

When **Zoom Mode** is enabled, a triangle with its apex pointing downward highlights the position of the **Marker**.

A horizontal line, of the color chosen with **Setup**, highlights the limit set, permitting easy comparison with the values shown on the graph.

5.7 Status window

The bottom section of the data window in the 8057SW-02 program displays the status window.

This window provides useful information about the program functions and also gives extended and immediate help with the meaning of the commands and options on which the mouse is positioned.

A few examples are shown below:

Actual operating mode

Values relative to **Marker** position

Display of description of the **Clip Board** key

5.8 Importing data to Word or Excel

All the graphs saved in .TXT format can be displayed by other programs. If Word or Excel are used, the saved file can be searched with the Open file command and selected using **File type: All files (*.*).** Search for the file in the 8057SW-02 directory and follow the path (Station Name, year, month and day) to select the desired file to open.

6 – Dual-Probe operation

6.1 Description

This section provides additional information regarding the dual-probe operating mode only. Please refer to the other sections of this manual for installation and use of AMB-8057 area monitor.

AMB-8057 area monitor can operate in Dual-probe configuration that enhances its field monitoring capacity.
Dual probe operation is based on the HP-1B-01 probe, for low frequency magnetic field measurement, that is equipped with a “pass-through” connector to allow the installation of a secondary probe.

Any single or tri-band probe can be installed as the secondary one of dual-probe configuration allowing thus to acquire, besides the ELF magnetic field, the ELF or RF electric one, depending on the secondary probe model.

NOTE

When a tri-band probe is used in dual-probe configuration the additional result, provided besides the low frequency magnetic field, will be limited to the electric field measurement of the Wide section only, without providing any information related to the Low and High frequency bands.

6.2 Installation

Follow the installation instructions provided in chapter 1 and chapter 2 and install the primary probe HP-1B-01 to the main section of the unit.
The HP-1B-01 top panel provides an additional connector for the secondary probe.

Fig. 6-1 HP-1B-01 top panel

Connect the secondary probe to the primary one as shown in the following pictures:

Fig. 6-2 Dual probe configuration (internal view): EP-1B-01 mounted as secondary probe

Fig. 6-3 Dual probe configuration (internal view): EP-1B-04 mounted as secondary probe

WARNING

Dual probe configuration requires the use of the 8057-extension for protective case when either EP-1B-01 or EP-1B-03 or EP-3B-01 is mounted as secondary probe.

The following picture shows the 8057-extension for protective case (check for any missing accessory with reference to the enclosed packing list). The Tool kit provided includes:
- n°3 Hexagon socket button head screws;
- n°3 Plastic washers;
- n°3 Hexagonal Nut.

Insert carefully the 8057-extension into the protective case; rotate the same to align the holes and the overlapping junctions.

Fasten the protective case extension by means of the provided screws keeping the nuts inside the case and the plastic washers on the outer surface. Tighten the screws using the provided 2.5 mm Allen key

Fasten the 8057-extension to the base plate and install the monitoring unit on the site following the installation instructions provided in chapter 1 and chapter 2.

Fig. 6-4 AMB-8057 area monitor Dual-Probe configuration

The dual probe configuration is automatically detected by the station Firmware which provides the requested functions.
Thresholds for field Warning and Alarm are based on the **reference** probe which is, as default settings, the primary one (HP-1B-01). As explained in the following sections any of the two probes can be set as the **reference** one by means of a specific command.

6.3 Probe combinations

Besides safety applications informing about critical situations by means of alarm messages and providing historical results, long term EM field monitoring is the best solution to show, specially in case of population concern and protests against antennas and power lines, that the field intensity is usually low and well below the regulation limits.
Even if in some applications, like measurement in proximity of power lines, low frequency electric field can be easily determined trough mathematical calculations and usually does not change with time, its monitoring, along with magnetic field, can be beneficial to show population measurement result of both quantities instead of explaining theory.

Regulations provide limits for Electric and Magnetic fields. Continuous monitoring of both quantities provides complete results to be easily compared to the limits without the need of any calculation.
Additionally, some industrial application may take advantage of the dual-probe monitoring.

Different probe combinations are possible by selecting the secondary one depending on specific monitoring needs as shown in the following table. Please note that the primary probe, directly connected to the area monitor main unit, must always be the HP-1B-01 model.

TABLE 6-1 Probe combinations

ELF		
HP-1B-01 + EP-1B-04	complete solution for low frequency monitoring providing both E and H field in the 10Hz – 5kHz frequency range	best answer to the concern of population exposed to power plants or lines.

ELF + RF		
HP-1B-01 + EP-1B-01	H field: 10Hz – 5kHz + E field: 100kHz - 3GHz	whenever population can be exposed to both low and high frequency fields
HP-1B-01 + EP-1B-03	H field: 10Hz – 5kHz + E field: 100kHz - 7GHz	
HP-1B-01 + EP-3B-01	H field: 10Hz – 5kHz + E field: 100kHz - 3GHz	

NOTE **Quad-band probes do not operate in dual-probe configuration.**

6.4 Selecting the reference probe

As described in 6-2, the default dual probe configuration sets the primary HP-1B-01 as the **reference** probe.
This means that the Last Field value, shown by the control software on the left side of the station control panel, will be calculated on the magnetic field measurement.
The Last Field value is continuously compared with the Warning and Alarm thresholds, set by the user, to determine whether any field alarm condition is occurring.

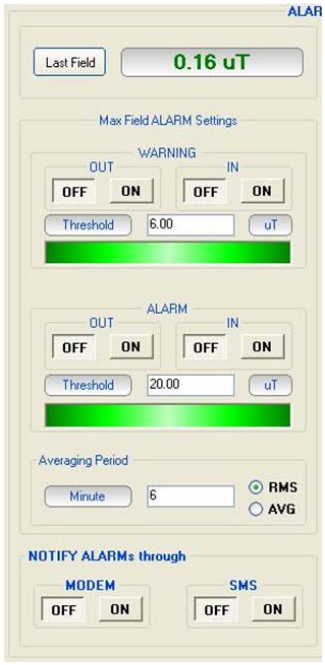


Fig. 6-5

Fig. 6-5 Last Field, as shown by the control software, and field alarm thresholds settings. Reference on primary probe as default.

If desired, it is possible to set the secondary probe (E field) as the reference one. In this case, Last Field and field alarm thresholds will be based on the electric field measurement provided by the secondary probe.

A command through RS232 or SMS containing the string "**#F7SSAAS***" can be sent to the station to set the secondary probe as the reference one. Please, see chapter 6 for command syntax and related information.

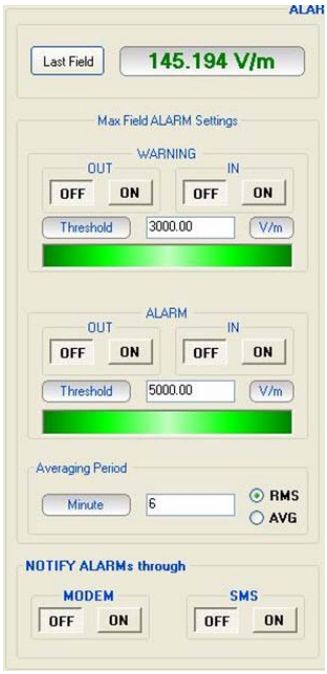


Fig. 6-6

Fig. 6-6 Last Field, as shown by the control software, and field alarm thresholds settings. Reference on secondary probe.

6.5 Control panel in Dual-probe configuration

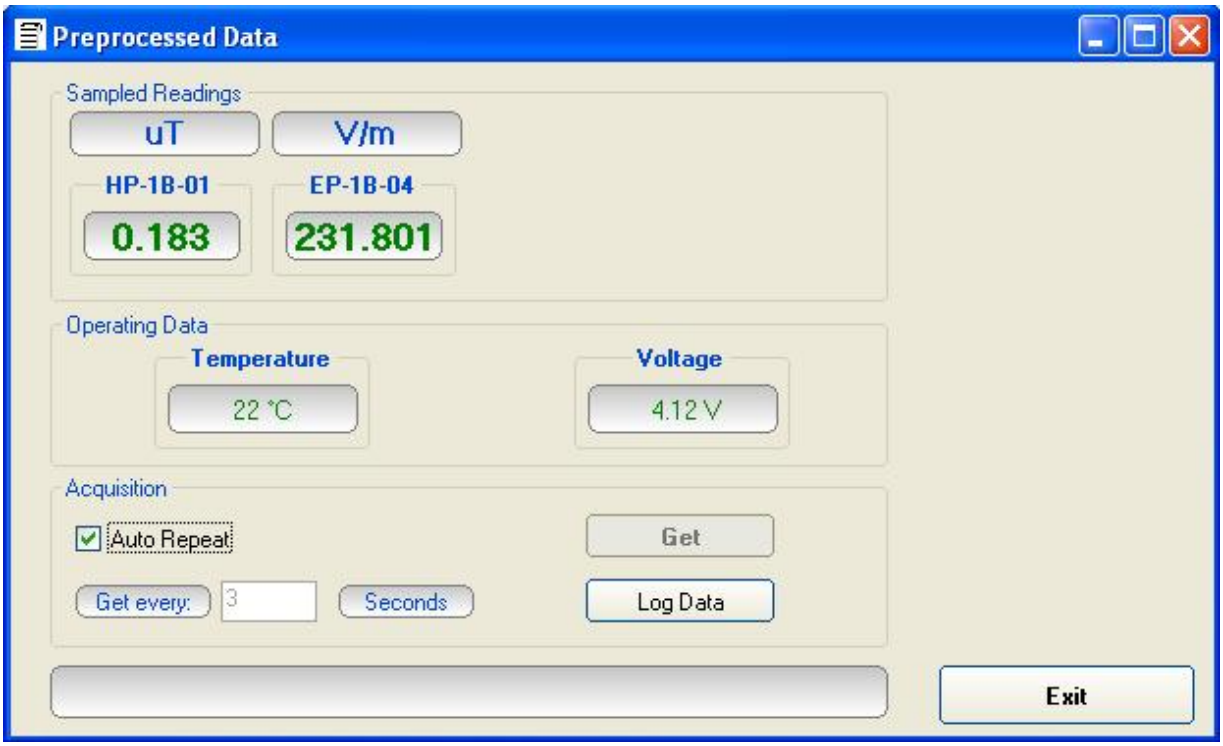
The only difference shown in the station control panel, displayed by the software, is the “Probe Section” which shows model and calibration date of both probes.

NOTE

The Probe alarm is always referred to the primary probe only.

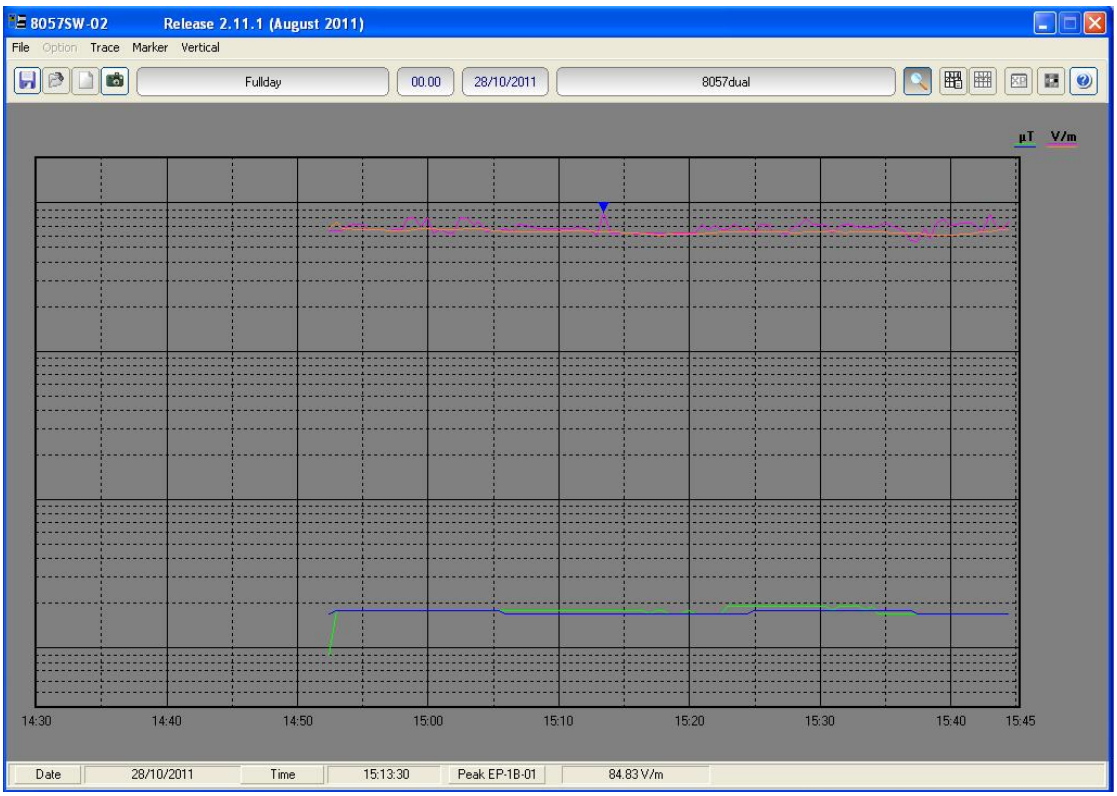
6.6 Direct readings

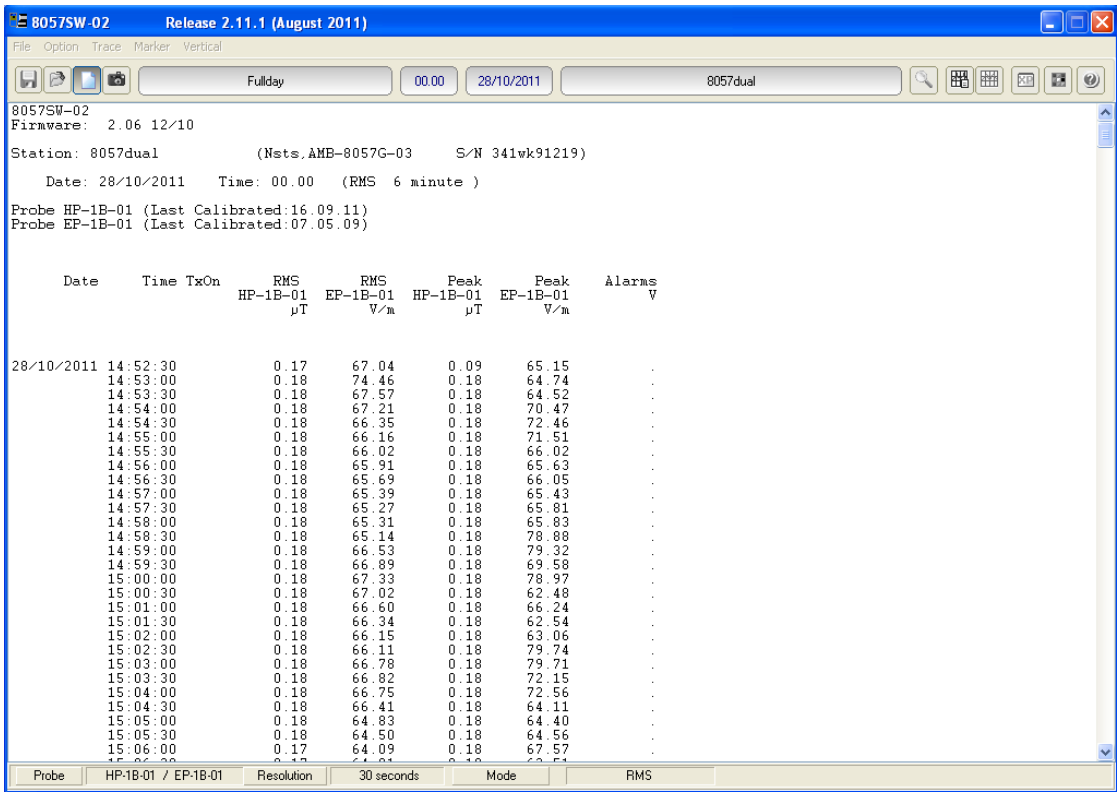
The Direct Readings function operates only when the station is connected to the controller PC by means of the RS232 cable. In case of dual-probe configuration both results, H and E field, will be displayed.



6.7 Measurement results

Measurement results downloaded from AMB-8057 can be displayed by the control software in graphical or table format. Results from both probes can be included in the same graph or table.





Date	Time TxOn	RMS HP-1B-01 µT	RMS EP-1B-01 V/m	Peak HP-1B-01 µT	Peak EP-1B-01 V/m	Alarms V
28/10/2011	14:52:30	0.17	67.04	0.09	65.15	.
	14:53:00	0.18	74.46	0.18	64.74	.
	14:53:30	0.18	67.57	0.18	64.52	.
	14:54:00	0.18	67.21	0.18	70.47	.
	14:54:30	0.18	66.35	0.18	72.46	.
	14:55:00	0.18	66.16	0.18	71.51	.
	14:55:30	0.18	66.02	0.18	66.02	.
	14:56:00	0.18	65.91	0.18	65.63	.
	14:56:30	0.18	65.69	0.18	66.05	.
	14:57:00	0.18	65.39	0.18	65.43	.
	14:57:30	0.18	65.27	0.18	65.81	.
	14:58:00	0.18	65.31	0.18	65.83	.
	14:58:30	0.18	65.14	0.18	78.88	.
	14:59:00	0.18	66.53	0.18	79.32	.
	14:59:30	0.18	66.89	0.18	69.58	.
	15:00:00	0.18	67.33	0.18	78.97	.
	15:00:30	0.18	67.02	0.18	62.48	.
	15:01:00	0.18	66.60	0.18	66.24	.
	15:01:30	0.18	66.34	0.18	62.54	.
	15:02:00	0.18	66.15	0.18	63.06	.
	15:02:30	0.18	66.11	0.18	79.74	.
	15:03:00	0.18	66.78	0.18	79.71	.
	15:03:30	0.18	66.82	0.18	72.15	.
	15:04:00	0.18	66.75	0.18	72.56	.
	15:04:30	0.18	66.41	0.18	64.11	.
	15:05:00	0.18	64.83	0.18	64.40	.
	15:05:30	0.18	64.50	0.18	64.56	.
	15:06:00	0.17	64.09	0.18	67.57	.

This page has been left blank intentionally

7 – SMS Commands and Messages

7.1 Introduction

This chapter provides information about the communications protocol of the AMB-8057 Area Monitor Broadband via mobile phone using SMS (Short Message System) or through RS232 by means of Windows Hyper Terminal or similar applications.
Every monitoring station equipped with GSM modem can be reached by any GSM mobile phone and the commands sent via SMS will enable the User to change the settings or query various functions of the station.
The commands have the following general format:

#F7Qcommand(parameters)* where:

# = opens the command string;
F7 = string always included;
Q = **?** for query commands;
S for setting commands ;
Command = command string;
(parameters) = value of setting parameters (if any);
***** = closes the command string.

The commands available via SMS message are divided into three main categories:

- **Query COMMANDs**;
- **Setting COMMANDs**.
- **GPRS COMMANDs**.

With the exception of “EVN”, “EVNL”, and “EVNR” (which on account of their prolixity would not be possible to send via SMS) all the remaining commands works in SMS, MODEM and direct RS232 mode.

NOTE

Every SMS sent to the AMB-8057 must contain as a first command the invitation to authenticate the device password. This is to protect the station for undesired access.

Therefore every SMS, to be processed correctly, must start with the string:
#F7?IDN psw*

Where psw is the device password set for the station (the default password is PASSPMM).

Example: to request the last reading (average value) the SMS message to be sent to the AMB-8057 with the password set by the factory is as follows:
#F7?IDN PASSPMM*#F7?LFA*

NOTE

Any command sent via RS232 immediately rouses the microcontroller. However, because of the peculiarity of the stop status, in this case the command is lost and must be sent again in order to be carried out. This is done automatically by the 8057SW-02 control software and should be taken into consideration by the User in developing any custom software.
Obviously, this does not occur in case of commands issued via SMS or in case of connection via modem, as the microcontroller is always on when the GSM is on stand-by.

7.2 List of commands

Query COMMANDs

Syntax	Function
#F7?IDN psw*	Request ID.
#F7?IDNF psw*	Request extended ID.
#F7?CLK*	Request complete internal clock.
#F7?STA*	Request alarm status.
#F7?MSK*	Request alarm screen.
#F7?BAT*	Request battery voltage status.
#F7?RPT*	Request report.
#F7?RPT0*	Request report with reset.
#F7?TMP*	Request temperature.
#F7?PRB*	Request field probe data.
#F7?TDM*	Request complete modem phone list.
#F7?TDMn*	Request single modem phone number.
#F7?TDS*	Request complete SMS phone list.
#F7?TDSn*	Request single SMS phone number.
#F7?ALR*	Request alarm threshold.
#F7?THA*	Request battery voltage and temperature limits.
#F7?TSM*	Request schedule programmed settings for modem.
#F7?TSS*	Request schedule programmed settings for SMS.
#F7?FST*	Request Time and Date of first available result.
#F7?AQ_*	Request actual acquisition mode setting.
#F7?LFA*	Request latest average value.
#F7?MES*	Request instantaneous (not averaged) field value.
#F7?MESR*	Request instantaneous field value (continued).
#F7?EVN*	Request record of all events.
#F7?EVNL*	Request record of latest 20 events.
#F7?EVNR*	Request record of events since last reading.

Setting COMMANDs

Syntax	Function
#F7SPSW (parameters)*	Save new Password
#F7SACL*	Autocalibration and control of probe conditions.
#F7SCAM*	Cancel data memory.
#F7SCLT (parameters)*	Set clock time.
#F7SCLD (parameters)*	Set clock date.
#F7SIDN (parameters)*	Set station ID.
#F7SMSK (parameters)*	Set alarm screen.
#F7SALR (parameters)*	Set alarm threshold.
#F7SWRN (parameters)*	Set attention threshold.
#F7SAVG (parameters)*	Set averaging time.
#F7SAA (parameter)*	Define reference probe in dual-probe mode
#F7STHA0 (parameters)*	Set minimum battery voltage alarm threshold.
#F7STHA1 (parameters)*	Set maximum battery voltage alarm threshold.
#F7STHA2 (parameters)*	Set minimum temperature alarm threshold.
#F7STHA3 (parameters)*	Set maximum temperature alarm threshold.
#F7STDMn parameters)*	Set modem phone number.
#F7STDSn (parameters)*	Set SMS phone number.
#F7SDMO*	Set MODEM disable function.
#F7STSM (parameters)*	Set programmed schedule for modem.
#F7STSS (parameters)*	Set programmed schedule for SMS.
#F7SENC*	Enable to calls.
#F7SDIC*	Disable to calls.
#F7SENR*	Enable to send reports.
#F7SDIR*	Disable to send reports.
#F7SATH*	End communication in progress.
#F7SATH0*	End communic. in progress + modem.
#F7SCNL (parameters)*	Enable deferred call.
#F7SAQ_ (parameters)*	Set acquisition mode.
#F7SRST*	Restore Default configuration.
#F7SRSTR*	Restore default configuration and storing rate

GPRS-FTP Setting COMMANDs

Syntax	Function
#F7SGPR0 (parameter)*	Set Access Point Name for GPRS
#F7SGPR1 (parameter)*	Set User Name for GPRS access network
#F7SGPR2 (parameter)*	Set Password for GPRS access
#F7SGPR3 (parameter)*	Set User Name for FTP access server.
#F7SGPR4 (parameter) *	Set Password for FTP access
#F7SGPR5 (parameter)*	Set IP Address of the FTP server
#F7SCGN*	Start a GPRS connection and access the FTP server
#F7SCGNL*	Start a GPRS connection, access the FTP server and upload txt file including last 20 events.
#F7SCGNA*	Start a GPRS connection, access the FTP server and upload txt file including all events available.
#F7SNETE*	Set the station to the GPRS communication mode.
#F7SNETD*	Set the station to the CSD communication mode.
#F7SSTS (parameter)*	Set the internal Real Time Clock by using the SMS provider's information.

7.3 Query COMMANDs Using these commands the monitoring station can be queried with a series of requests to which the unit will respond with an SMS message containing the required information.
Query commands are characterized by the character **?** in the string.

Command	Meaning
?IDN psw (Identity)	Request of ID with authentication of the password to enable commands. The subject "psw" must be the Device Password saved in the monitoring station using the command **SPSW** to enable the communication when the unit is not directly connected via RS232. Any spaces entered between the IDN string and the password string are ignored. The response of the unit contains the ID followed by the serial number as follows: IDN=**NAME; Serial No** Where **Name** is the ID string saved with the command **#F7SIDN** and **Serial No**. is an alphanumerical string that distinguishes the field monitor (serial number). When receiving a command like the following **#F7?IDN PASSPMM*** first the unit verifies that the Password PASSPMM in the command is the same previously memorized in the unit (see the command **SPSW**), then it returns the expected string if: • It is connected directly via RS232 regardless of the correctness of the password • It is connected via modem and the password has been successfully verified • It is receiving a command via SMS and the password has been successfully verified (in this case all succeeding commands in the same SMS will be accepted as well). The expected response string of the example is **IDN= Via_Marconi; 0987654321** And it provides the serial number "09876564321" and the ID "Via_Marconi". If the Password is incorrect (although required) the response string is: **#F7 DENIED*** Since the SMS commands are recognize after the control of the Password, this command should be used instead of **?IDNF** because using less characters. Indeed, the **IDNF** answer will use almost all the 160 characters allowed for a single SMS and would therefore be impossible to read and recognize the following commands.
?IDNF psw (Identity)	Request of ID with authentication of the password to enable commands. The subject "psw" must be the Device Password saved in the monitoring station using the command **SPSW** to enable the communication when the unit is not directly connected via RS232. Any spaces entered between the IDN string and the password string are ignored. The response of the unit contains the ID followed by: • brand (NARDA), model and release of firmware • Serial number of the unit • Date of latest calibration • Origin call **ON** or **OFF** • Time and frequency of MODEM start (for non-SMS calls) • Alarms currently on (not masked) The format is: IDN= ***NAME*; NARDA,AMB-8057; *R.rr MM/YY*;Serial No.; dataprobe; ON|OFF HH:mm** (X**q**) **each** Y**h; ALARM;*** Where: **Name** is the ID string saved with the command **#F7SIDN** **R.rr** is the release version and ***MM/YY*** the date of the firmware. **Serial No.** is an alphanumerical string that distinguishes the unit (serial number) **Dataprobe** is the date of the latest calibration in the format dd.MM.YY (day.month.year) (for HP-1B-01 only in dual probe configuration) • First interval **ON**|**OFF** only one of the two strings is present to indicate whether the incoming call is enabled or not **HH:mm** (X**q**) **each** Y**h** displays the MODEM start schedule, exactly as in the command **#F7?TSM*** • Second interval **ON**|**OFF** only one of the two strings is present to indicate whether the transmission of the report via SMS is enabled or not

	HH:mm (X**q**) **each** Y**h** displays the MODEM start schedule, exactly as in the command **#F7?TSS*** **ALARM** displays the status of the alarms in progress (not masked) in symbolic mode as in the command **#F7?ALR*** When receiving a command like the following **#F7?IDNF PASSPMM*** First the unit verifies that the Password PASSPMM in the command is the same previously memorized in the unit, then it returns the expected string if: • It is connected directly via RS232 regardless of the correctness of the password • It is connected via modem and the password has been successfully verified • It is receiving a command via SMS and the password has been successfully verified (in this case all succeeding commands in the same SMS will be accepted as well). The expected response string of the example is ***#F7 IDN=Prova_NARDA;NARDA,AMB-8057/02; 0.01 28/04;0987654321; 07.04.05;ON 02:00 (1q) each 24h;----------;**** It identifies the field monitor NARDA model AMB-8057; serial number 0987654321; Firmware released in April 2004, Version 0.01; Date of latest calibration April 7, 2005; Programmed time to switch on the modem set at 02:00 for fifteen minutes only once a day; Call by unit enabled. No alarms active. If the Password is incorrect (although required) the response string is: **#F7 DENIED***
?CLK (clock)	Request complete clock. The response returns the time in the format: **#F7 CLK:**HH.mm.ss;GG.MM.YY* H = hour m = minutes s = seconds G = days M = Month Y = Year **#F7 CLK:20.02.09;19.10.00***
?STA (status)	Request Alarm Status. The response returns a string with the relative alarms in the format: **#F7 STA=AWLVPTCawlvp*** A = threshold of ALARM exceeded W = threshold of Attention exceeded L = ALARM for tampering V = ALARM for low battery P = ALARM for PROBE malfunction (for HP-1B-01 only in dual probe configuration) T = ALARM for temperature C = ALARM for memory almost saturated a = threshold of ALARM regained w = threshold of Attention regained l = Tampering ALARM ended v = Battery ALARM ended p = PROBE ALARM ended the hyphen (-) means the specific alarm is not active **#F7 STA=------V-L--***

?MSK (mask)	Request Status of Alarm SCREEN. The response returns a string with the relative alarms active in the format: **#F7 MSK=WwAaPpVvLIT MODEM SMS*** The same symbols are used as for ?STA The inclusion of the string MODEM means the alarm is active on the MODEM function. The inclusion of the string SMS means the alarm is in progress on the SMS function **#F7?MSK*** Response **#F7 MSK=--A-----L--*** **#F7?MSK*** Response **#F7 MSK=--A-----L—MODEM*** **#F7?MSK*** Response **#F7 MSK=--A-----L—SMS*** **#F7?MSK*** Response **#F7 MSK=--A-----L—MODEM SMS ***	
?BAT (battery)	Request Battery Voltage Status. The response indicates the voltage in VOLT and hundredths of VOLT in the format: **#F7 BAT=V.vv***	**#F7 BAT=4.10***
?RPT (Report)	Request of data relative to max field recorded by latest reading and battery voltage at the time. The time and date of the event are supplied. For example, the command **#F7 ?RPT*** returns the response **#F7 REPORT=MAX:0.70 V/m 18:08 28/10/00** **Battery=4.10V 18:05 28/10/00***	
?RPT0 (Report & reset)	Request of data relative to max field recorded by latest reading and battery voltage at the time. The time and date of the event are supplied, but in addition, the stored value of the field is reset so as to start over for a new period. For example, the command **#F7 ?RPT0*** returns the response **#F7 RPT=MAX:0.70 V/m 18:08 28/10/00** **Battery=4.10V 18:05 28/10/00***	
?TMP (temp.)	Request Temperature. The response returns the temperature in degrees Centigrade in the format: **#F7 TMP=tt***	**#F7 TMP=22.75***
?PRB (probe)	Request PROBE data. The response returns the probe model, latest calibration date, unit of measurement and divider in the format: **Triband Probe** • **#F7 PRB=NAME:dd.MM.YY; unit: divider:range:minlevel** **Quadriband Probe** • **#F7 PRB=NOME:dd.MM.YY; unit: divider:range:minlevelWide:4: minlevelSubBand *** **SingolBand Probe** • **#F7 PRB=NOME:dd.MM.YY; unit: divider:range:minlevel:S *** Dual-probe configuration: answers related to the two probes connected are provided, in the same format as above, separated by the semicolon ";" character. • **#F7 PRB=NAME:dd.MM.YY; unit: divider:range:minlevel:S; PRB=NAME:dd.MM.YY; unit: divider:range:minlevel:S ***	**#F7 PRB=EP 330:13.09.00; V/m: 100.:300.:.3.*** In case of Dual-probe configuration: **#F7 PRB=HP-1B-01:24.12.10; uT : 100.: 180.: .04:S;PRB=EP 3TB:24.12.10; V/m: 100.: 300.: .45:S***

?TDMn **T**elephone **D**irectory **M**odem	Request **MODEM** phone **no.** (n may be 0 o 1). The response returns the number requested, if any, or VOID in the following format: **#F7 TDMn=xxxxxxxxxxx*** For example, the command **#F7 ?TDM1*** returns the response **#F7 TDM1=VOID***	
?TDM telephone Directory Modem	Request **MODEM** phone list. The response returns the numbers, if any, or VOID in the following format (every number is separated by<LF>: **#F7 TDM=** **xxxxxxxxxxx** **VOID** ****	**#F7 TDM=** **1234568565** **VOID** ****
?TDS telephone Directory SMS	Request **SMS** phone list. The response returns the numbers, if any, or VOID in the following format (every number is separated by <LF>: **#F7 TDS=** **xxxxxxxxxxx** **void** ****	**#F7 TDS=** **1234568565** **VOID** ****
?TDSn **T**elephone **D**irectory **S**ms	Request **SMS** phone **no.** (n may be 0 or 1). The response returns the number requested, if any, or VOID in the following format: **#F7 TDSn=xxxxxxxxxxx*** For example, the command **#F7 ?TDS1*** returns the response **#F7 TDS1=1234568565***	
?ALR Alarm	Request ALARM threshold. The response returns the threshold in the current unit followed by the average time (in minutes) on which it is calculated: In case of Dual-probe configuration, the answer is related to the field of the probe set as the reference one (see command SAA).	**#F7 ALR= 6.0; 6***
?THA	Request battery voltage limits (min-max) and temperature (min-max). These values correspond to the alarm thresholds. The response returns the 4 parameters in the format: THA=Vmin;Vmax; Tmin; Tmax	**#F7 THA=3.90;4.98; -10; 50***
?TS**M** Time Schedule Modem	Request Time Schedule Settings for **MODEM**. The format is: **#F7 TSM=ON|OFF HH:mm (Xq) each Yh (DIS)*** where: **ON|OFF** indicates if the call from the station to the controlling PC is enabled or not**;** **HH.mm** expresses the starting time of the modem (on and Stand-By). **Xq** expresses the time **in Quarters of an HOUR** that the MODEM is on (maximum 24 quarters of an hour). **Yh** expresses how often the operation must be repeated. (**DIS**) informs whether the disable command (see **SDMO**) is on. The lack of the string (DIS) indicates that the function is disabled and that the modem will therefore function correctly at the required time. For example, the command **#F7 ?TSM*** returns the response: **#F7 TSM=OFF 14:53 (1q) each 24h*** which confirms that the modem is started at 14:53 and will remain on for 15 minutes and this will repeated every day.	

?TS**S** Time Schedule SMS	Request Time Schedule Settings for **SMS**. The format is as follows: **#F7 TSS=ON|OFF HH:mm (Xq) each Yh (DIS)*** where: **ON|OFF** indicates if the call from the station to the controlling PC is enabled or not**;** **HH.mm** expresses the starting time of the modem/GSM (on and Stand-By). **Xq** expresses the time **in Quarters of an HOUR** that it is on (maximum 24 quarters of an hour). **Yh** expresses how often the operation must be repeated. (**DIS**) informs whether the disable command (see **SDMO**) is on. The lack of the string (DIS) indicates that the function is disabled and that the modem will therefore function correctly at the required time. For example, the command **#F7 ?TSS*** returns the response: **#F7 TSS=OFF 12:00 (4q) each 24h*** which confirms that the modem/gsm is started at 12:00 and will remain on for 1 hour and this will be repeated every day.
?FST	Request Time and Date of first available reading. This Time-Date correspond to that of the first event saved after the command SCAM (data cancellation) or SAQ_ (Rate of storing). If the memory of the unit is completely full so that the first item has been overwritten, the response is **"----------"** **example #F7 ?FST*** returns the response: **#F7 FST=15:18 14/04/05*** meaning that the first reading available in chronological order is the one relative to 14/04/2005 at 15:18
?AQ_	Request current acquisition mode setting: the response is given in the following format **#AQ**_LTR***** where:L is an index that goes from 0 to 4 and represents the rate of storing as follows" "0" = 30 seconds "1" = 1 minute "2" = 2 minutes "3" = 6 minutes "4" = 15 minutes T indicates an internal status and is not significant for any purpose R expresses the type of average used A= AVG; R=RMS **example #F7 ?AQ_*** returns the response: **#F7 AQ_=43A*** which means that the station is storing data every 15 minutes and the average is AVG.
?LFA	Request latest average value. The response returns the value with the current unit followed by the time (in minutes) of the average on which it has been calculated (the same indicated in the command ALR). In case of Dual-probe configuration, the answer is related to the field of the probe set as the reference one (see command SAA). **Example #F7 ?LFA*** returns the response: **#F7 LFA=1.23 V/m;06*** which means that the average of the last 6 minutes is 1,23 V/m

?MES	Request instant value (not averaged) of field. This command requests the elementary value for each band in the format: Triband Probe: • **#F7 MES=W.WW;L.LL;H.HH V/m*** where: • W.WW is the wide band field probe value • L.LL is the low pass band field probe value (<862 MHz) • H.HH is the high pass band field probe value (>933MHz) • V/m Label Unit of measurement Quadriband Probe: • **#F7 MES=W.WW;A.AA;B.BB;C.CC V/m*** where: • W.WW is the wide band field probe value • A.AA is the band1 field probe value (950 MHz) • B.BB is the low pass band field probe value (1850 MHz) • C.CC is the low pass band field probe value (2150 MHz) • V/m Label Unit of measurement Monoband Probe: • **#F7 MES=W.WW;; V/m*** where: • W.WW field probe value • V/m Label Unit of measurement Dual probe configuration: • **#F7 MES=W.WW;S.SS ; Unit_P, Unit_S*** where: • W.WW field value of Primary probe • W.WW field value of Secondary probe • **Unit_P unit of Primari probe** • **Unit_S* unit of secondary probe** It should be noted that, due to the delay for data transfer from probe->unit->RS232, the reading refers to the acquisition value of the previous sampling (minimum ≥ 3 seconds, maximum <6 seconds).

?MESR	Request instant value (not averaged) of field **continuously**. This command requests the elementary value for every band as for the previous command "**?MES**" but enables continuous transfer of the elementary data as soon as they are available (~3 seconds). This command can be useful, for example, to record separately all the elementary data processed by the station. In this case the prefix "**#F7**" and the suffix '*****' are omitted. Triband Probe: • **MES=W.WW;L.LL;H.HH V/m** where: • W.WW is the wide band field probe value • L.LL is the low pass band field probe value (<862 MHz) • H.HH is the high pass band field probe value (>933MHz) • V/m Label Unit of measurement Quadriband Probe: • **MES=W.WW;A.AA;B.BB;C.CC V/m** where: • W.WW is the wide band field probe value • A.AA is the band1 field probe value (950 MHz) • B.BB is the low pass band field probe value (1850 MHz) • C.CC is the low pass band field probe value (2150 MHz) • V/m Label Unit of measurement Monoband Probe: • **MES=W.WW;; V/m** where: • W.WW field probe value • V/m Label Unit of measurement Dual-probe configuration: • **#F7 MES=W.WW;S.SS ; Unit_P, Unit_S*** where: • W.WW field value of the Primary probe • W.WW field value of the Secondary probe • **Unit_P unit of Primary probe** • **Unit_S* unit of Secondary probe** To disable continuous transmission just send the command "**?MES**" Note that when this command is enabled the absorption of the station, due to the full activity of the UART, is much greater than normal (~ 10 time greater)
?EVN	Request record of events. The response returns the complete list of all events recorded by the unit. The terminator is **#F7 END_EVENTS*** This command does not return any data in **SMS** mode but only the terminator feedback **EVN N/A.**
?EVNL	Request record of latest 20 events. The response returns the list of the latest 20 events recorded by the unit. The terminator is **#F7 END_EVENTS*** This command does not return any data in **SMS** mode but only the terminator feedback **EVN N/A.**
?EVNR	Request record of events not yet read. The response returns the complete list of all events recorded by the station since the last reading. The terminator is **#F7 END_EVENTS*** This command does not return any data in **SMS** mode but only the terminator feedback **EVN N/A.**

7.4 Setting COMMANDs These commands are used to make settings on the monitoring station so that the unit can respond with an SMS message containing the corresponding information or confirmation.
The setting commands are characterized by the presence of the character **S** in the string.

Command	Meaning	Example of Response
SPSW	Save new Password. The command responds with the string #F7 PSW0=psw* if successful, otherwise with #F7 ERROR* Syntax: #**F7 SPSW** psw***** **psw** is the Password that will be saved and must be alphanumerical. At least one space is required for separation between SPSW and the string. Every additional initial space is removed. This command is always accepted when connection is in direct mode (without MODEM or SMS) or via MODEM or SMS if the current Password has been verified (with the command "?IDN psw"	**#F7 PSW0=PASSPMM***
SACL	Autocalibration of monitoring station and control of integrity of probe axes. Although the monitoring station automatically calibrates itself periodically (every 7 days at 23:00), it is possible to force the action using this command **#F7 SACL ***	**#F7 ACL=OK***
SCAM	Complete cancellation of data memory. This command is used to cancel the entire data memory on condition that all the data have been downloaded (with the command ?FLD). The immediate response is #F7 CAM=ERR* if there are still data that have not yet been downloaded with the command ?FLD, otherwise the response is #F7 CAM=OK* **#F7 SCAM***	**#F7 SCAM=OK***
SCLT	Set clock time. The response returned is the same as the response to the command ?CLK **#F7SCLT** HH.mm.ss * H = hour m = minutes s = seconds	**#F7 CLK:20.02.09;19.10.00***
SCLD	Set clock date. The response returned is the same as the response to the command ?CLK **#F7SCLD** DD.MM.YY * D = days M = Month Y = Year	**#F7 CLK:20.02.09;19.10.00***
SIDN	Set station ID. The maximum length is 20 characters. The response returned is the same as the response to the command ?IDN **#F7SIDN** Istituto Marconi, 23*	**#F7 IDN=Istituto Marconi 23; AMB-8057; A.00 10/00;***

SMSK	Set alarm window. The window must contain the mnemonic symbols representing the individual alarms as shown in the table. The order of the symbols is not important. A = threshold of ALARM exceeded W = threshold of Attention exceeded L = ALARM for tampering V = ALARM for low battery P = ALARM for PROBE malfunction T = ALARM for temperature C = ALARM for memory almost saturated a = threshold of ALARM regained w = threshold of Attention regained l = Tampering ALARM ended v = Battery ALARM ended p = PROBE ALARM ended S= Enabled set to **SMS** M= Enabled set to **MODEM** The response is the same as the response to the command "?MSK" For example: **#F7SMSK** AL* enables threshold alarms and protective case opening. **Note that to have a call on alarm the relevant device (either MODEM or SMS) must also be enabled**	
SALR x.x	Set Alarm Threshold. The setting xx.x establishes the threshold value: #F7SALR 6.0* In case of Dual-probe configuration, the answer is related to the field of the probe set as the reference one (see command SAA). The response is the same as response to command?ALR	**#F7 ALR= 6.0; 6***
SWRNx.x	Set Attention Threshold. The setting xx.x establishes the threshold value: #F7SWRN 4.0* In case of Dual-probe configuration, the answer is related to the field of the probe set as the reference one (see command SAA). The response is the same as response to command?WRN	**#F7 WRN= 4.0; 6***
SAVG x	Set average time for alarm and attention threshold. The setting x is expressed in minutes: #F7SAVG 4.0* In case of Dual-probe configuration, the answer is related to the field of the probe set as the reference one (see command SAA). The response is the same as response to command?ALR	**#F7 ALR= 6.0; 6***

SAAx	**This command is valid in Dual-probe configuration only** Set the reference probe on which measurement will be related the field strenght Alarm and Warning thresholds as well as response to the commands MES and LFA. The command **#F7SSAAS*** sets the Secondary probe (mounted on the Primary one) as the reference, field thresholds and readings (MES, LFA) will be therefore related to this Secondary probe. The response to #F7SSAAx* is the same as received by the **?ALR** command. The command **#F7SSAAP*** sets the Primary probe (mounted directly on the main unit) as the reference, field thresholds and readings (MES, LFA) will be therefore related to this Primary probe. The response to #F7SSAAx* is the same as received by the **?ALR** command.
STHA0 V.V	Set Minimum battery voltage alarm threshold. V.V is expressed in Volt. The response is the same as response to command **?THA** The value is limited to the admissible range and rounded to the intrinsic resolution of the unit. **AMB-8057/00 and AMB-8057/02 –** Minimum value from 3,0 to 3,9 V Example #F7STHA0 3.00* sets the threshold of minimum battery voltage as 3,00V obtaining the response: **#F7 THA=3.00;4.07; -10; 60*** **AMB-8057/01 and AMB-8057/03 –** Minimum value from 3,90 to 4,05 V Example #F7STHA0 3.90* sets the threshold of minimum battery voltage as 3,90V obtaining the response: **#F7 THA=3.90;4.68; -10; 60***
STHA1 V.V	Set Maximum battery voltage alarm threshold. V.V is expressed in Volt. The response is the same as response to command **?THA** The value is limited to the admissible range and rounded to the intrinsic resolution of the unit. **AMB-8057/00 and AMB-8057/02 –** Maximum value from 3,9 to 4,2 V Example #F7STHA1 4,10* sets the threshold of minimum battery voltage as 4,1V obtaining the response: **#F7 THA=3.00;4.07; -10; 60*** **AMB-8057/01 and AMB-8057/03 –** Maximum value from 4,54 to 5,25 V Example #F7STHA1 4,7* sets the threshold of Maximum battery voltage as 4,7V obtaining the response: **#F7 THA=3.90;4.68; -10; 60***

STHA2 T	Set Minimum temperature alarm threshold. T is expressed in Centigrade degrees. The response is the same as response to command ?THA The value is limited to the admissible range –20°C ÷+10°C and rounded to the intrinsic resolution of the unit. Example #F7STHA2 -10* sets the minimum temperature threshold at -10°C. obtaining the response: #F7 THA=3.90;4.68; -10; 60*
STHA3 T	Setting of maximum temperature alarm threshold. T is expressed in Centigrade degrees. The response is the same as response to command ?THA The value is limited to the admissible range +40°C ÷+60°C and rounded to the intrinsic resolution of the unit. Example #F7STHA3 60* sets the maximum temperature threshold at 60°C. obtaining the response: #F7 THA=3.90;4.68; -10; 60*
STDMn Telephone Directory Modem	Set MODEM telephone number in the directory. The format is as follows: #F7 STDMn xxxxxxxxxx* where: n represent the position in the list and must be 0 or 1 xxxxxxxxxx expresses the telephone number. To change a number just overwrite the previous number and to delete a number just enter a new number that starts with 00000. The response has the same format as the command ?TDMn. For example the command #F7 STDM1 987654321* returns the response: #F7 TDM1=987654321*
STDSn Telephone Directory Sms	Set SMS telephone number in the directory. The format is as follows: #F7 STDSn xxxxxxxxxx* where: n represent the position in the list and must be 0 or 1 xxxxxxxxxx expresses the telephone number. To change a number just overwrite the previous number and to delete a number just enter a new number that starts with 00000. The response has the same format as the command ?TDSn. For example the command #F7 STDS1 0000000* returns the response: #F7 TDS1=VOID*
SDMO	Set the command to disable MODEM function. This command is accepted only if there is a battery alarm active. When the battery alarm ends, the status of disable function will be automatically cancelled. The response to this command is identical to ?TSM. For example, the command #**F7 SDMO*** returns the response: #**F7 TSM=14:53 (1q) each 24h*** which, in the absence of the string **(DIS),** informs that the disable command has been ignored.

STS**M** Time Schedule Modem	Set **MODEM** time schedule. The format is as follows: **#F7 STSM HH.mm.xx.ee*** where: **HH.mm** expresses the MODEM switch on time (on and Stand-By). **xx** expresses the time in **Quarters of an HOUR** of time the modem is on (maximum 24 quarters of an hour). **ee** expresses how often the operation has to be repeated. NOTE: The numbers must always consist of two digits and no spaces can be used in the time, duration and repetition, which must be sub-multiples of 24 hours. The response has the same format as the command ?TSM. For example, the command #**F7 STSM 14.53.01.24*** returns the response: **#F7 TSM=14:53 (1q) each 24h*** confirming that the modem will go on at 14:53 and stay on for 15 minutes and this will be repeated every day at the same time.
STSS Time Schedule SMS	Set SMS time schedule. The format is as follows: #F7 STSS HH.mm.xx.ee* where: HH.mm expresses the MODEM/GSM start time (on and Stand-By). xx expresses the time in Quarters of an Hour of time the modem is on (maximum 24 quarters of an hour). ee expresses how often the operation has to be repeated. NOTE: The numbers must always consist of two digits and no spaces can be used in the time, duration and repetition, which must be sub-multiples of 24 hours. The response has the same format as the command ?TSS. For example, the command #F7 STSS 12.00.04.24* returns the response: #F7 TSS=12:00 (4q) each 24h* confirming that the modem/gsm will go on at 12:00 and stay on for 1 hour and this will be repeated every day at the same time.
SENC ENable Call	This command enables calls from the AMB-8057 to the control center. When enabled, at the scheduled time (STSM) the MODEM switches on, registers with the server and makes a call to the first number saved in the MODEM phone directory, following the call procedure. After the call, it remains in Stand-by condition for the rest of the time. Note that this command only enables the call and not MODEM startup at the scheduled time, which remains effective in any case. The response has the same format as the command ?TSM. For example, #F7 SENC* returns the response: #F7 TSM=ON 14:53 (1q) each 24h* confirming that the station is enabled for the call (ON) at given schedule and modes.
SENR ENable Report	This command enables sending the report via SMS. When enabled, at the scheduled time (STSS) the GSM is switched on, makes the call and sends the SMS message containing the report to all the numbers saved in the SMS phone directory: after sending all the messages it remains in Stand-by condition for the rest of the time. Note that this command only enables message transmission and not GSM activation at the scheduled time, which remains enabled in any case. The response has the same format as the command ?TSS. For example, #F7 SENR* returns the response: #F7 TSS=ON 12:00 (2q) each 24h* confirming that the station is sending SMS messages (ON) at given schedule and modes.
SDIC **DI**sable **C**all	This command disables the call by the unit to the control center. If disabled, at the scheduled time (STSM) the MODEM switches on, registers with the server and remains in reception mode ready to receive any calls or SMS messages. The response has the same format as the command ?TSM. For example, #**F7 SDIC*** returns the response: **#F7 TSM= 14:53 (1q) each 24h*** confirming that the station is disabled for the call, at given schedule and modes.

SDIR **DI**sable **R**eport	This command disables sending the report via SMS. When disabled, at the scheduled time (STSS) the GSM switches on, makes the call and remains in reception mode ready to receive calls or SMS messages. The response has the same format as the command ?TSM. For example, #**F7 SDIR*** returns the response: #**F7 TSS= 12:00 (2q) each 24h*** confirming that the station is disabled for the call, at given schedule and modes.
SATH **H**ANG	This command ends the communication in progress and is equivalent to having the station hanging up. It should always be used to end the communication as it confirms that the data exchange has ended. The response is always #**F7 ATH=OK*** Example: #**F7 SATH***
SATH0 **H**ANG	Like the previous command, this one disables the communication in progress and is equivalent to having the station hanging up, then it switches the MODEM off. To allow it to complete any functions in progress correctly, the Modem is switched off after a time ranging from 1 to a maximum of 2 minutes. During this time the GSM can be called again. The response is always #**F7 ATH=OK*** Example: #**F7 SATH0***
SCNL Call Number Later	Format: #**F7 SCNL d nnnnnnnn *** where **d** is in minutes and ranges from 1 to 9 and **nnnnnnnn** is the number to be called. This command enables a deferred call to the number **nnnnnnnn** indicated. The call will be made d minutes later than the scheduled time. For example, #**F7 SCNL 5 018220346*** returns the response: #**F7 SCNL=018220346*** confirming that the station will call back the number indicated.
SAQ_	Set acquisition mode: the response is identical to that of command **?AQ_** The format is as follows: #**SAQ_LTR*** where: L is the rate of storing and goes from • 0 (30 seconds) • 1 (1 minute) • 2 (2 minutes) • 3 (6 minutes) • 4 (15 minutes) T must be “3” R expresses the type of average used A= AVG; R=RMS example #**F7 SAQ_13R*** returns the response: #**F7 AQ_=13R*** confirming that the station is set to save data every minute using RMS average.
SRST	Restore Default configuration. The command restores the main parameters as follows: • Alarms all masked • Calls from station by appointment disabled • SMS from station by appointment disabled • Average period = 6 minutes • Average in progress reset • Type of average = RMS • **Interval 1** Modem switched on at 12:05 every 24 hours for 1 hour • **Interval 2** Modem switched on at 16:00 every 24 hours for 1/2 hour • **AMB-8057/02** - Minimum battery charge alarm threshold = 3,0V • **AMB-8057/03** - Minimum battery charge alarm threshold = 3,9V • **AMB-8057/02** - Maximum battery charge alarm threshold = 3,9V • **AMB-8057/03** - Maximum battery charge alarm threshold = 5,02V • Minimum temperature alarm threshold = 0 °C • Maximum temperature alarm threshold = 50 °C The response indicates everything is OK with the string: **RST=OK**

SRST**R**	Restore Default configuration and rate of storing. The command, in addition to restoring the main parameters like SRST, also sets the rate of saves and executes the RESET (**ReBoot**) as follows: • **Save every 6 Minutes** • Alarms all masked • Calls from station by appointment disabled • SMS from station by appointment disabled • Average period = 6 minutes • Average in progress reset • Type of average = RMS • **Interval 1** Modem switched on at 12:05 every 24 hours for 1 hour • **Interval 2** Modem switched on at 16:00 every 24 hours for 1/2 hour • **AMB-8057/00 and AMB-8057/02** - Minimum battery charge alarm threshold = 3,0V • **AMB-8057/01 and AMB-8057/03** - Minimum battery charge alarm threshold = 3,9V • **AMB-8057/00 and AMB-8057/02** - Maximum battery charge alarm threshold = 3,9V • **AMB-8057/01 and AMB-8057/03** - Maximum battery charge alarm threshold = 5,02V • Minimum temperature alarm threshold = 0 °C • Maximum temperature alarm threshold = 50 °C The answer indicates the result of operation with the string **RST RATE=OK** To permit the accomplishment of the residual running functions (for example, to send the return SMS at the same command), the reboot complete comes postponed of 30 seconds from the identification of the command. Consequently, each activity or command will be interrupted to expiring of the 30th second for which, in modem connection eventual command “SATH” (neither necessary neither indispensable) it would have to be send within this time. **Extreme care should be taken in using this command as it invalidates all the data already saved considering them as not significant.**

7.5 GPRS COMMANDs

These commands are used by the user to establish a connection with a Access Point or FTP server, to enable the GRPS or point-to-point CSD connection and to set time/date using the SMS provider's information.
The GPRS commands are characterized by the presence of the character **GPR** in the string.

Connection Data		
Field	**Description**	**Setting command** Command to be issued by either SMS or RS232
GPR**0** **APN** Access Point Name	The provider name of the GPRS bearer.	#F7SGPR**0** <apn>* where <apn> is Access Point Name Example: #F7SGPR**0** web.omnitel.it*
GPR**1** **GUN** User Name for Gprs access	The User Name required for logging-in. Sometimes this field might not be required and thus can be left empty.	#F7SGPR**1** <gun>* where <gun> is the User Name of GPRS access. Example: #F7SGPR**1** MyGPRS*
GPR**2** **GPSW** Password for Gprs access	The Password required for logging-in. Sometimes this field might not be required and thus can be left empty.	#F7SGPR**2** <gpsw>* where <gpsw> is the Password of GPRS access. Example: #F7SGPR**2** 1234*

FTP Connection Data		
Field	**Description**	**Setting command** Command to be issued by either SMS or RS232
GPR**3** **FUN** User Name for FTP access	The User Name required for accessing to the FTP server. This word is usually issued from the FTP administrator and is nothing to do with the bearer.	#F7SGPR**3** <fun>* where <fun> is the User Name for FTP. Example: #F7SGPR**3** MyFTP*
GPR**4** **FPSW** Password for FTP access	The Password required for accessing to the FTP server. This word is usually issued from the FTP administrator and is nothing to do with the bearer.	#F7SGPR**4** <fpsw>* where < fpsw > is the Password for FTP. Example: #F7SGPR**4** abcd*
GPR**5** **FIP** FTP IP Address	This parameter is the server address for FTP (IP Address of FTP). Normally this is the static IP Address that routes the file transferring process to the wanted server	#F7SGPR**5** <fip>* where < fip > is the IP Address for FTP. Example: #F7SGPR**5** 194.183.2.17*

MISC		
Field	**Description**	**Setting command** Command to be issued by either SMS or RS232
CGN Connect GPRS Now	This command starts a GPRS connection immediately. All the procedures are then the same as it would for a scheduled connection. a	#F7SCGN*
CGNL Connect GPRS Now (Last Events)	This command starts a GPRS connection immediately as for CGN but it forces to have a EVENT.TXT file containing the last 20 events instead of the most recent, and not yet loaded, ones .	#F7SCGNL*
CGNA Connect GPRS Now (All Events)	This command starts a GPRS connection immediately as for CGN but it forces to have a EVENT.TXT file containing all the events available instead of the most , and not yet loaded, ones .	#F7SCGNA*
NETE Enable GPRS protocol	This command enables the AMB8057 to connect via GPRS instead of point-to-point GSM-MODEM connection. The reply is the same as for command ?TSM	#F7SNETE*
NETD Disable GPRS protocol	This command disables the AMB8057 GPRS and enables point-to-point GSM-MODEM connection. The reply is the same as for command ?TSM	#F7SNETD*
STS id Set Timedate SMS	This command sets the internal real clock time by using the SMS provider's information. To use it **id** (the AMB8057 telephone number) must be sent. This command works assumes that the SMS provider gives the correct Clock/Date and its feedback is within 30 seconds. The reply is sent only if the real time clock has been updated and is the same as for the command "?CLK"	#F7SSTS nnnnnnnn* where nnnnnnnn is the telephone number of AMB8057

8 - Accessories

8.1 Introduction

This chapter provides the necessary information for installation and use of the Accessories of the AMB-8057 Systems for Distributed Monitoring of Environmental Electromagnetic Fields.
It also includes information regarding the initial inspection, power requirements, connections, working environment, assembly, cleaning, storage and shipment.

8.2 Initial inspection

Check the package for any damages.

If the packing materials or protective materials are damaged, check the equipment and make sure it is complete with all parts and intact, without any mechanical or electrical damage.
Check the accessories with reference to the packing list enclosed with the device.
Report any damages at once to the shipping company and to NARDA.

8.3 Working environment

The working environment for the accessories, unless specified otherwise, must be in the following ranges:

- Temperature from -20°C to +50°C
- Humidity (without condensation) ≤ 98% relative (45°C)

The accessories should be stored in a clean, dry place free of acids, dusts and humidity.
The storage environment must be in the following ranges:

- Temperature from -25°C to + 70°C
- Humidity (without condensation) < 99% relative

8.4 Returning for repair

Any part of the instrument – with the sole exception of the battery of AMB-8057/00 and AMB-8057/02 - can only be replaced by NARDA, therefore, in case of damage to parts and/or malfunctions, contact the NARDA service center.
When the instrument have to be returned to NARDA for repair, the User is kindly requested to fill out the questionnaire enclosed with this Users Manual and write all the required service information and a full description of the malfunction, to enable NARDA to repair the device in the shortest possible time.
To reduce the time necessary for the repair, be as specific as possible in describing the malfunction. If the problem only occurs under specific conditions, detail in the best possible way how to reproduce these conditions.
Whenever possible, use the original packing when returning items, and make sure to wrap the device in heavy paper or plastic.
If the original package material is no longer available, use a sturdy card box and a sufficient quantity of impact absorbing material all around the equipment to provide a tight fit and prevent its moving inside the packing.
In particular, take every precaution to protect the solar panels.
Seal the packing securely and write FRAGILE on the container to encourage better care in handling.

8.5 Cleaning

Use a clean, dry, soft cloth to clean the instruments.

Do not use solvents, acids, turpentine, acetone or similar products to clean the instruments to prevent damages.

8.6 *Battery charger (AMB-8057/01 and AMB-8057/03 only)*

8.6.1 Recharging the batteries of stations equipped with solar panel

AMB-8057/01 and AMB-8057/03 Field Monitor are equipped with an autonomous power unit and are powered jointly by a rechargeable internal battery and directly by solar panels. The units can also be connected to an additional plug-in battery charger.

If, for example, the Field Monitor is used indoor for a prolonged period and there is no direct sunlight illumination, the internal battery could run down and undergo damage. In this case it is advisable to recharge the battery using the plug-in battery charger before switching on again the unit.

The battery charger connector should be plugged into the specific outlet on the Solar Panel module, located underneath the solar panel. The photograph shows the position and use of the connector.

☞NOTE **Use of the battery charger is not recommended during measurement, as it may introduce noises that could noticeably affect the readings.**

The battery charger must be used with a mains frequency of 50/60 Hz and voltage of 100-240V.

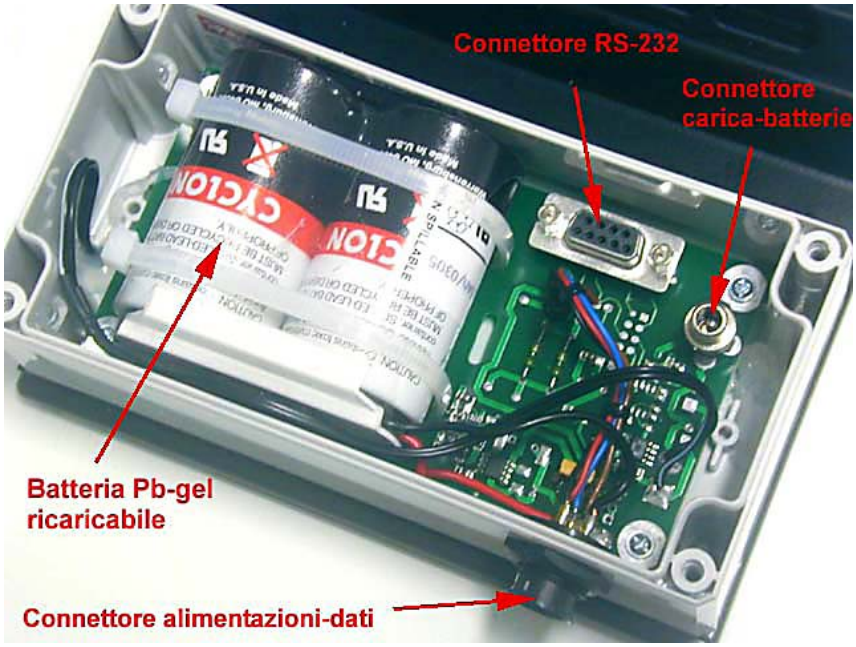
☞NOTE **Use only the battery charger supplied, which provides current at a 6V DC, 300mA max.**

It takes about 48 hours to perform a complete battery recharge.
To connect the battery charger it is necessary to remove the cover of the Solar Module unscrewing the 4 screws on the bottom panel of the module.

Power unit / plug-in battery charger.

NOTE

When recharging, the Data-Supply connector shall be connected.



Detail of internal connection to Solar Module unit.

NOTE

After using the plug-in battery charger, before installing the field monitor outdoors, make sure the cover on the Solar Module is securely closed , in order to prevent any moisture from penetrating the unit.

8.7 *8057-MAST Supporting pole*

8.7.1 Installation of the Field Monitor on the mast

NARDA recommends to install all NARDA Field Monitoring Stations on the special mast that rests on a sturdy metal base.

Fig. 8-1 AMB-8057/02 on its mast without joint

Fig. 8-2 AMB-8057/02 on its mast with swivel joint

Fig. 8-3 AMB-8057/03 on its mast without joint

Fig. 8-4 AMB-8057/03 on its mast with swivel joint

TABLE 8-1 8057-MAST Technical Specifications

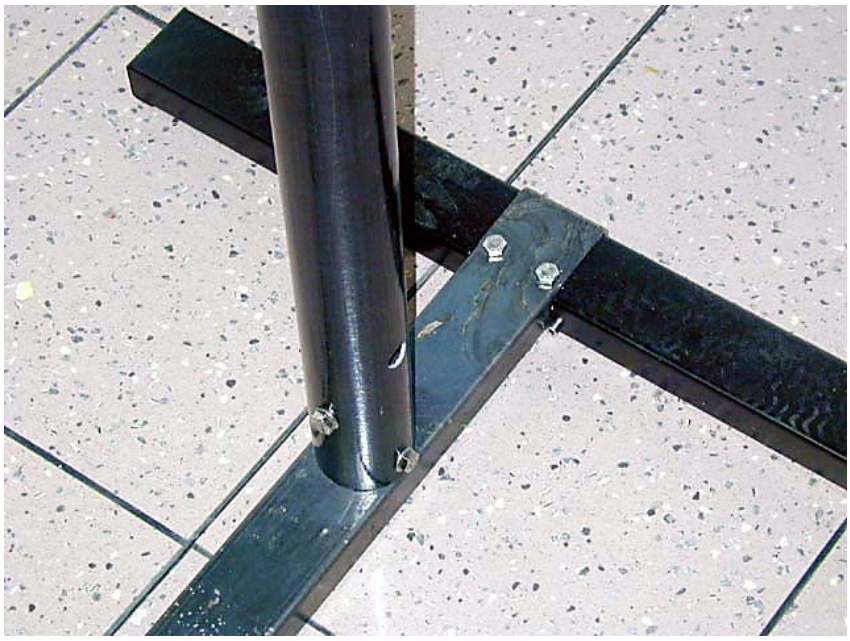
Base material	Varnished iron
Mast material	Fiberglass
Dimensions	(WxDxH) 600 x 600 x 2000 mm
Exterior mast diameter	60mm
Total weight	
AMB-8057/02	approx 5,5 kg (with field monitoring station)
AMB-8057/02 with swivel joint	approx 6,5 kg (with field monitoring station)
AMB-8057/03	approx 6,6 kg (with field monitoring station)
AMB-8057/03 with swivel joint	approx 7,7 kg (with field monitoring station)

8.7.1.1 Metal base

First, assemble the “T” base with the two screws supplied, then position the base where it will be installed, making sure it is leveled to ensure stability.

8.7.1.2 Mast

The mast fits inside the pipe stub at the center of the base. Match the holes on the pole with those on the stub and fasten with the four 8MAx20mm bolts as shown in the figure below.



The 8057-MAST kit is complete with the tools necessary for installation (13 mm hexagonal wrench and bolts).

8.7.1.3 Bags

The Field Monitor is usually installed outdoors where atmospheric agents, especially strong winds, can endanger its stability.

To ensure the necessary stability under the worst possible conditions, the unit is supplied with three ballast bags that can be filled with water or sand and fastened to the base of the mast as shown in the following examples.

Fasten the ballast bags to the mast using the plastic straps.

The hook at the top of the mast serves for fastening the nylon wind strays supplied with the kit.

8.8 Installation of the field monitor on the mast.

8.8.1 Indoor use

See the following instructions to install the field monitor on the mast **for indoor use only**.

- Loose the central screw

- Unscrew and remove the two fastening screws from the swivel joint

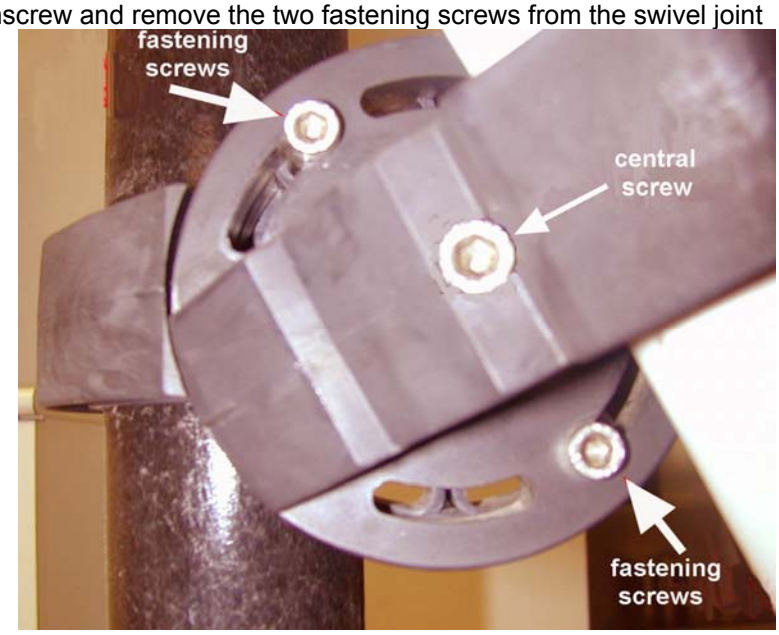


Fig. 8-5 Swivel joint

- Turn the field monitor to the desired position

- Fasten the central screw;

- Replace and fasten the two screws in the joint slots

Fig. 8-6 Horizontal position of AMB-8057/02

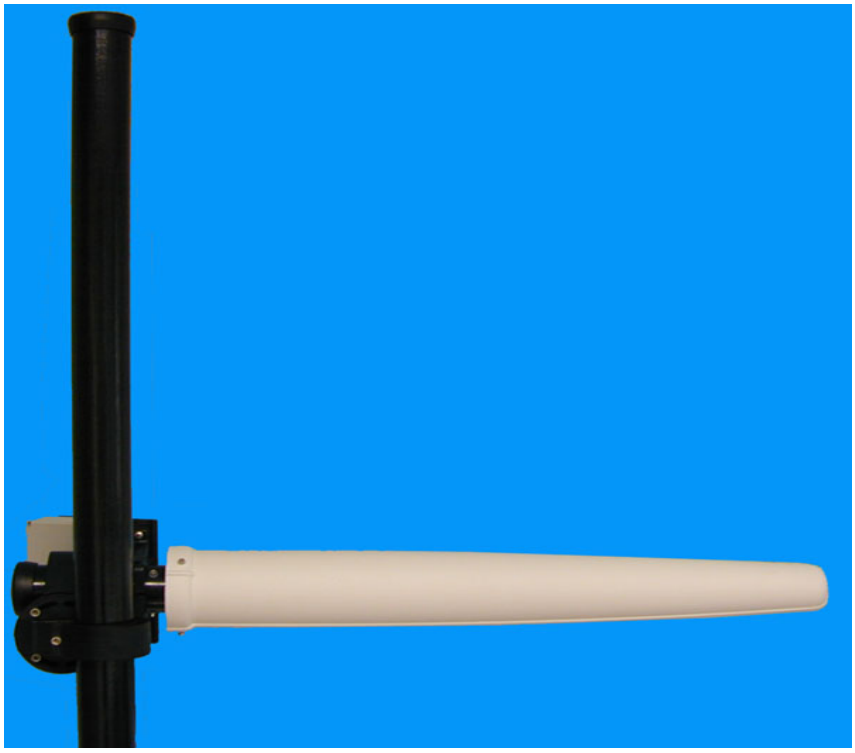


Fig. 8-7 Horizontal position of AMB-8057/03

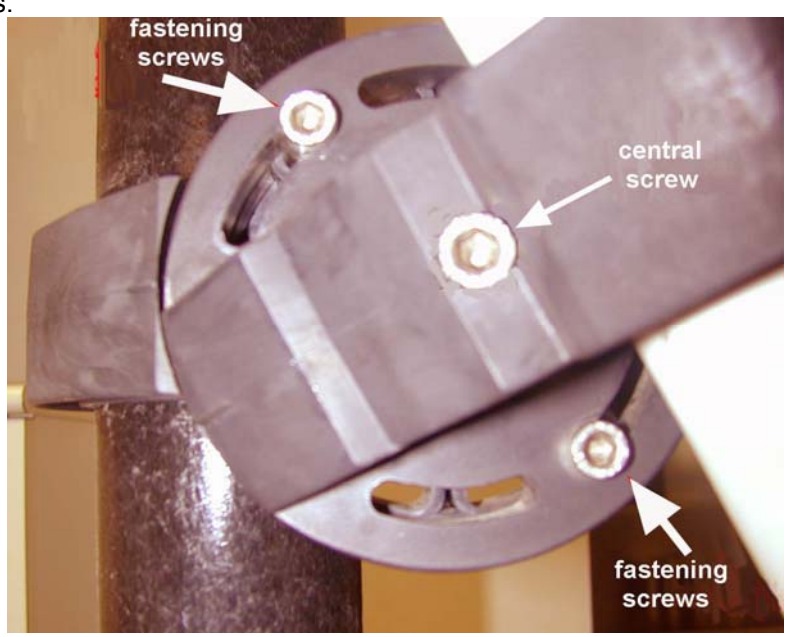
NOTE

You can turn the field monitor in any angle when using it indoor.

8.8.2 Outdoor use

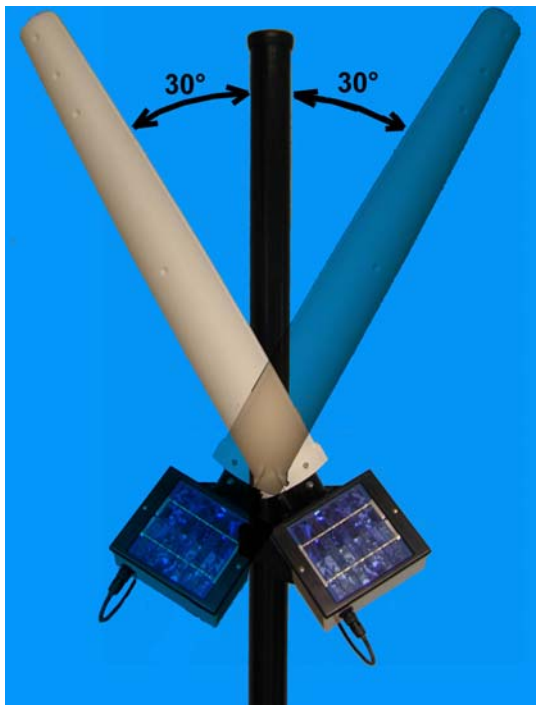
- Loosen the central screw.

- Loosen the two fastening screws without removing them from the plate slots.



NOTE

During the outdoor use, the two screws limit the range of rotation. (about 30 degree from the mast).



- Turn the field monitor to the desired position.

- Fasten the central screw.

- Fasten the two screws in the plate slots.

9 – Action of the wind on the AMB-8057

9.1 Introduction

This section provides the information necessary to install and use the Area Monitor Broadband AMB-8057 in the presence of wind.
The Field Monitor is usually installed outdoors where the strong winds can endanger its stability that depends on the weight and eventual ballast bags or nylon wind strays.
Depending on the AMB-8057 models and wind speed, it is possible to calculate the weight of the ballast bags through the tables below to guarantee the stability of the apparatus.

WARNING

It is necessary to calculate the speed and pressure of the wind in the place of installation; through the table it is possible to determine if it is necessary to use the ballast bags with their full weight or to fasten the nylon wind strays

The models of the AMB-8057 are:
- AMB-8057/02 without swivel joint;
- AMB-8057/02 with swivel joint;
- AMB-8057/03 without swivel joint
- AMB-8057/03 with swivel joint.

AMB-8057/02
(without swivel joint)

AMB-8057/02
(with swivel joint)

AMB-8057/03
(without swivel joint)

AMB-8057/03
(with swivel joint)

9.2 AMB-8057/02 without joint

Table 9-1 Wind resistance of the AMB-8057/02 without swivel joint

Wind speed [km/h]	Wind speed [m/s]	Aerodynamic form	Air density [N/mc]	Wind pressure [N/m^2]	Overturning moment [Nm]	Stabilizing moment [Nm]	Weight ballast [N]	NOTE
3,60	1,00	1,20	1,25	0,75	0,13	0,19	-54,06	Ballast bags not necessary
7,20	2,00	1,20	1,25	3,00	0,50	0,75	-51,23	
10,80	3,00	1,20	1,25	6,75	1,13	1,70	-46,51	
14,40	4,00	1,20	1,25	12,00	2,01	3,02	-39,90	
18,00	5,00	1,20	1,25	18,75	3,15	4,72	-31,41	
21,60	6,00	1,20	1,25	27,00	4,53	6,79	-21,03	
25,20	7,00	1,20	1,25	36,75	6,16	9,25	-8,77	
28,80	8,00	1,20	1,25	48,00	8,05	12,08	5,39	Ballast bags filled with water
32,40	9,00	1,20	1,25	60,75	10,19	15,29	21,43	
36,00	10,00	1,20	1,25	75,00	12,58	18,87	39,35	
39,60	11,00	1,20	1,25	90,75	15,22	22,83	59,17	
43,20	12,00	1,20	1,25	108,00	18,12	27,17	80,87	
46,80	13,00	1,20	1,25	126,75	21,26	31,89	104,46	
50,40	14,00	1,20	1,25	147,00	24,66	36,99	129,94	
54,00	15,00	1,20	1,25	168,75	28,31	42,46	157,30	
57,60	16,00	1,20	1,25	192,00	32,21	48,31	186,55	
61,20	17,00	1,20	1,25	216,75	36,36	54,54	217,69	
64,80	18,00	1,20	1,25	243,00	40,76	61,14	250,71	
68,40	19,00	1,20	1,25	270,75	45,42	68,12	285,62	
72,00	20,00	1,20	1,25	300,00	50,32	75,48	322,42	
75,60	21,00	1,20	1,25	330,75	55,48	83,22	361,10	
79,20	22,00	1,20	1,25	363,00	60,89	91,34	401,68	
82,80	23,00	1,20	1,25	396,75	66,55	99,83	444,14	Ballast bags filled with sand
86,40	24,00	1,20	1,25	432,00	72,46	108,70	488,48	
90,00	25,00	1,20	1,25	468,75	78,63	117,94	534,72	
93,60	26,00	1,20	1,25	507,00	85,05	127,57	582,84	
97,20	27,00	1,20	1,25	546,75	91,71	137,57	632,85	
100,80	28,00	1,20	1,25	588,00	98,63	147,95	684,74	
104,40	29,00	1,20	1,25	630,75	105,80	158,70	738,52	Fastening the nylon wind strays
108,00	30,00	1,20	1,25	675,00	113,23	169,84	794,19	
111,60	31,00	1,20	1,25	720,75	120,90	181,35	851,75	
115,20	32,00	1,20	1,25	768,00	128,83	193,24	911,19	
118,80	33,00	1,20	1,25	816,75	137,00	205,50	972,52	
126,00	35,00	1,20	1,25	918,75	154,11	231,17	1100,85	
129,60	36,00	1,20	1,25	972,00	163,05	244,57	1167,84	
133,20	37,00	1,20	1,25	1026,75	172,23	258,34	1236,72	
136,80	38,00	1,20	1,25	1083,00	181,66	272,50	1307,48	
140,40	39,00	1,20	1,25	1140,75	191,35	287,03	1380,14	
144,00	40,00	1,20	1,25	1200,00	201,29	301,94	1454,68	

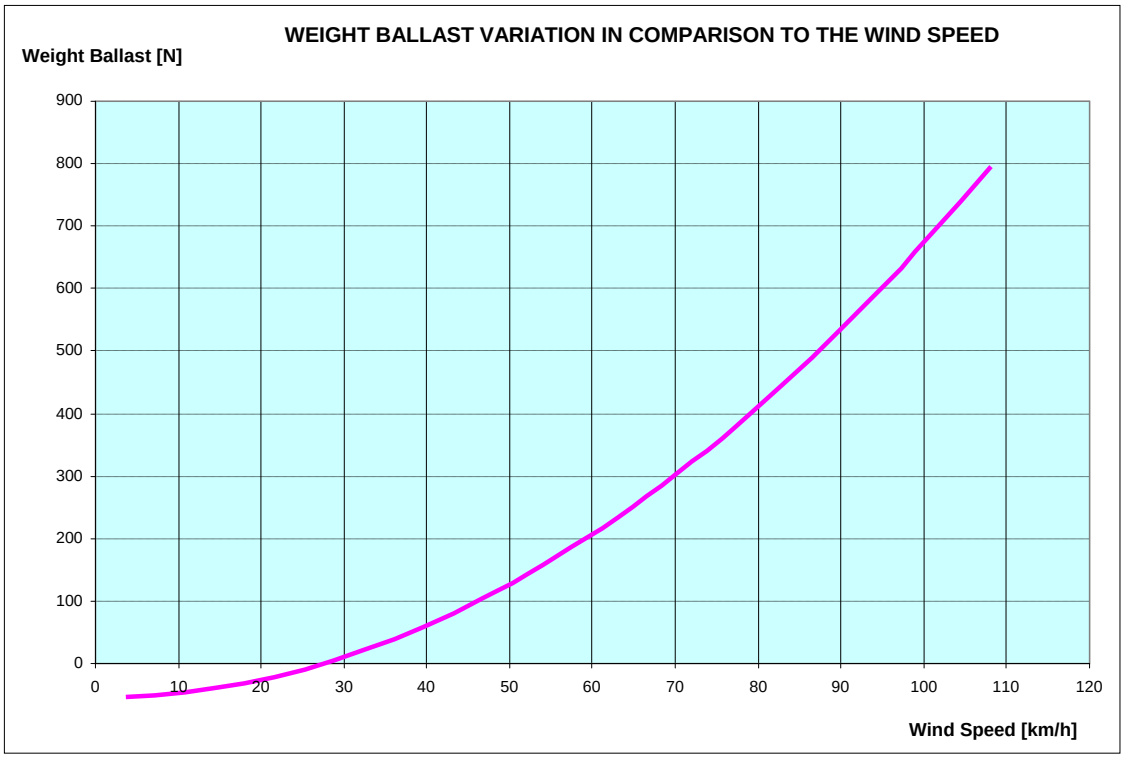


Fig. 9-1 Weight Ballast variation in comparison to the wind speed for AMB-8057/02 without joint

9.3 AMB-8057/02 with joint

Table 9-2 Wind resistance of the AMB-8057/02 with swivel joint

Wind speed [km/h]	Wind speed [m/s]	Aerodynamic form	Air density [N/mc]	Wind pressure [N/m^2]	Overturning moment [Nm]	Stabilizing moment [Nm]	Weight ballast [N]	NOTE
3,60	1,00	1,20	1,25	0,75	0,18	0,27	-63,65	Ballast bags not necessary
7,20	2,00	1,20	1,25	3,00	0,72	1,08	-59,61	
10,80	3,00	1,20	1,25	6,75	1,62	2,42	-52,88	
14,40	4,00	1,20	1,25	12,00	2,87	4,31	-43,46	
18,00	5,00	1,20	1,25	18,75	4,49	6,73	-31,34	
21,60	6,00	1,20	1,25	27,00	6,46	9,69	-16,53	
25,20	7,00	1,20	1,25	36,75	8,80	13,19	0,97	Ballast bags filled with water
28,80	8,00	1,20	1,25	48,00	11,49	17,23	21,17	
32,40	9,00	1,20	1,25	60,75	14,54	21,81	44,06	
36,00	10,00	1,20	1,25	75,00	17,95	26,93	69,64	
39,60	11,00	1,20	1,25	90,75	21,72	32,58	97,91	
43,20	12,00	1,20	1,25	108,00	25,85	38,78	128,88	
46,80	13,00	1,20	1,25	126,75	30,34	45,51	162,54	
50,40	14,00	1,20	1,25	147,00	35,19	52,78	198,89	
54,00	15,00	1,20	1,25	168,75	40,39	60,59	237,93	
57,60	16,00	1,20	1,25	192,00	45,96	68,93	279,67	
61,20	17,00	1,20	1,25	216,75	51,88	77,82	324,10	
64,80	18,00	1,20	1,25	243,00	58,16	87,24	371,22	
68,40	19,00	1,20	1,25	270,75	64,81	97,21	421,04	Ballast bags filled with sand
72,00	20,00	1,20	1,25	300,00	71,81	107,71	473,55	
75,60	21,00	1,20	1,25	330,75	79,17	118,75	528,75	
79,20	22,00	1,20	1,25	363,00	86,89	130,33	586,64	
82,80	23,00	1,20	1,25	396,75	94,96	142,45	647,23	
86,40	24,00	1,20	1,25	432,00	103,40	155,10	710,51	
90,00	25,00	1,20	1,25	468,75	112,20	168,30	776,48	Fastening the nylon wind strays
93,60	26,00	1,20	1,25	507,00	121,35	182,03	845,15	
97,20	27,00	1,20	1,25	546,75	130,87	196,30	916,51	
100,80	28,00	1,20	1,25	588,00	140,74	211,11	990,56	
104,40	29,00	1,20	1,25	630,75	150,97	226,46	1067,30	
108,00	30,00	1,20	1,25	675,00	161,56	242,35	1146,73	
111,60	31,00	1,20	1,25	720,75	172,52	258,77	1228,86	
115,20	32,00	1,20	1,25	768,00	183,82	275,74	1313,68	
118,80	33,00	1,20	1,25	816,75	195,49	293,24	1401,20	
122,40	34,00	1,20	1,25	867,00	207,52	311,28	1491,41	
126,00	35,00	1,20	1,25	918,75	219,91	329,86	1584,31	
129,60	36,00	1,20	1,25	972,00	232,65	348,98	1679,90	
133,20	37,00	1,20	1,25	1026,75	245,76	368,64	1778,18	
136,80	38,00	1,20	1,25	1083,00	259,22	388,83	1879,16	
140,40	39,00	1,20	1,25	1140,75	273,04	409,57	1982,83	
144,00	40,00	1,20	1,25	1200,00	287,23	430,84	2089,20	

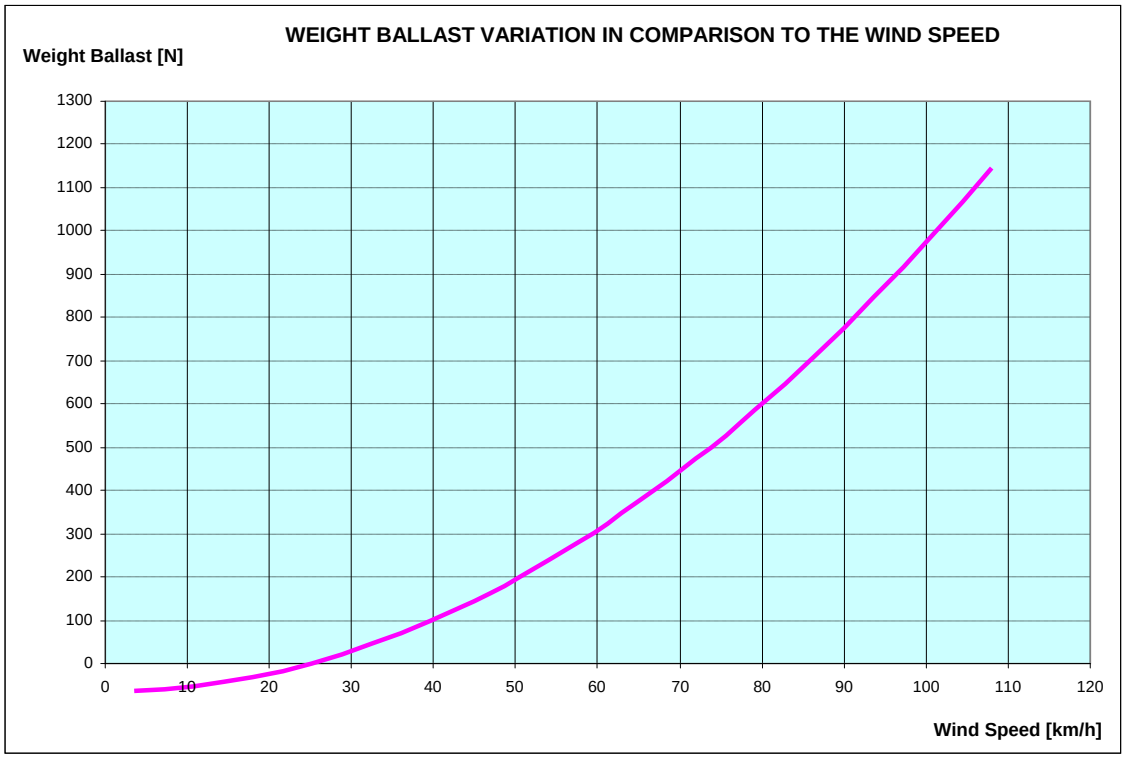


Fig. 9-2 Weight Ballast variation in comparison to the wind speed for AMB-8057/02 with joint

9.4 AMB-8057/03 without joint

Table 9-3 Wind resistance of the AMB-8057/03 without swivel joint

Wind speed [km/h]	Wind speed [m/s]	Aerodynamic form	Air density [N/mc]	Wind pressure [N/m^2]	Overturning moment [Nm]	Stabilizing moment [Nm]	Weight ballast [N]	NOTE
3,60	1,00	1,20	1,25	0,75	0,14	0,21	-64,95	Ballast bags not necessary
7,20	2,00	1,20	1,25	3,00	0,56	0,84	-61,79	
10,80	3,00	1,20	1,25	6,75	1,26	1,90	-56,52	
14,40	4,00	1,20	1,25	12,00	2,25	3,37	-49,15	
18,00	5,00	1,20	1,25	18,75	3,51	5,27	-39,67	
21,60	6,00	1,20	1,25	27,00	5,06	7,58	-28,08	
25,20	7,00	1,20	1,25	36,75	6,88	10,32	-14,39	
28,80	8,00	1,20	1,25	48,00	8,99	13,48	1,41	Ballast bags filled with water
32,40	9,00	1,20	1,25	60,75	11,38	17,06	19,32	
36,00	10,00	1,20	1,25	75,00	14,04	21,07	39,33	
39,60	11,00	1,20	1,25	90,75	16,99	25,49	61,46	
43,20	12,00	1,20	1,25	108,00	20,22	30,34	85,68	
46,80	13,00	1,20	1,25	126,75	23,74	35,60	112,02	
50,40	14,00	1,20	1,25	147,00	27,53	41,29	140,46	
54,00	15,00	1,20	1,25	168,75	31,60	47,40	171,00	
57,60	16,00	1,20	1,25	192,00	35,95	53,93	203,66	
61,20	17,00	1,20	1,25	216,75	40,59	60,88	238,42	
64,80	18,00	1,20	1,25	243,00	45,50	68,26	275,28	
68,40	19,00	1,20	1,25	270,75	50,70	76,05	314,26	
72,00	20,00	1,20	1,25	300,00	56,18	84,27	355,34	
75,60	21,00	1,20	1,25	330,75	61,94	92,91	398,53	
79,20	22,00	1,20	1,25	363,00	67,98	101,96	443,82	Ballast bags filled with sand
82,80	23,00	1,20	1,25	396,75	74,30	111,44	491,22	
86,40	24,00	1,20	1,25	432,00	80,90	121,35	540,73	
90,00	25,00	1,20	1,25	468,75	87,78	131,67	592,34	
93,60	26,00	1,20	1,25	507,00	94,94	142,41	646,06	
97,20	27,00	1,20	1,25	546,75	102,39	153,58	701,89	
100,80	28,00	1,20	1,25	588,00	110,11	165,17	759,83	Fastening the nylon wind strays
104,40	29,00	1,20	1,25	630,75	118,12	177,17	819,87	
108,00	30,00	1,20	1,25	675,00	126,40	189,60	882,01	
111,60	31,00	1,20	1,25	720,75	134,97	202,45	946,27	
115,20	32,00	1,20	1,25	768,00	143,82	215,73	1012,63	
118,80	33,00	1,20	1,25	816,75	152,95	229,42	1081,10	
122,40	34,00	1,20	1,25	867,00	162,36	243,53	1151,67	
126,00	35,00	1,20	1,25	918,75	172,05	258,07	1224,35	
129,60	36,00	1,20	1,25	972,00	182,02	273,03	1299,14	
133,20	37,00	1,20	1,25	1026,75	192,27	288,41	1376,03	
136,80	38,00	1,20	1,25	1083,00	202,80	304,21	1455,04	
140,40	39,00	1,20	1,25	1140,75	213,62	320,43	1536,14	
144,00	40,00	1,20	1,25	1200,00	224,71	337,07	1619,36	

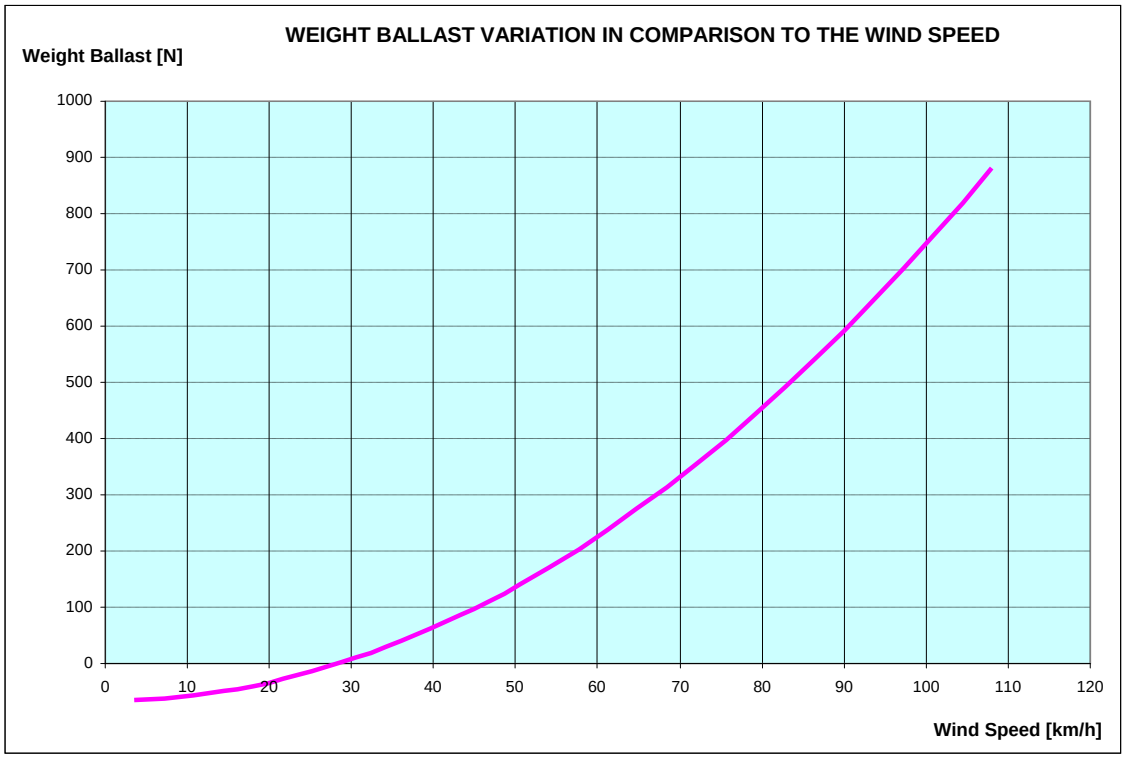


Fig. 9-3 Weight Ballast variation in comparison to the wind speed for AMB-8057/03 without joint

9.5 AMB-8057/03 with joint

Table 9-4 Wind resistance of the AMB-8057/03 with swivel joint

Wind speed [km/h]	Wind speed [m/s]	Aerodynamic form	Air density [N/mc]	Wind pressure [N/m^2]	Overturning moment [Nm]	Stabilizing moment [Nm]	Weight ballast [N]	NOTE
3,60	1,00	1,20	1,25	0,75	0,19	0,29	-75,54	Ballast bags not necessary
7,20	2,00	1,20	1,25	3,00	0,78	1,16	-71,18	
10,80	3,00	1,20	1,25	6,75	1,75	2,62	-63,89	
14,40	4,00	1,20	1,25	12,00	3,11	4,66	-53,70	
18,00	5,00	1,20	1,25	18,75	4,85	7,28	-40,60	
21,60	6,00	1,20	1,25	27,00	6,99	10,48	-24,58	
25,20	7,00	1,20	1,25	36,75	9,51	14,27	-5,65	
28,80	8,00	1,20	1,25	48,00	12,43	18,64	16,20	Ballast bags filled with water
32,40	9,00	1,20	1,25	60,75	15,73	23,59	40,95	
36,00	10,00	1,20	1,25	75,00	19,42	29,12	68,62	
39,60	11,00	1,20	1,25	90,75	23,49	35,24	99,20	
43,20	12,00	1,20	1,25	108,00	27,96	41,94	132,69	
46,80	13,00	1,20	1,25	126,75	32,81	49,22	169,09	
50,40	14,00	1,20	1,25	147,00	38,05	57,08	208,41	
54,00	15,00	1,20	1,25	168,75	43,69	65,53	250,64	
57,60	16,00	1,20	1,25	192,00	49,70	74,56	295,78	
61,20	17,00	1,20	1,25	216,75	56,11	84,17	343,83	
64,80	18,00	1,20	1,25	243,00	62,91	94,36	394,80	
68,40	19,00	1,20	1,25	270,75	70,09	105,14	448,68	Ballast bags filled with sand
72,00	20,00	1,20	1,25	300,00	77,66	116,49	505,47	
75,60	21,00	1,20	1,25	330,75	85,62	128,43	565,17	
79,20	22,00	1,20	1,25	363,00	93,97	140,96	627,79	
82,80	23,00	1,20	1,25	396,75	102,71	154,06	693,31	
86,40	24,00	1,20	1,25	432,00	111,83	167,75	761,76	Fastening the nylon wind strays
90,00	25,00	1,20	1,25	468,75	121,35	182,02	833,11	
93,60	26,00	1,20	1,25	507,00	131,25	196,87	907,37	
97,20	27,00	1,20	1,25	546,75	141,54	212,31	984,55	
100,80	28,00	1,20	1,25	588,00	152,22	228,33	1064,64	
104,40	29,00	1,20	1,25	630,75	163,29	244,93	1147,64	
108,00	30,00	1,20	1,25	675,00	174,74	262,11	1233,55	
111,60	31,00	1,20	1,25	720,75	186,58	279,88	1322,38	
115,20	32,00	1,20	1,25	768,00	198,82	298,22	1414,12	
118,80	33,00	1,20	1,25	816,75	211,44	317,15	1508,77	
122,40	34,00	1,20	1,25	867,00	224,44	336,67	1606,33	
126,00	35,00	1,20	1,25	918,75	237,84	356,76	1706,81	
129,60	36,00	1,20	1,25	972,00	251,63	377,44	1810,20	
133,20	37,00	1,20	1,25	1026,75	265,80	398,70	1916,50	
136,80	38,00	1,20	1,25	1083,00	280,36	420,54	2025,71	
140,40	39,00	1,20	1,25	1140,75	295,31	442,97	2137,84	
144,00	40,00	1,20	1,25	1200,00	310,65	465,98	2252,88	

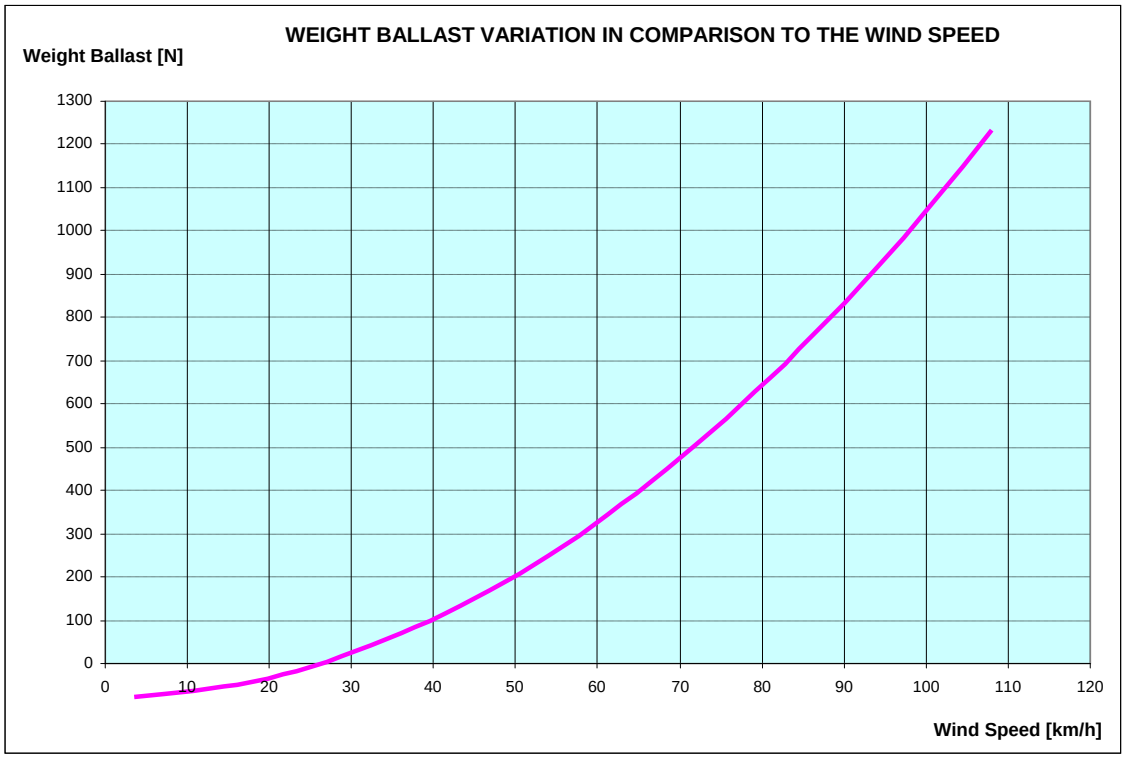


Fig. 9-4 Weight Ballast variation in comparison to the wind speed for AMB-8057/03 with joint

This page has been left blank intentionally

narda Safety Test Solutions
an L3 Communications Company
http://www.narda-sts.it

NARDA Safety Test Solutions S.r.l. Socio Unico

Sales & Support:
Via Leonardo da Vinci, 21/23
20090 Segrate (MI) - ITALY
Tel.: +39 02 2699871
Fax: +39 02 26998700

Manufacturing Plant:
Via Benessea, 29/B
17035 Cisano sul Neva (SV)
Tel.: +39 0182 58641
Fax: +39 0182 586400

Mod. 18-1

Caro cliente
grazie per aver acquistato un prodotto NARDA! Sei in possesso di uno strumento che per molti anni ti garantirà un'alta qualità di servizio. NARDA riconosce l'importanza del Cliente come ragione di esistenza; ciascun commento e suggerimento, sottoposto all'attenzione della nostra organizzazione, è tenuto in grande considerazione. La nostra qualità è alla ricerca del miglioramento continuo. Se uno dei Suoi strumenti NARDA necessita di riparazione o calibrazione, può aiutarci a servirla più efficacemente compilando questa scheda e accludendola all'apparecchio.
Tuttavia, anche questo prodotto diventerà obsoleto. In questo caso, ti ricordiamo che lo smaltimento dell'apparecchiatura deve essere fatto in conformità con i regolamenti locali. Questo prodotto è conforme alle direttive WEEE dell'Unione Europea (2002/96/EC) ed appartiene alla categoria 9 (strumenti di controllo). Lo smaltimento, in un ambiente adeguato, può avvenire anche attraverso la restituzione del prodotto alla NARDA senza sostenere alcuna spesa. Può ottenere ulteriori informazioni contattando i venditori NARDA o visitando il nostro sito Web www.narda-sts.it.

Dear Customer
thank you for purchasing a NARDA product! You now own a high-quality instrument that will give you many years of reliable service. NARDA recognizes the importance of the Customer as reason of existence; in this view, any comment and suggestion you would like to submit to the attention of our service organization is kept in great consideration. Moreover, we are continuously improving our quality, but we know this is a never ending process. We would be glad if our present efforts are pleasing you. Should one of your pieces of NARDA equipment need servicing you can help us serve you more effectively filling out this card and enclosing it with the product.
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.

☑ **Servizio richiesto:** ☑ *Service needed*:

☐ Solo taratura ☐ Riparazione ☐ Riparazione & Taratura ☐ Taratura SIT ☐ Altro:
☐ Calibration only ☐ Repair ☐ Repair & Calibration ☐ Certified Calibration ☐ Other:

Ditta:
Company:

Indirizzo:
Address:

Persona da contattare: *Technical contact person:* **Telefono:** *Phone n.*

Modello: *Equipment model:* **Numero di serie:** *Serial n.*

☑ ***Accessori ritornati con l'apparecchiatura:*** ☐ **Nessuno** ☐ **Cavo(i)** ☐ **Cavo di alimentazione** **Altro:**
☑ *Accessories returned with unit:* ☐ None ☐ Cable(s) ☐ Power cable Other:

☑ ***Sintomi o problemi osservati:*** ☑ *Observed symptoms / problems*:

☑ ***Guasto*:** ☐ **Fisso** ☐ **Intermittente** ***Sensibile a*:** ☐ **Freddo** ☐ **Caldo** ☐ **Vibrazioni** ☐ **Altro**
☑ *Failure*: ☐ Continuous ☐ Intermittent *Sensitive to*: ☐ Cold ☐ Heat ☐ Vibration ☐ Other

Descrizione del guasto/condizioni di funzionamento:
Failure symptoms/special control settings description:

Se l'unità è parte di un sistema descriverne la configurazione:
If unit is part of system please list other interconnected equipment and system set up:

Suggerimenti / Commenti / Note:
Suggestions / Comments / Note: