inStation

INSTALLATION
MANUAL

infield

INSTALLATION PROCEDURE
MONITORING SYSTEM
INSTATION

1. INTRODUCTION

This document is an installation manual for the InStation solo monitoring system and provides a detailed description of the assembly process.

2. PRELIMINARY ANALYSIS OF THE INSTALLATION SITE FOR THE MONITORING SYSTEM

inStation solo is a device designed to transmit information, related to field parameters and weather conditions for the plot of land on which it is installed, to the InField remote platform. A few precautions must be taken to ensure optimum operation:

• Check for the presence of a GPRS signal. Using a smartphone, check that there is a good GPRS signal (check the bars usually displayed in the upper part of the phone screen).

• Choose the most suitable and relevant area in which to install the system: close to the field in which crop monitoring is required and preferably in areas where agricultural machinery does not pass (avoid the middle of the field).

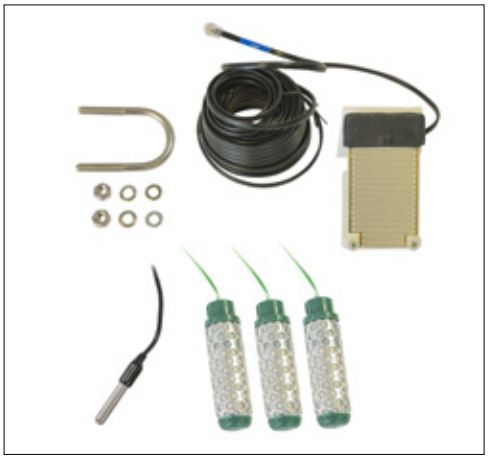
• To ensure correct operation of the rain sensor (rain gauge), wind sensor (anemometer), leaf wetness sensor and photovoltaic panel, check that there are no trees or obstacles (roofs or overhead coverings) and avoid shaded areas.

3. SYSTEM COMPONENTS INSTATION SOLO

Kit 4 Meteo Sensors – Art. 92009

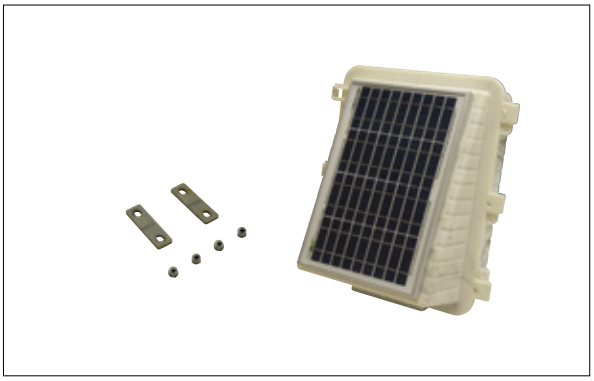
Includes: rain gauge, anemometer, solar radiation sensor, air temperature and moisture sensor.

Kit 3 Agri Sensors – Art. 92008



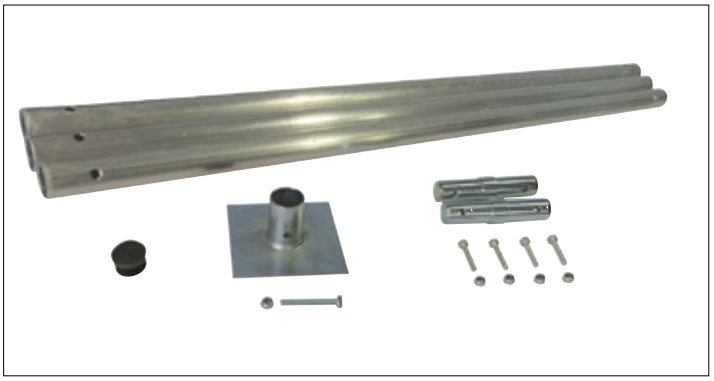
Includes: leaf wetness sensor, soil temperature sensor, soil moisture sensor.

InStation control unit– Art. 92000



Includes: control unit, fixing kit.

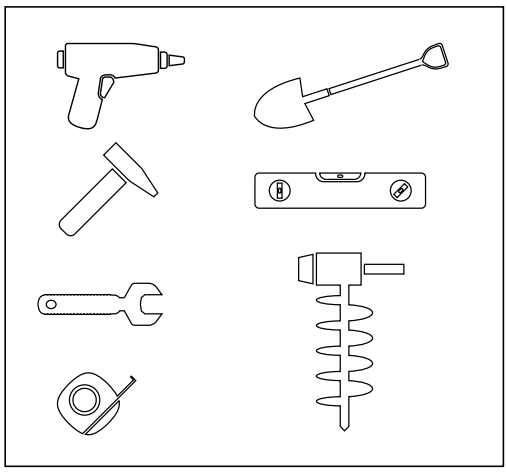
Inpulse Pole – Art. 92005



Includes: 3 poles, 1 fixing base, 1 plug, 2 pole connectors, fixing kit.

4. INSTALLATION EQUIPMENT REQUIRED

(Not included in the supply)



- Drill for drilling a hole in the ground
- Shovel
- Screwdriver with set of standard sockets
- Spanners sizes 10 and 13
- Weather resistant cable ties or straps
- Hammer
- Tape measure
- Spirit level

5. PRE-INSTALLATION ACTIVITIES

Preparation of soil moisture sensors included in Kit 3 Agri Sensors Art. 92008

The soil moisture sensors must be prepared by soaking them in water for at least two hours.

Preparation of Kit 4 Meteo Sensors Art. 92009

Remove from the package all of the items included in Kit 4 Meteo Sensors Art. 92009.

5.1 RAIN GAUGE PREPARATION

1. Remove the anemometer wind blades packed in the upper part of the rain gauge.

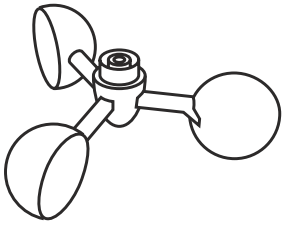
2. Remove the protection cone inserted in the upper part of the rain gauge.

3. Remove the upper rain collector, rotating it in an anti-clockwise direction.

4. Cut the strap securing the internal rocker inside the rain gauge. Reassemble the upper funnel and reinsert the protection cone inside.

5. Fit the 14 bird deterrent spikes into the respective holes and the central deterrent spike into the hole on the protection cone.

1



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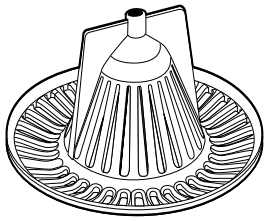

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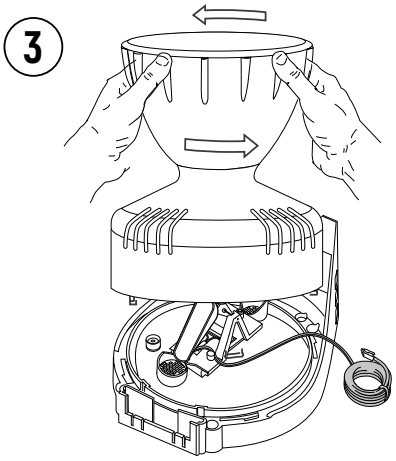

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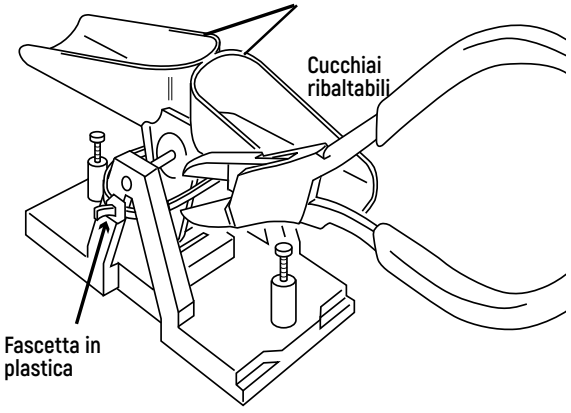


5.2 ANEMOMETER PREPARATION

1. Fit the blades onto the unit using the Allen key supplied.

1

5.3. PREPARATION OF POLE ART. 92005

Fasten the lower pole to the base using the relevant nuts and bolts.

5.3 PREPARATION AND FIXING OF POLE AND POSITIONING OF SENSORS IN THE GROUND

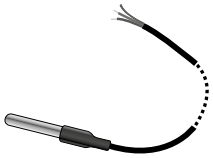
1. After identifying the installation site, use a drill or spade to dig a hole in the ground about 30 cm in diameter and 1 metre deep.

2. Insert the lower pole assembled onto the base into the hole, make sure it is positioned so that it is perfectly perpendicular to the ground. Check it with a spirit level.

Note: do not force the lower pole by hitting the upper end of it, which could damage the anodised finish or make it impossible to fit the upper pole.

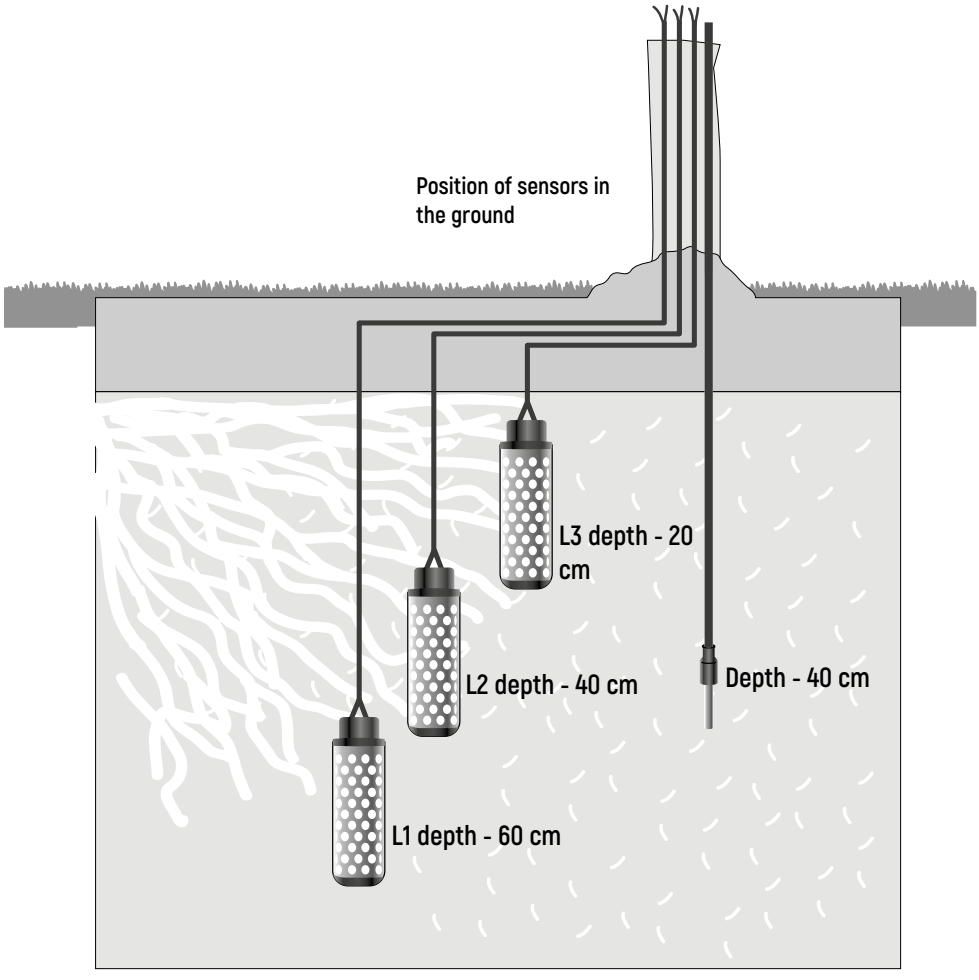
3. Bury the soil moisture sensors, previously soaked in water, beside the pole at the three recommended depths – L1 at 60 cm, L2 at 40 cm and L3 at 20 cm from ground level. The soil temperature sensor should be buried at a depth of about 40 cm. Cover with earth up to ground level, lightly watering the earth after each 20 cm layer.

Soil moisture sensor
92015 L1 - L2 - L3



Soil temperature sensor

Note: take the recommended measurements directly on the sensor wires. Insert one sensor at a time, starting with the one at a depth of 60 cm. The sensors must be covered with earth and watered until the next measurement.

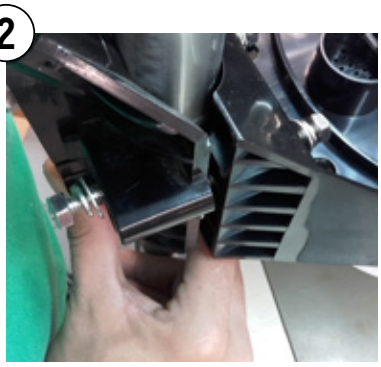


6. ASSEMBLY OF KIT 4 METEO SENSORS ON POLE

1. Insert the connector into the buried pole, securing it with a nut and bolt. Fit the middle pole into the connector just fitted, securing it with a nut and bolt. Repeat the operation to fasten the third pole. Finally, insert the plug into the upper end of the pole.

2. Fasten the previously assembled anemometer and rain gauge onto the upper pole and tighten the relative nuts as shown in the photo.

3. Not previously assembled, fit the arm of the anemometer, inserting it into the relative hole of the anemometer holder, securing it with nuts and screws. Using a compass or the compass function on a smartphone, point the arm towards north.

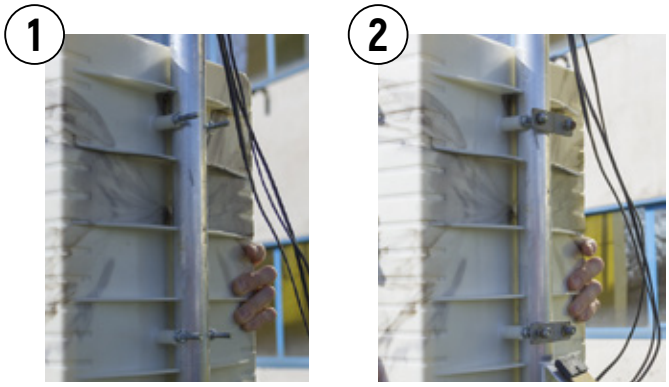


Rain gauge unit detail

Anemometer unit detail

7. INSTALLATION OF CONTROL UNIT ART. 92000

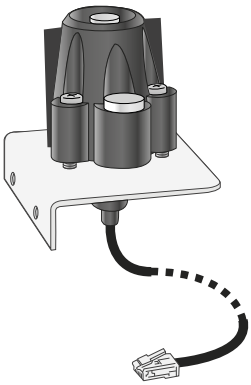
Fasten the control unit to the pole, about 15 cm below the base of the Kit Meteo, using the relative bracket and nuts.



Note: point the photovoltaic panel south, below the rain gauge.

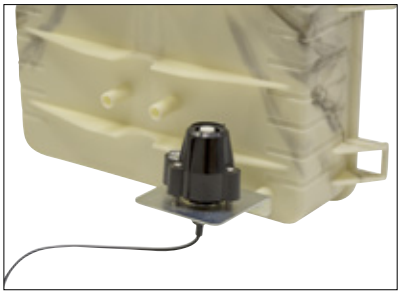
8. INSTALLATION OF SOLAR RADIATION SENSOR

Included in Kit 4 Meteo Sensors Art. 92009



Fasten the solar radiation sensor behind the CABLE BOX. For the assembly, use a 1-1/2” clevis, 1/4” washers and 1/4” nuts.

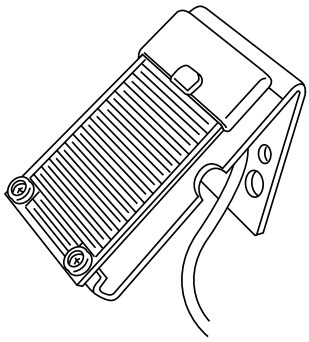
Use a spanner to tighten the nuts.



SENSOR MAINTENANCE

To obtain more accurate readings, clean the diffuser after assembly and at regular periods thereafter. Use ethanol (not isopropyl alcohol).
Readings have been found to deviate by about 2% per year due to the sensitivity of the solar radiation sensors .
For applications requiring greater precision, sensors must be calibrated once a year (not included in the support service).

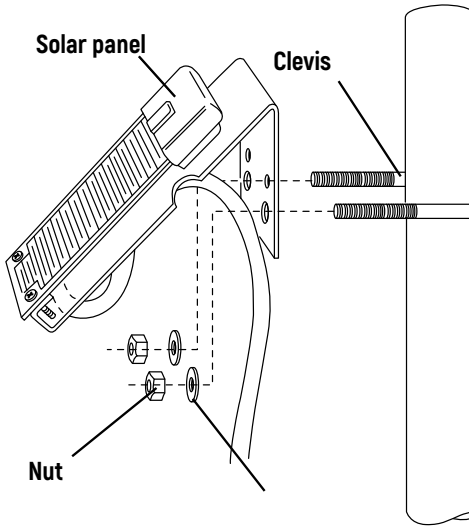
9. INSTALLATION OF LEAF WETNESS SENSOR



Included in Kit 4 Meteo Sensors Art. 92008

To fit the sensor onto the pole, use the 1-1/2” clevis, 1/4” washers and 1/4” nuts, as shown here below.

1



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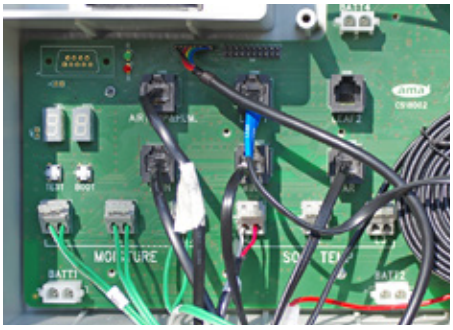
10. CONNECTING SENSORS TO THE CONTROL UNIT

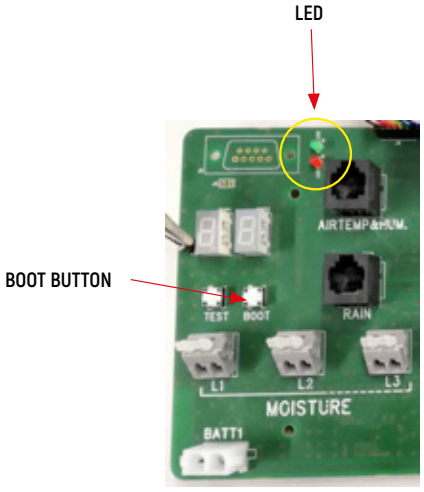


1. Remove the cover from the control unit, removing the hooks securing it.

2. The control unit houses a circuit board equipped with connectors for connecting the sensors. Insert the sensor wires into the respective connectors on the circuit board of the control unit, making sure the wires are passed through the relevant holes (protected with sponge) on the bottom part of the two plastic casings. Each wire is identified with the description marked next to each of the connectors.

3. Connect the battery wires to the relevant connectors on the circuit board.

4. Press the BOOT key on the circuit board. If the procedure has been completed successfully, the green LED light will flash quickly once every 5 seconds.

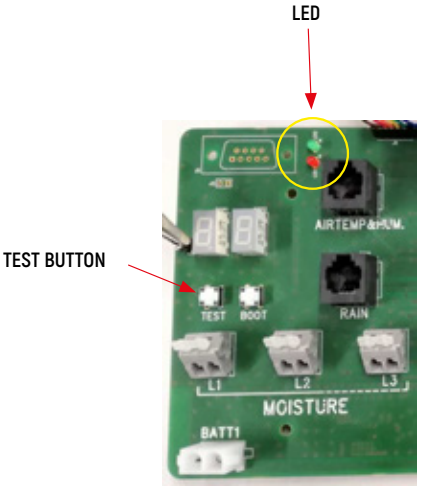


Note: if after pressing the BOOT key, the green and red LED lights turn on simultaneously and remain on and the letters UP appear on the screen, an automatic update procedure is in progress, which may last for a few minutes. Such a condition is normal, but check that when the procedure has finished, the screen turns off and the green LED starts to flash once every five seconds.

	GREEN LED	**RED LED**
No malfunction	1 fast flash every 5 seconds	Off
Malfunction (Proceed with the test stage, pressing the "TEST" button at any time to display details about the cause of the malfunction)	Off	2 flashes per second

11. CHECKING THE INSTALLATION

Note: if the green and red LED lights turn on simultaneously and remain on and the letters UP appear on the screen, an automatic update procedure is in progress. Wait until this procedure has finished before performing the test.



1. Press the TEST button. The red and green LED lights will flash together 5 times per second throughout the test stage, which lasts about a minute.

2. If no errors are found, at the end of the procedure just the green LED will turn on and remain on for 30 seconds. If any malfunctions were detected, just the red LED will turn on and the errors found will be displayed on the screen on a rotating basis.

	GREEN LED	**RED LED**
No malfunction	Remains steady for 30 seconds	Off
Malfunction	Off	Remains on during the entire sequence of errors displayed on the screen

TYPE OF MALFUNCTION	**CODE DISPLAYED ON THE SCREEN**
Critical panel voltage level	A1
Critical battery level	A2
Defective EEPROM	E1
Telit module: communication error	U1
Telit module: insufficient GSM signal	U2
Telit module: insufficient GPS signal	U3

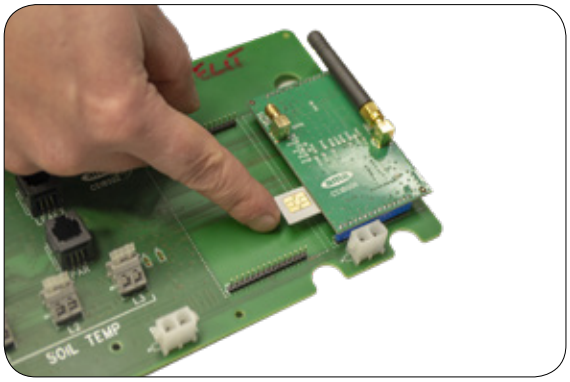
If the testing stage has been completed successfully, proceed with positioning the cables and close the box as shown in the illustration.

12. CHANGING THE APN

If you wish to use a SIM card other than the one supplied, you must configure the APN (Access Point Name) to ensure correct operation of the station. Follow the simple steps shown below to change the APN.

SIM CARD in dotazione

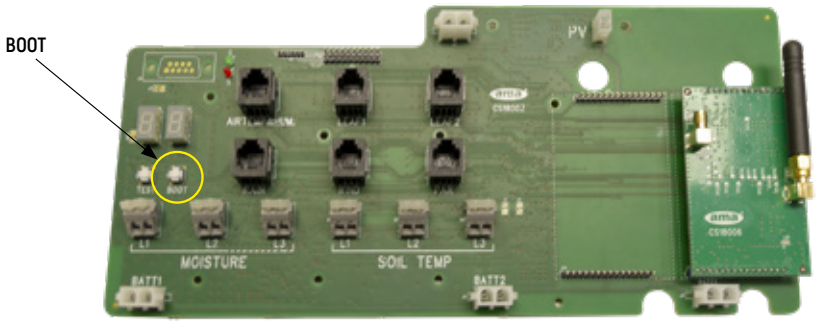
1. Write down the phone number of the new SIM before inserting it into the relevant port.



2. Using a mobile phone, send a text to the number of the new SIM noted down previously containing the following message: $AMA_SET_APN “MyApn.com” MyApn is the new APN provided by the card’s service provider. Pay attention to the lower case and capital letters in the text message.

3. Connect the batteries to the circuit board.

4. Press the BOOT key and perform the TEST procedure.



NOTE: it could take a few hours for the new APN to be received and recorded by the control unit. Performing the TEST procedure facilitates reception of the new APN message.

NOTES

VIA G. PUCCINI, 28 | 42018, SAN MARTINO IN RIO (RE)
TEL.: +39 0522 6369
INFO@INPULSE.TECH

Policy on the treatment of electrical and electronic waste

"Policy on the treatment of electrical and electronic waste: information for users pursuant to Article 13 of Legislative Decree 151 dated 25th July, 2005, "Implementation of Directives 2002/95/EC, 2002/96/EC and 2003/108/EC, on the restriction of the use of certain hazardous substances in electrical and electronic equipment, and on waste disposal". The crossed-out bin symbol on the equipment or packaging indicates that the product must be disposed of separately from other waste at the end of its useful life. Separate disposal of this equipment when it has reached the end of its useful life is arranged and managed by the manufacturer. Users who wish to dispose of this equipment must therefore contact the manufacturer and follow the procedure adopted by the same to enable separate disposal of the equipment at the end of its useful life. Separate disposal enables disused equipment to be recycled, processed and disposed of in an environmentally friendly way, which helps to prevent negative environmental and health impacts and promotes reuse and/or recycling of the materials of which the equipment is composed. Unauthorised disposal of this product by the holder will result in the application of administrative sanctions as foreseen by the regulations in force."