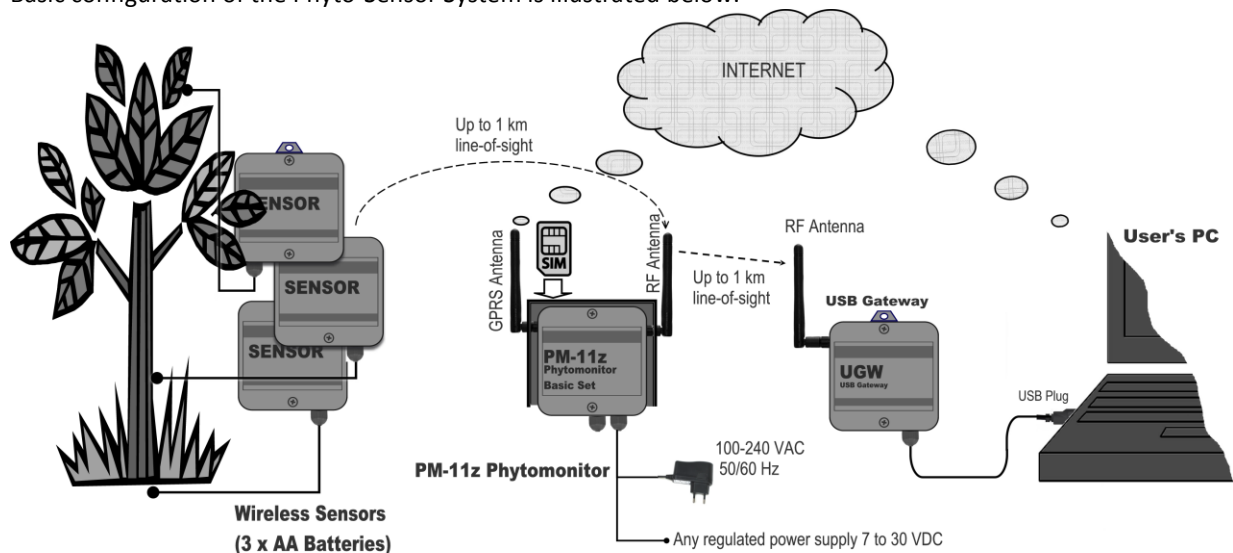# PHYTO-SENSOR™ GROUP
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Phyto-Sensor System™
PM-11z Phytomonitor
Quick Start Guide
(Version 2014-AC)

ABOUT THE PHYTO-SENSOR SYSTEM

Basic configuration of the Phyto-Sensor System is illustrated below:

The System hardware includes a variety of wireless sensors for plant and environment, the data logging PM-11z Phytomonitor, USB Gateway, and several optional communication and powering accessories.

FIRST START

Congratulations! You have the up-to-date wireless battery operated Phyto-Sensor™ system that includes the PM-11z Phytomonitor, USB Gateway, Software CD, and the following optional parts: Router, and a customized set of wireless Phyto Sensors. To put all these parts into operation, you need also a PC (or notebook).It is recommended to do the first start on site keeping the sensors near the PM-11z.

Please follow the recommended procedure:

1. **PM-11z Phytomonitor**
   a. Open the front lid of the PM-11z
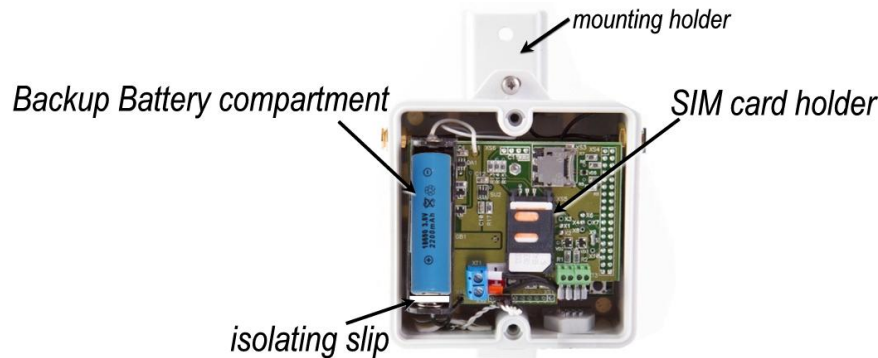
   b. Insert a local SIM card.
   c. Remove the isolating slip from the battery compartment.
   d. Close the lid.
   e. Attach antennas matching the color-coded bands.
   f. Mount the PM-11z using the mounting plate located at the rear side of the PM-11z. For best communication range, mount the PM-11z as high as possible.
   g. Connect the power adapter to the power outlet (90 to 240 Vac, 50/60 Hz).

2. **PC and USB Gateway**
   a. Insert installation CD into your CD drive and install the program.
   b. Insert the USB Gateway's plug into any free USB port of your PC. The green LED located at the USB Gateway indicates that it is activated.
   c. Locate the PM-11z Phytomonitor program icon on desktop, and click it to run the program.
   d. Follow on-screen instructions during program setup. Please select USB connection type on the first screen.
   e. In the <System View> window click <Settings> button. Set 1 min measurement period and 1 in the <Go online after every> box. Click OK.

3. **Sensors**
   a. Take a sensor, unscrew two screws and remove the lid. Please note that, at this stage, the sensor should be located close to the PM-11z Phytomonitor and your PC, i.e. within line-of-sight.
   b. Remove the isolation slip from the battery compartment. This applies power to the sensor's electronics and starts activation procedure. The following light and beep indications represent progressive activation stages:
        i. Short light and beep – beginning of activation.
       ii. Searching network – continuous LED light and no beep. It may take about a minute.
      iii. The network is found – double LED blink and double beep. (If network was not found – continuous beep and LED blinking during 8-10 sec).
       iv. Representing index of communication quality – 1 to 6 beeps of higher tone. Six beeps correspond to excellent quality index. Three to five beeps – acceptable quality index. One or two – low index. If the quality index is low, the following measures are recommended: 1) to place a sensor closer to the PM-11z Phytomonitor; 2) to place a Router between the sensor and the PM-11z Phytomonitor. Important note: the higher the communication quality index, the lesser power is used during communication sessions, and the lifetime of batteries is longer.
   c. You may repeat the activation process as many times as necessary by pressing a reset button. The stage 'iv' allows finding the best location and orientation of the sensor in terms of optimal communication quality. It is important to note that the next activation (i.e. reset) processes may be initiated with the lid closed. There is a magnet-operated switch inside the sensor's electronics. You may use the enclosed magnet stick to reset the sensor from outside as shown in the picture below.
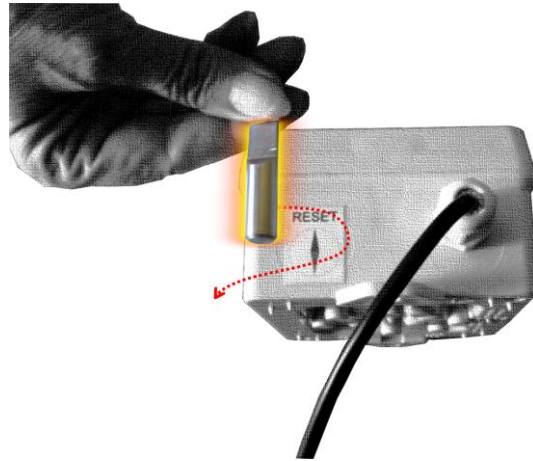
d. When the sensor is activated, close and fix the lid by two screws.

e. Take next sensor and repeat steps 4a-4d.

f. When all sensors have been activated, open the PC program and check readings of all sensors in <Data View> window. The readings are updating every minute.

g. If the readings are reasonable, the startup procedure is completed. Now please go to <Settings> in the <System View> window, and set desired measurement period and communication interval. The recommended values are 10 min and 1 or 2, respectively.

h. Now you may place sensors and other system parts where necessary. Please refer to a particular sensor's documentation to provide correct installation.

4. Router (optional)

The Router simply relays the signals between the PM-11 z and sensors. The Router may be used for two reasons: a) to extend the communication distance between sensors and the PM-11z. In that case, the Router shall be positioned somewhere between the PM-11z and a distant sensor (sensors), and b) to increase the total number of sensors in a single network above 15. The Router may be powered either from the Solar Power Kit or from any regulated power supply 7 to 30 Vdc.

NORMAL SHUTDOWN AND STORAGE

1. Sensors
   - Open a sensor's housing, and remove batteries from the battery compartment.
   - Close the lid and store the sensor and batteries separately in dry place.
2. PM-11z Phytomonitor
   - Open the Phytomonitor's housing, and remove the rechargeable battery.
   - Close the lid and store the Phytomonitor and its battery separately in fry place.
3. USB Gateway
   - Disconnect the USB cable from a PC port. Keep the USB Gateway in dry place.
4. Batteries
   - Please check sensors' batteries with a tester after long-term operation and storage. Please use new standard AA Alkaline batteries when necessary.
   - The rechargeable battery has long lifetime comparable with the lifetime of the PM-11 Phytomonitor. Please contact your supplier for battery replacement if necessary.

NEXT PUTTING INTO OPERATION

1. Please check batteries in insert them into appropriate battery compartment of each sensor.
2. Insert the rechargeable battery into the battery compartment of the PM-11z Phytomonitor.
3. Assemble Tripod and make all connections as described in the First start section.

ACTIVATION OF THE GPRS MODULE

Some PM-11z may come with the GPRS module to provide data transmission over Internet. The activation procedure is following:

- Make sure that the PM-11z is not powered on.
- Open PM-11z box and remove the rechargeable battery.
- Insert a local GPRS-enabled SIM card into the appropriate slot inside the PM-11z box.
- Power the PM-11z on. Establish communication via USB Gateway.
- Open the 'System view' window and click 'GPRS' button. Enter necessary information in empty fields:
    a. Check the 'Upload data...' box.
    b. Set the desired time interval for data transmission.
    c. The GPRS settings shall be acquired from a local GSM operator.
    d. The FTP settings shall be acquired from the appropriate provider. If you have no your own provider, please contact Bio Instruments S.R.L. at support@phyto-sensor.com for arranging data transfer via Bio's FTP server.

Customer Support

If you ever need assistance with your Phyto-Sensor™ System, or if you just have questions or feedback, please e-mail at support@phyto-sensor.com. Please include as part of your message your name, address, phone, and fax number along with a description of your problem.