



PlantCare SMS DryAlarm System

Operating instructions



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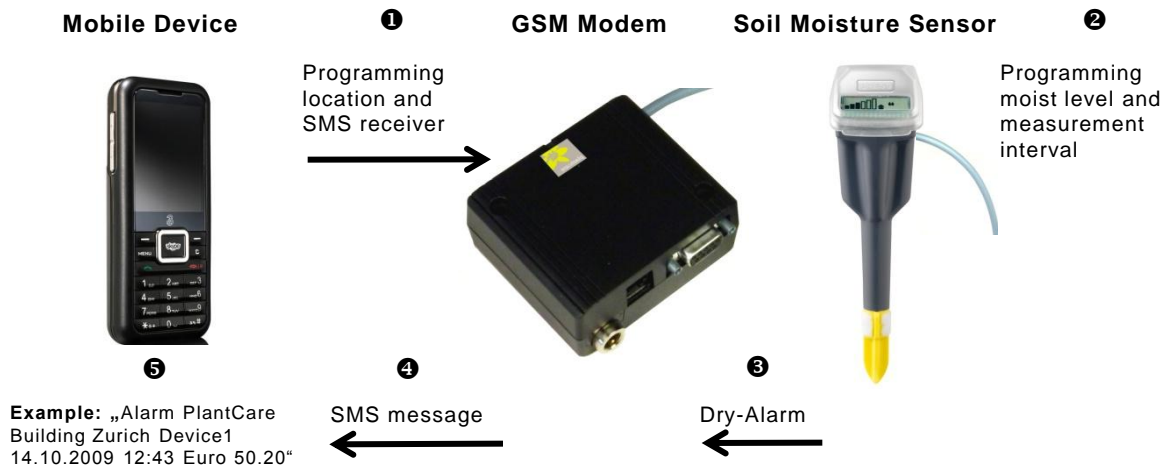
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1. Introduction

Please read these operating instructions carefully before programming and installing the PlantCare SMS DryAlarm System.

1.1 General

The PlantCare SMS DryAlarm System incorporates a soil moisture sensor and a GSM Modem and is used to monitor the moist level of the substrate for high-grade interior landscaping, such as indoor gardens or vertical plant walls, as well as in greenhouses. As soon as the moisture sensor measures a moisture level below a set minimum, a SMS alert is automatically transmitted to a mobile phone of one or several recipients. This means that watering problems are alerted at an early stage and appropriate measures can be taken timely and, therefore, losses of plants can be avoided.



1.2 System features

- Up to 3 moisture sensors can be connected to the GSM Modem.
- The moisture sensor independently measures substrate moisture at selectable intervals of 3 or 6 hours. When the moisture level set on the moisture sensor reaches its minimum, the GSM Modem sends a SMS (dryness alarm). The SMS message contains the following information: Location of the plant, sensor number, date and time and in case a Prepaid SIM card is used, the credit left.
- 3 selectable moisture levels.
- A display on the moisture sensor shows the current moisture level in the substrate, the time between two measurements and the selected moisture level. In case, the re-chargeable batteries have to be replaced or recharged, an empty battery symbol is shown. When a dryness alarm is activated, a red LED starts to blink.
- Programming the GSM Modem by using a mobile phone is fast and easy. Programming requires only to send a SMS to the modem containing the plant location as well as the recipient's number (one or several).
- Thanks to its compact dimensions, the sensor can be discreetly positioned in the planting.

1.3 Technical specifications moisture sensor

- Power supply via the GSM Modem with battery buffer (2 AAA 1.3 VDC rechargeable batteries)
- Splash water proof plastic housing

1.4 Technical specifications GSM Modem

- Power supply with plug-in power unit (230V)
- No internal power supply in case of power black out. System will start normal operation, as soon as power is available again.
- Not watertight

1.5 Delivery contents

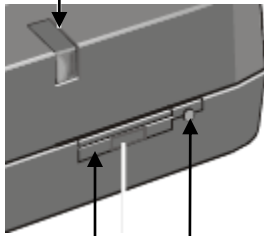
- 1 Moisture sensor incl. 2 rechargeable batteries
- GSM Modem (without SIM card)
- GSM antenna
- Plug-in power supply
- Connection cable from moisture sensor to GSM Modem (5 m)

Optional accessories:

- Additional soil moisture sensor including connection cable (5 m)
- Sensor extension cable (5 m)

1.6. GSM Modem: Input/output Connections

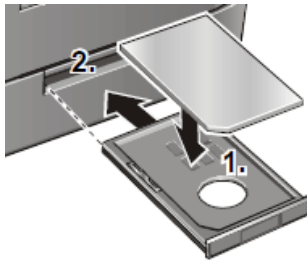
Status LED



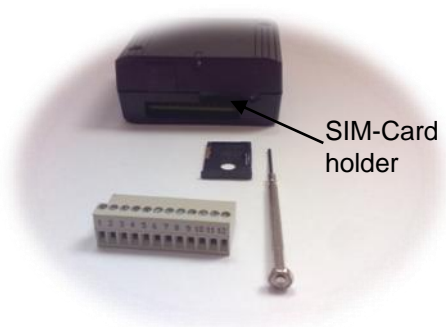
SIM-Card holder

SIM-Card holder unlocking pin

(visible, when edge connector is removed)



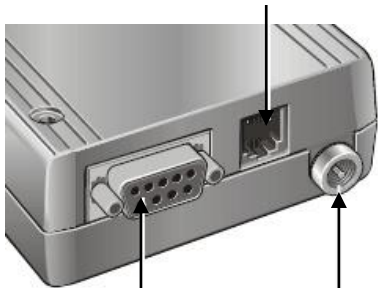
SIM-Card holder



SIM-Card holder

PlantCare version with edge connector / SIM-Card holder

Power Supply Connector



RS232 Interface

Antenna Connector

1.7 GSM Modem: LED status

	Orange (GSM)	Red (System)
Blinking (every 1 second)	Searching GSM network	Initializing
Blinking (every 3 seconds)	Connected to the GSM network and ready for operation (only if SIM-Card is inserted)	

1.8 GSM Modem: Edge connector

The edge connector has a total of 12 connections. Up to 3 moisture sensors can be connected to the PlantCare SMS DryAlarm System.



Pin	Function	Color of cable isolation	Details
1	3V Output	Brown	For up to 3 moisture sensors
2	Connection sensor 1	Blue or white	
3	Connection sensor 2	Blue or white	
4	Connection sensor 3	Blue or white	
5	Not used	-	
6	Not used	-	
7	Not used	-	
8	Not used	-	
9	Not used	-	
10	Not used	-	
11	Not used	-	
12	Ground	Black	For up to 3 moisture sensors

Example:

- Moisture sensor 1 is connected as follows:
 - Pin 1 = 3V (brown)
 - Pin 2 = Moisture sensor 1 (blue or white)
 - Pin 12 = Ground (black)
- Moisture sensor 2 is connected as follows:
 - Pin 1 = 3V (brown)
 - Pin 3 = Moisture sensor 2 (blue or white)
 - Pin 12 = Ground (black)

2. Start-up procedure

- Preparing and programming the GSM Modem
- Preparing and programming the moisture sensor
- Function test
- Installation

2.1 Preparing the GSM Modem

Please follow exactly the following procedure:

- Connect the GSM antenna (if not connected yet).
- Connect the power supply unit to the GSM Modem and to a 230V socket. Check the status LED which will first light up red and then start blinking every second.
- Insert the SIM-Card of the GSM Modem in a mobile telephone, in order to **unlock the SIM-Card***. The SIM-Card is unlocked correctly, when after switching off and switching on your mobile device, no PIN code entry is requested.
- Pull out the grey edge connector from the GSM Modem. The cables connected to the edge connector must not be removed.
- Unlock the SIM-Card holder by pushing a ball-pen or alike onto the small button on the right of the card holder.
- Place the **unlocked SIM-Card** into the card holder and insert it into the GSM Modem. Observe now the status LED, which will blink after approx. 20 seconds every 3 seconds (if this is not the case, check if the location has sufficient reception and/or the SIM-Card is placed correctly and is unlocked).
- Your Modem is now connected to the GSM network and is ready for operation after 30 seconds.
- Insert now the grey edge connector to the GSM Modem.
- Configure now the GSM Modem according to the following steps.

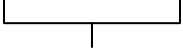
* Please read the manual of your SIM-Card provider.

2.1.2 Programming additional commands

1. Adding an additional receiver:

Send a SMS with the following message to the SIM card number in the GSM Modem:

Cfg;receiver2:0041786600002


receiver2 is variable

The GSM Modem sends back the following confirmation:

„Configuration successful“

2. Status request

Send a SMS with the following message to the SIM card number in your GSM Modem:

Cfg;status

The GSM Modem sends back the following confirmation:

„Cfg;location:PlantCare office Zurich;receiver1:0041786600001“

3. Deleting existing configuration

Deleting existing location as well as all receivers:

Send a SMS with the following message to the SIM card number in your GSM Modem:

Cfg;reset

The GSM Modem sends back the following confirmation:

„Configuration successful, Default settings applied“

2.1.3 Prepaid-SIM-Card Information

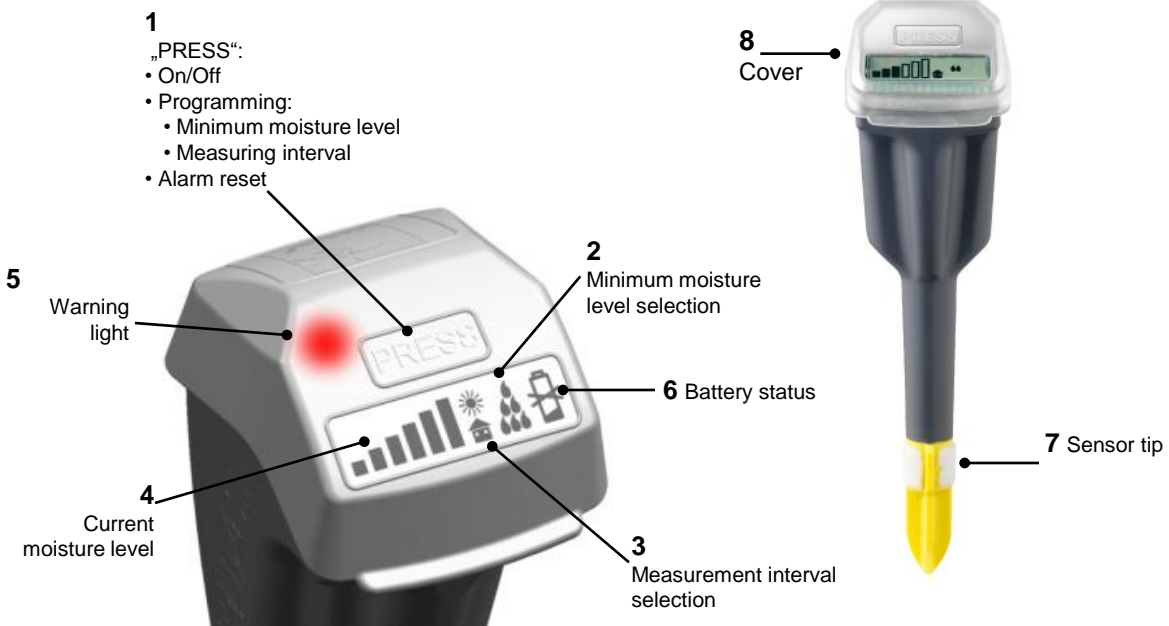
If you use a prepaid SIM card, we would like to inform you about legal regulations in some countries regarding the use of prepaid SIM card products.

Your prepaid SIM card provider is possibly bound by legal regulations and, therefore, must deactivate your SIM card number if not used for a certain length of time. In such a case, the GSM Modem cannot transmit any data. Legal regulations vary according to provider and country. We recommend contacting your provider and asking for the contract details of your prepaid SIM card.

For instance, some providers require SIM cards to be used within one year for an incoming or outgoing call. In such cases, you may have to periodically remove the SIM card from the GSM Modem, insert it in a mobile phone and make a phone call. Some providers also accept an outgoing message as an outgoing call. If this is the case with your provider, you could periodically send an SMS message to the SIM card number of your GSM Modem (for example the command [cfg;status](#)).

Alternatively, you can have a SIM card subscription with a provider instead of a prepaid SIM card. However, monthly costs arise in such cases, depending on provider and subscription type.

2.2 Initialising and programming the soil moisture sensor



- **Connecting the cable:** Connect the connection cable to the GSM Modem and to the soil moisture sensor. When you use an extension cable, connect this cable to the system also.

- **Switching on:** Hold the „PRESS“ (1) key until the warning light flashes 1x.

- **Setting the minimum moisture level (2)** at which a dryness alarm should be sent.

After switching on, three possible minimum moisture levels will appear::

1 drop = low moisture level

2 drops = medium moisture level

3 drops = relatively high moisture level

The default setting of 3 drops will flash and is memorized after approximately 5 seconds. If you wish to change the minimum moisture level, press the „PRESS“ key while the set level is flashing until the level you require flashes. Then wait for the new setting to be memorized.

- **Setting the measurement interval (3):** After setting the minimum moisture level, the symbol „sun“ will flash and is memorized after approximately 5 seconds. In this case the measuring interval of the current moisture is 3 hours (recommended). If you wish to have a measuring interval of 6 hours, push 1x the „PRESS“ key while the symbol „sun“ is flashing and wait until the new symbol „house“ is memorized.
- **Resetting the warning light:** Push the „PRESS“ key briefly.
- **Switching off:** Hold the PRESS (1) key down until the warning light (5) flashes 2x.
- **Reprogramming the moisture sensor:** Switch off the moisture sensor and switch it on again. The sensor is now ready for reprogramming.

2.3 Testing the system before installation

Before installing the system in the planting, the system should be functionally tested as described below.

It is important to know that the soil moisture sensor conducts the moisture measurement according to the following intervals:

Measurement interval 15 minutes:

- after switching on the sensor for the first moisture measurement.
- in switched on mode always after pressing the PRESS button.

Measurement interval 3 hours (subsequent measurement):

- after the first moisture measurement, if the symbol „sun“ is programmed.

Measurement interval 6 hours (subsequent measurement):

- after the first moisture measurement, if the symbol „house“ is programmed.

In order to **simulate a dryness alarm**, keep the dry sensor tip (7) in the air. As described above, the system will conduct the first moisture measurement 15 minutes after switching on the moisture sensor. The moisture measurement itself will take approximately 3 minutes. According to that and assuming that you have correctly programmed the system, you will receive a SMS dryness alarm approximately 20 minutes after switching on the sensor (because the sensor is dry). At the same time, the dryness alarm is indicated by the red LED warning light on the moisture sensor (see picture on the right). If you wish to re-simulate this event within the next 15 minutes, simply press the „PRESS“ key 1x. Otherwise, the next SMS dryness alarm will be sent after 3 or 6 hours, depending on your setting of the measurement interval.



Display indication in case of dryness alarm (empty bars)

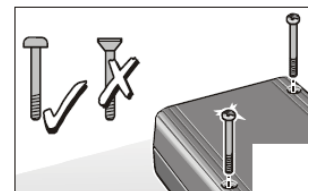
You can also test the system, when it should **not send a SMS dryness alarm**. For this case, submerge the sensor tip with its felt (7) in cold water for approximately 1 minute and switch on the moisture sensor. After the first measurement (approximately 20 minutes after switching the sensor on) the system should not send a dryness alarm and the LED warning light should not flash (see picture on the right).



Display indication, when sensor is measuring high moisture level (full bars)

2.4 Installing the system into the planting

- Place the GSM Modem on a location with a good reception (status LED is blinking every 3 seconds) and mount it as recommended (see picture on the right).
- Connect the connection cable and if necessary the extension cable of the GSM Modem to the soil moisture sensor.
- Submerge the sensor tip with its felt (7) in cold water for approximately 1 minute.
- Activate the soil moisture sensor as described under 2.2
- Insert the soil moisture sensor into the wet substrate: Form a hole near the root zone and push the sensor as far as necessary (maximum to the lower edge of the sensor cover). Ensure that the sensor tip with felt (7) is in close contact with the substrate. If used outdoors, ensure that the sensor is not exposed totally to rain or full heat of the sun.



3. Battery replacement soil moisture sensor

Important notice: Use only rechargeable batteries (2 AAA 1.3 VDC rechargeable batteries).

The integrated rechargeable batteries in the soil moisture sensor have a long durability and are generally fed by the GSM Modem. However, if the battery status symbol (6) should appear, remove the cover (8) by pushing up the tab at the front. Gently lift out the battery holder. Pay close attention to correct polarity when inserting newly charged batteries. Then re-insert the battery holder gently into its housing. Always dispose of old batteries appropriately.

4. Trouble shooting

System does not send SMS message after configuration:

- Check, if the GSM Modem is connected to the power supply and the soil moisture sensor is switched on. Please also note the measurement intervals of the moisture sensor (see under 2.3), as an eventual dryness alarm can only be sent, after the sensor has conducted a moisture measurement.
- Check, if the SIM card has been correctly placed and unlocked (see under 2.1)
- Check, if the Modem is connected to the GSM network (see under 1.7)
- Check, if the receiver number has been correctly entered (see under 2.1.1).
If necessary, check your configuration details by sending an SMS with a status request (see under 2.1.2)

Important notice: The PlantCare SMS DryAlarm System also sends an alarm message, when the connection cable between the Modem and the moisture sensor is disconnected. This feature allows to detect device manipulations by unauthorized persons. In order to avoid a false alarm, always disconnect the GSM Modem from the power supply first before the connection cable is disconnected from the Modem or the moist sensor.

4. Guarantee

The vendor will give you a 2-year guarantee on this product (from purchase date). This guarantee covers any significant defects of the device, which are clearly linked to material or manufacturing errors. We shall decide whether a new, fully functional device will be supplied or the device which has been sent in will be repaired free of charge, insofar as the following conditions are met:

- The device was handled appropriately and in line with the recommendations in the manual.
- Neither the purchaser nor a third party tried to repair the device.

5. Disclaimer of liability

We will not accept any liability for any damage resulting from the incorrect use or malfunction of this product.

6.0 Support

Please contact us as follows:

- support@plant-care.ch