



Cellular Alert PRO

PRODUCT MANUAL

Item #3451



Spectrum
Technologies, Inc.

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This manual will familiarize you with the features and operation of your new WatchDog Cellular Alert PRO. Please read this manual thoroughly before using your instrument. For customer support, or to place an order, call Spectrum Technologies, Inc. at 800-248-8873 or 815-436-4440 between 7:30 am and 5:30 p.m. CST, FAX at 815-436-4460, or E-Mail at info@specmeters.com.
www.specmeters.com

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GENERAL OVERVIEW

Thank you for purchasing a WatchDog Cellular Alert PRO Model.

This manual describes how to use your WatchDog Cellular Alert and how to keep it working accurately for many years.

This manual will describe how to use the PRO model which contains a cellular module.

Contents:

- Control Panel with key pad for user control: (Off, Setup, Test, Run)
- LCD display (current temperature, signal strength, etc.)
- Relay terminal connections to control an external device
- 6 ft external temperature sensor
- NEMA 4 (IP66) enclosure
- Temperature range: -40° to 140°F (-40° to 60°C)

Note: Operating Range for the alert itself is limited by the batteries being used. Most Alkaline batteries have a recommended operating range of -4°F to 131°F (-18°C to 55°C)

- Accuracy: $\pm 1.1^{\circ}\text{F}$ ($\pm 0.6^{\circ}\text{C}$) at -4 to 122°F (-20 to 50°C), else $\pm 2.2^{\circ}\text{F}$ ($\pm 1.2^{\circ}\text{C}$)
- LED light with red and green indicators
- GSM cellular module (**user provides SIM card and service plan — Pay-As-You-Go voice/text recommended, see page 5**)
- Makes voice call or sends text message (or both)
- **Requires 6-volt lantern battery (not included)**

Additional sensor options (one sensor at a time):

- Leaf Wetness Sensor, Humidity Sensor

SPECIFICATIONS

Hard Case with Handle—8 3/4" x 7" x 4" deep

LED Light—flashing green and red

Hole with gland nut for external cables (sensor, antenna)

Relay switch

External Temperature Sensor

Control Panel with LCD display

Battery Compartment

U-Bolt (used for mounting)

GSM Cellular Module/Circuit Board

Velcro strip

Antenna with 6' cord

SIM Card and Service Plan (Pay As You Go Recommended - not included, see page 5)

1 - 6 Volt Lantern Battery (not included)

Optional Sensors Available:

Leaf Wetness Sensor

Humidity Sensor

Relay Specifications:

Internal relay 250 V, 1 Amp AC or DC

Maximum switching power 60 W or 60 VA.

IMPORTANT SIM CARD INFORMATION

Spectrum Technologies recommends the purchase of a Pay As You Go SIM Card and Service Plan with voice and text capabilities. For example, a \$25 pay as you go cell phone SIM card with a 90 day life would work well.

Be sure to have the store properly test the SIM card to verify it works before leaving the store.

Some carriers send a text message or voice call after the first call of the day on prepaid accounts. This may cause the first call or calls to fail as your carrier sends welcome texts and screen banners. If your test call or text fails, please wait a minute and retry.

Be sure to test your Cellular Alert to ensure calls and/or texts are successfully received before it is used in production.

Also note that because you are using a “normal” SIM card, you can test it with a standard cell phone.

IMPORTANT: If the SIM card is running low of funds, the Cellular Alert might believe a call went through when it actually was intercepted by the carrier to play a recording notifying you of low card funds.

SET UP

The PRO model contains a GSM cellular module that will make a voice call or send text messages to a designated phone. It also has the option of setting a relay.

A SIM card and service plan (Pay-As-You-Go recommended) is necessary but not included.

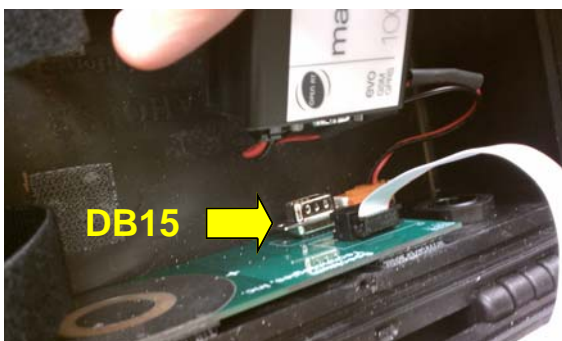
SIM Card Setup

A SIM card may be purchased from a cellular phone carrier.

First remove the antenna from the top of the case. Then remove the module from the Cellular Alert case by gently pulling the module off the Velcro that is underneath it and sliding it up to disengage it from the DB15 Silver Connector as shown in the picture to the right.

Remove the SIM card tray from the end of the module pressing the small button next to it. The tray will slide out. See picture to the right.

Place the SIM card into the tray. Slide the SIM card tray back into the slot until it locks making sure the SIM card is facing the top of the module.



SET UP

Put the module back into the case. Remove the antenna first then place the module against the back of the case.



Slide the module into the DB15 connector and then snap it onto the Velcro at the back of the case.



SLIDE



SNAP

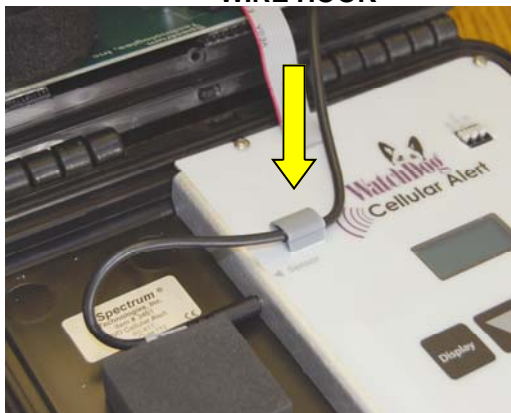
SENSOR SET UP

Sensor Setup

Take the cable of the temperature sensor and run the sensor plug into the box through the gland nut, then through the wire hook.

Plug the temperature sensor into the side of the control panel.

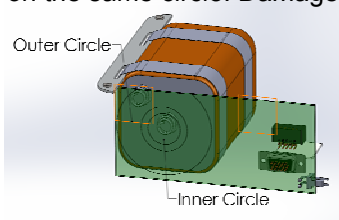
WIRE HOOK



BATTERY SET UP

Battery Setup

Press the battery against the foam on top (see picture to the right) while insuring the spring posts are properly aligned on the circuit board below (see picture below). Caution: There are two silver circles on the board. One post should be on the inner circle and one post should be on the outer circle. In no case should both posts be on the same circle. Damage will occur.



BATTERY SET UP

Battery Setup—

When the batteries are first connected the display will show the firm-ware version on the first line and indicate the cellular module cable is connected (w/modem) on the second. This will change to the Run or Off menu after 5 seconds.

When using an international cell phone frequency (900/1800 Hz) it is necessary to let the unit know to reset the cellular module. Disconnect the battery and then hold the UP button while connecting the battery. Continue holding the UP button for two seconds, until a warbling beep occurs indicating the button can be released. Then press and release the SET button. The cellular module will be set to international frequencies and display INTL 900/1800 for a few seconds. Be sure to verify communications using the TEST procedure.

To change the mode back to US frequencies (850/1900) use the same procedure except hold the DOWN button and reconnect the battery.

Once the battery is in place, it needs to be secured tightly with the Velcro straps provided.



PROGRAMMING CONTROL PANEL

The DISPLAY button is used to toggle between the various modes. These modes are Off, Test, Setup, Run. Once the desired mode is displayed press the SET button.

NOTE: If this is the first time the Cellular Alert is being used, the first step is to go into Setup Mode and set the Alert with a phone number. Then the Test Mode can be used to verify communications.

Off Mode—Turns the Cellular Alert off—Cancels Run Mode.

Test Mode—Used to test the alert function. When the Test Mode is chosen, the LCD display will show diagnosis and status information. The bars across the top of the display show signal strength. To the right of the signal strength indicator the # of communication errors in displayed. A strength of 10 to 31 will appear. The lower number in both signal strength and errors the better. If the signal strength is not the best, reposition the antenna to obtain a better signal strength. This is done by moving the antenna out of the case and running the antenna wire into case through the gland nut hole. There is a 6 foot cable attached to the antenna. Once the strength of the signal is good, press the SET button. It should display “Call Test or Text Test”. The SET button will trigger a voice call or text message or both (depending on the choices made in the Alert Setup Mode) to be sent to the designated phone number. If test, is successful LCD will read ‘Test Passed’. If not successful LCD will read ‘Test Failed’. Verify that the correct phone received call and/or text message.

Setup Mode— Used to set the type of sensor and limits for the alert and the type of alert desired. Using the up and down arrows, toggle between the ‘sensor’, ‘limit’ and ‘alert’. Pressing the SET button will select the option shown on the LCD

Sensor— In the sensor setup the choices are: Temperature in Fahrenheit, Temperature in Celsius, Humidity, Wetness, and Voltage. Using the up and down arrows toggle between the choices. Once the desired sensor is displayed, press the SET button. The display will toggle to Limit mode. Press

PROGRAMMING CONTROL PANEL

Limit— The limit choices are Above or Below. To set the temperature above, press the SET button and then using the up and down arrow buttons set the correct temperature. Once the temperature is reached, press the SET button. The display will toggle to Alert. Press SET again to select.

The Alert will monitor a value either crossing above or below a threshold. Select above or below using the up and down arrow buttons, then SET to select your choice. The display will toggle to allow you to set the threshold value. Use the up and down arrow buttons to change the value and then press the SET button to select the value shown.

Alert— The alert choices are Modem, Relay. The Modem choice will prompt for a phone number. To delete the current phone number, use the up/down arrow buttons to go below zero where a back arrow will appear. ← Holding the SET button down will erase all the numbers. Holding the SET button temporary will erase the prior number only. To key in a new phone number, use the up/down arrow buttons, pressing SET after each number once it is reached. There is room for 17 digits. Once all numbers are programmed in, press SET and hold for a couple seconds. **Note:** Entering a '1' before the number is not necessary with most cellular services.

The next display is Voice Call. Toggling the up and down arrow buttons, YES or NO are the options. Press SET to select the option. The next display is Text Message. Toggling the up and down arrow buttons, YES or NO are the options. Press SET to select the option. The text message will read similar to: "Temp F, limit 80.0 F, current 77.7 F". Spectrum recommends both Voice Call and Text Message are set to YES.

Alert (continued)

If both voice call and text message are set to NO only the relay will be activated during an alert.

The relay choice is used to trigger a switch that will perform an action (See setting up a relay function on page 15), such as sound a horn, turn on a fan, or turn on an irrigation system, it will not trigger the actuator to make a call.

Run Mode— Used to start monitoring. This mode will show the current sensor value. Verify the sensor value on the Cellular Alert is equal to a known standard.

OPERATION

When the programmed threshold is reached and the cellular module sends an alert and the call fails (due to line being busy, down, or other), the cellular module with redial at 2 minutes, then 4 minutes, then 8 minutes, etc. intervals up to one hour. At that point if it continues to fail, it will then attempt to dial every hour. With some phone systems, the Cellular Alert will recognize an answering machine/voicemail as a successful call and will not continue to redial.

If the cellular module is set up to send a text message only, there is no way to verify if the text was successfully received. Spectrum recommends both Voice Call and Text Message are set to YES.

TROUBLESHOOTING

The firmware version number will appear on the LCD screen when the module is first activated.

RELAY FUNCTION SETUP

The Cellular Alert has a relay that may be used to trigger an action with the alert such as, turn on a fan or turn on an irrigation system. This action will result when the sensor crosses above or below the threshold that was determined when programming the control panel.

The internal relay is limited to 250 V, 1 Amp AC or DC. Higher voltage or current than this will require an interface relay. The maximum switching power is 60 W or 60 VA.



The terminal block for the relay appears to the right of the Watch-Dog on the control panel. It contains three wire terminals: NO - Normally Open, COM - Common, and NC - Normally Closed.

To insert the wires, press on the white button then insert the wire into the corresponding terminal. Release the button when the wire is in place to lock it. **Ensure that no bare wire is exposed above the terminal block to avoid shorting.**



LED LIGHT DEFINITION

There is an LED light that shows through the outside of the case. The light indicates what mode the Cellular Alert is in. The following chart shows the patterns:

<u>Light Pattern</u>	<u>Mode</u>
Short green flash each 5 seconds	Run mode, sensor in normal range
Short green flash, followed immediately by short yellow flash each 5 seconds	Run mode, sensor in normal range, battery low
Short red flash each second	Run mode, sensor beyond limit
Short red flash, followed immediately by short yellow flash each 5 seconds	Run mode, sensor beyond limit, battery low
Short red and green flash every 5 seconds	Run mode, sensor beyond limit, alarm active

INSTALLATION

In frost alert mode, the Cellular Alert should be installed in the area that is most likely to have the first frost. A U bolt is included with each Alert. Using the U bolt, attach it to the handle of the case. The case can then be attached to a pole. See picture below.

The temperature sensor should be at least three inches from the ground for an accurate freeze temperature.

If the signal strength is weak then it might be necessary to mount the antenna higher. Remove the antenna from the case, and disconnect the antenna cable from the modem. From outside the case, insert the antenna cable through the bottom gland (alongside the sensor cable). Connect the cable to the modem. If you use a metal pole to mount the antenna, you should attach a section of PVC pipe to the top and attach the antenna to the PVC. Mounting the antenna to a metal pole can cause interference, degrading your cellular connection.



WARRANTY

This product is warranted to be free from defects in material or workmanship for one year from the date of purchase. During the warranty period Spectrum will, at its option, either repair or replace products that prove to be defective. This warranty does not cover damage due to improper installation or use, lightning, negligence, accident, or unauthorized modifications, or to incidental or consequential damages beyond the Spectrum product. Before returning a failed unit, you must obtain a Returned Materials Authorization (RMA) from Spectrum. Spectrum is not responsible for any package that is returned without a valid RMA number or for the loss of the package by any shipping company.



DECLARATION OF CONFORMITY

Spectrum Technologies, Inc.
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Model Numbers: 3451
Description: WatchDog Cellular Alert PRO
Type: Electrical equipment for measurement, control, and laboratory use
Directive: 2004/108/EC
Standards: EN 61326-1:2006
EN 61000-4-2:1995, including A1:1998 and A2:2001
EN 61000-4-3:2002
EN 55011:2007

Michael J. Dunning, Weather Products Manager

March 22, 2012

Spectrum[®]

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