WatchDog®

Cellular Alert
(Standard Version)

Item #3450, #3450H,
#3450W, #3450P120/24/12

Spectrum®
Technologies, Inc.

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This manual will familiarize you with the features and operation of your new WatchDog Cellular Alert. 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.

This manual describes how to use your WatchDog Cellular Alert (Model #3450, #3450H, #3450W, #3450P) and keep it working accurately for many years.

This manual will describe how to use the standard version which is used with a cell phone.

Features:
- Control Panel with key pad for user control
- LCD display
- Relay terminal connections to control an external device
- NEMA 4 (IP66) enclosure
- LED light with red and green indicators
- Presses the phone button to make a voice call

Note: Requires user-provided basic cell phone (flip phone or flat phone; not a touch-screen Smart Phone) (not included)

CONTENTS

- Cellular Alert Enclosure with cell phone dialer, relay switch, and mounting components
- Control Panel with LCD display
- External Sensor

3450	Temperature Sensor with 6 ft (2m) cable
3450H	Humidity sensor with radiation shield and mounting bracket
3450W	Water Sensor with 6 ft (2m) cable (Item #3666 Leaf Wetness)
3450P12	12V Power Sensor Relay with cable
3450P24	24V Power Sensor Relay with cable
3450P120	120V Power Sensor Relay with cable

- U-Bolt (used for mounting)
- Battery Compartment

Specifications

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

Relay Specifications: Internal relay 250 V, 1 Amp AC or DC
Maximum switching power 60 W or 60 VA.

Operating Temperature Range: 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)

Temperature	Range	-40° to 140°F (-40° to 60°C)
	Accuracy	±1.1ºF (±0.6°C) at -4 to 122°F (-20 to 50°C), else ±2.2°F (±1.2°C)
Humidity	Range	0% - 100%
Water	Range	0 (dry) to 15 (wet), typical threshold level for irrigation events is 5.00

Uses 4-AA batteries (not included) to power the electronic controls and
display (but not the cell phone)

Important cell phone information

If a prepay phone is running low on funds, the alert phone call might be
intercepted by the low funds notification.

On prepaid accounts, some carriers send a text message or voice call
after the first call of the day. Be sure to test how your service works.

If your phone supports it, the speed dial option is preferable to the re-
dial option. Redial calls the last number dialed or the last number that
called the phone. This may cause it to dial an incorrect number.
Speed dial will always call the pre-programmed number.

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Standard Model Setup

The standard model is designed to dial a pre-programmed number or the last dialed number on the cell phone (not included). Please refer to your phone manual to setup the number to be dialed.

Phone Setup —To view setup video, visit www.specmeters.com

Position mounting plate on phone to determine which slots on either end should be used for weaving the tie strap. The rough side of the mounting plate should be facing up. See figure 1.

The smooth side (back) of the mounting plate has an indentation, so when it is sitting on top of the phone buttons it will not touch them. To test if the mounting plate is in the proper place, press on the sides of the plate to ensure the phone is not activated. If the phone does light up, then reposition the mounting plate over the phone buttons.

Figure 1

Weave tie strap through the mounting plate slots that are closest to the phone and then through the hole in the strap itself. See figure 2.

Put extra piece of Velcro (fuzzy strip) on back of phone so the tie strap can adhere to it and secure mounting plate in place.

If it is difficult to attach the mounting plate without it contacting the buttons then contact Spectrum Technical Support for suggestions and solutions.
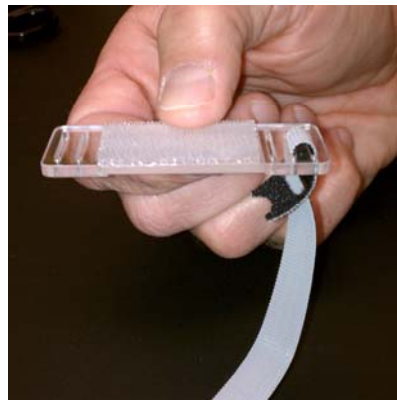

Figure 2

Secure mounting plate to phone. See figures 3 and 4.

Figure 3   Figure 4

The secure mounting plate should resemble the following picture.
Again ensure the plate is in the correct position by pressing on the
sides of the mounting plate and verifying the mounting plate is not
pressing on the buttons.

TALK

Speed
Dial

There

should be a 1/16th inch gap between the mounting plate and the 'talk'

Attach the actuator to the mounting plate so the arm lines up with the 'talk' or speed dial button.   The actuator should snap onto the mounting plate. Test that the actuator is lined up properly by pushing down the arm gently and having it touch the button. This will not harm the arm.

Actuator Lined Up
for Talk Button

Actuator Lined Up
for Speed Dial

Plug the actuator cable into the actuator power cable that is attached to the control panel.

A set-up instruction video can be found on www.SpecMeters.com.

Battery Setup

Place the batteries into the battery pack. Once the batteries are in properly, the LCD display will turn on (for 30 seconds and turn off automatically). The firmware version number will appear on the LCD display when the module is first activated.

Testing Actuator

After plugging the actuator cables together, test the actuator by pressing the DISPLAY button on the control panel until it reads 'TEST'. Press the SET button. The actuator will rotate, press the button and initiate the dialing of the phone.

NOTE:

If the actuator arm is not positioned so that its able to press the button, follow directions on page 14 to reposition the actuator arm.

The second piece of Velcro can be used to attach the phone into the bottom of the case.
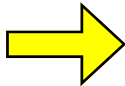
Remove the protective cover from the Velcro and stick to the back of the phone, position the phone in the case, and stick it down. Allow a few minutes for the adhesive to stick to the case before removing the phone.

Sensor setup

## Sensor Setup for Temperature, Water, and Humidity

Run the sensor plug into the case through the gland nut. Pass the cable through the cable hook on the panel. Using the cable hook keeps the wire from tangling with the dialer mechanism. Tighten the gland nut once the cable is positioned.

Plug the sensor into the sensor port on the side of the control panel. Place the sensor where you want to measure.

Power Alert Setup

See the Power Alert Installation (page 14).

WIRE HOOK
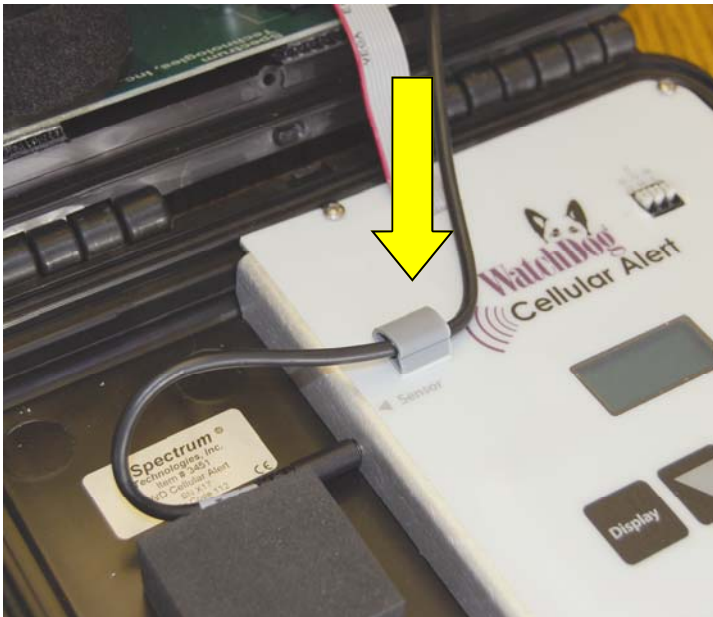
Programming the Control Panel

Pressing the DISPLAY button will activate the LCD. When the LCD is on, the DISPLAY button is used to scroll through the various modes. These modes are Off, Test, Setup, Run. Once the desired mode is displayed, select it by pressing the SET button.

Off Mode—Turns the cellular alert off—Cancels Run Mode.

Test Mode—Used to test the alert function. When the Test Mode is chosen, it will attempt to initiate the chosen alert action(s).

Setup Mode— Used to set the type of sensor, limits for the alert and the type of alert desired. The Setup mode involves moving through a sequence of different levels to define each option. The arrow buttons are used to scroll through options, the Set button is used to select options, and the Display button is to move back to the previous level. The first level of options is 'Sensor', 'Limit', and 'Alert'. Details about each option are given below. The default programming sequence is to select the Sensor type, then the threshold Limit, and finally the Alert type. However, it is possible to skip straight to the Limit or Alert options from the initial Setup Mode screen. Use the arrow button to scroll to the desired option and select it by pressing the SET button.

> **Sensor**— In sensor setup mode, the choices are: Temperature in Fahrenheit, Temperature in Celsius, Humidity, Wetness, and Voltage. Use the up and down arrows to scroll through the choices. Once the desired sensor is displayed, select it by pressing the SET button. The display will switch to Limit mode. Press SET again to enter Limit setup mode.

> **Limit**— The Alert will monitor if the sensor value crosses above or below an adjustable threshold. Select Above or Below using the up and down arrow buttons. Press SET to select your choice. The display will then allow you to set the threshold value. Use the arrow buttons to change the value. Save the value by pressing the SET button. For a fast scroll, hold the SET button down. For the power unit, set the sensor type to Voltage and the Limit to 1.0 Below.

Alert— There are three alert choices:

REDIAL will trigger the actuator to press the button on the phone three times to make the call.

SPD DIAL will trigger the actuator arm to press the button on the phone once (holding it for 3 seconds) to make the call. (Based on the type of phone that is being used, one, two or three presses of the talk or speed dial button will result in the phone call).

RELAY is only used to trigger a switch that will perform an action such as sound a horn, turn on a fan, or turn on an irrigation system. It will <u>not</u> trigger the actuator to make a call. (See Relay Function Setup on page 12) All three Alert devices will activate the relay.

Once the threshold has been crossed for 30 seconds, the alert action will be triggered. If the sensor value returns into the acceptable range for 30 seconds the unit will be reset. The Cellular Alert will then initiate another alert action if the threshold is re-crossed. An alarm will also be generated if the meter does not detect the sensor.

Run Mode— If the Cell Alert is not actively monitoring the sensor, the Run Mode screen will display the text "Push SET". Press the Set button to start monitoring. When the unit is in monitoring mode, the LCD screen will display the current reading from the sensor. This reading is updated every 5 seconds. You should verify the sensor is reading an accurate value. Pressing the SET button will turn off the display screen but will not de-activate monitoring. To deactivate monitoring, press the Display button to transition to the OFF option. Press the SET button to turn off the device and deactivate monitoring.

Tip: If you have multiple cellular alerts, you might want to program the phone you are calling to identify the Alert number. For example, phone # 815-436-4440 could be given the name 'North40'.

Important: If the receiving cell phone has a keyboard lock, this may require a special key combination to be pressed after the phone turns off the display. Make sure this function is turned off or the actuator will <u>not</u> be able to make a call.

Output Relay Function SETUP

The Cellular Alert has a relay that may be used to trigger an action such as turning on a fan or turning on an irrigation system. This action will be triggered 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 WatchDog logo on the control panel. It contains three wire terminals,
NO—NormallyOpen
COM—Common
NC—Normally Closed.

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

Installation

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.

In frost alert mode (Item #3450), the Cellular Alert should be installed in the area that is most likely to have the first frost. The temperature sensor should be at least three inches from the ground for an accurate temperature.

In humidity mode (Item #3450H), the sensor should be placed in an area that gives a representative reading. The sensor and radiation shield should also be attached to the pole using the bracket supplied.

In water mode (Item #3450W), the sensor should be placed in a furrow. The ideal location is as close to the middle of the irrigated area as is logistically possible. Take care that the sensor grid is not touching the soil. Contact with damp soil could trigger the alert condition.   Mounting the sensor at the bottom of a post will offer it some stability and keep it from lying face down on the soil. After responding to the alert at one location, it will still be a matter of hours before the water permeates the soil and allows for easy removal of the sensor. If you wish to immediately deploy the Cell Alert at a second location, it is recommended that you disconnect that sensor and equip the second location with a separate sensor.

Power Alert Installation

Feed the power cord through the gland.

The P120 (120VAC) model includes a protective housing for the sensor relay.

Once fed through the gland, the power cord must be connected to the sensor relay.

Open the protective housing (using a Phillips screwdriver, not included).

Plug the two power wires onto the A and B spades on the relay.

Place the relay into the protective housing. Reassemble the protective housing using the 4 screws.
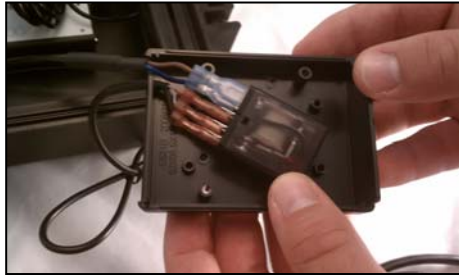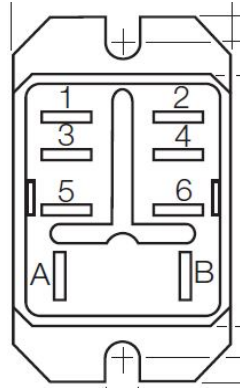
*Insert Relay/ Housing He*re

- Plug the sensor cord into the sensor port.
- Adjust the relay/housing to fit in the case.
- Tighten the gland nut.
- Close the case.

Sensor Port

Plug (P120) or wire (P24, P12) the power cord into the circuit you want to monitor. For setup limit, set the voltage limit to alert below 1 Volt. (see setup mode, p.10)
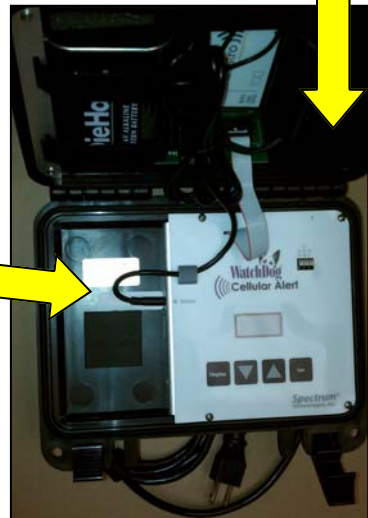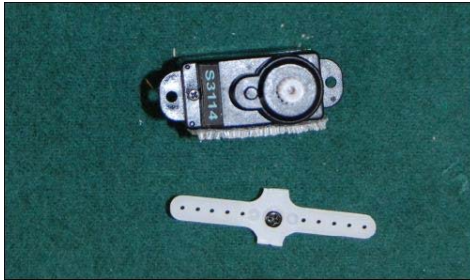
Repositioning Actuator Arm

If, after assembling the actuator to the phone, the arm does not rotate enough to depress the phone button, the arm should be repositioned on the actuator hub.

Note the position of the actuator after Test mode has been used.

Disassemble the arm from the actuator by removing the center screw and pulling the arm off. Note the hub has 'teeth' that hold the actuator in position.

Reassemble the arm by repositioning the arm rotated clockwise one tooth.
Re-attach the actuator assembly to the phone and re-test.

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:

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

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.

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Rev. 9/12