Spectrum®
Technologies, Inc.
"To Measure Is To Know"

WatchDog® 3000 Series Weather Stations Product Manual

Models 3580, 3550, 3540, 3250, 3240, 3230, 3220, 3210

WatchDog®

INTRODUCTION

Thank you for purchasing a WatchDog 3000 Wireless Weather Station. The 3000 Series Weather Stations are easy to install and operate. The station features internal modem/radio and integrated solar power. Connects via Bluetooth to smartphones running the free WatchDog Mobile App. Use the app to configure the station and check current conditions.

The communication options are Cellular Modem, WiFi, Direct Connection to PC, and USB flash drive. These options allow for automatic upload of the data to a computer or the web for further analysis. Growers can monitor their crops on their computer or smartphone and make real-time decisions that improve yield and quality, conserve resources, and increase profits.

3000 SERIES MODEL NUMBERS

3 n ss

- ss — Sensor Package*
- n — Sensor Ports Group
  - 2: Two general sensor ports
  - 5: Six general sensor ports

*Sensor Package

10 Temperature/Relative Humidity
20 Temperature/Relative Humidity, Rain
30 Temperature/Relative Humidity, PAR Light
40 Temperature/Relative Humidity, Rain, Wind
50 Temperature/Relative Humidity, Rain, Wind, Solar Radiation
80 No Sensors Included, Ports Only

3000 SERIES ITEM NUMBERS

Model # Suffix	Modem/Radio Type
nnnnMU	Cellular LTE-M (CAT-M1, NB-IOT) US, Canada
nnnnME	Cellular LTE-M (CAT-M1, NB-IOT) Global
nnnnMH	Cellular, LTE-M (Hologram SIM)
nnnnCE	Cellular, LTE CAT-4, Europe
nnnnCA	Cellular, LTE CAT-4, Asia Pacific
nnnnC4	Cellular, LTE CAT-4, North America
nnnnCG	Cellular, LTE CAT-4, Latin America
nnnnHU	Cellular 3G/HSPA+
nnnnWF	Wi-Fi
nnnnDU	Pup, 900MHz Mesh Network
nnnnDE	Pup, 868MHz Mesh Network
nnnnDA	Pup, 900MHz Australia Mesh Network
nnnnDR	Data Recorder (No Radio)

TABLE OF CONTENTS

This manual will familiarize you with the features and operation of your new WatchDog Weather Station. Please read this manual thoroughly before launching the units.

For customer support or to place an order, call Spectrum Technologies, Inc. at 800-248-8873 or 815-436-4440, FAX at 815-436-4460, or e-mail at info@specmeters.com.

www.specmeters.com
Spectrum Technologies, Inc.
3600 Thayer Court
Aurora, IL 60504

INSTALLATION

PREPARATION

The weather station should be located in an open, unobstructed, grassy area to ensure accurate measurement of wind, rainfall, sunlight, and evapotranspiration.

Mounting hardware is provided to attach the weather station to a mast/pole with a 1.25" to 1.66" (32mm to 42mm) outside diameter and a wall thickness of at least 0.13" (3.3mm). The mounting pole should be securely anchored perpendicular to the ground.

For mounting at an approximately 6' (1.8m) height, a 1.5" (40mm) OD or larger pole should be used for any station with a rainfall sensor. If that size is not available, then the station should be mounted on a tripod, such as Spectrum Technologies item #3396TPS. Mounting the station at a greater height requires both the 1.5" (40mm) OD or larger pole and guy wires to keep the station from swaying in the wind.

If you are using the mounting tripod, open it and place it where the weather station is to be located. The tripod feet can also serve as mounting brackets if the unit is located on a solid surface. Slide the 3' post through both center screw clamps, adjust the height as desired and tighten the screws so that the post is perpendicular to the ground.

ASSEMBLY

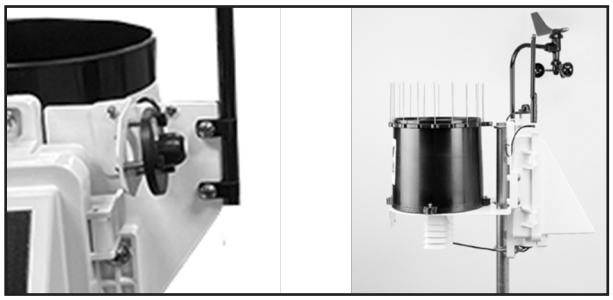
Tools Required: 1/2" (13mm) wrench
#2 Phillips screwdriver

The majority of the assembly of each 3000 Series Wireless Station is completed prior to shipment. Some parts are not attached to protect them from damage in shipping. The final assembly can be done either at the installation site or on a table for convenience.

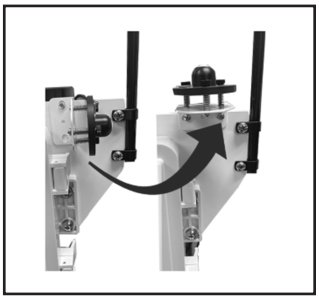
If final assembly is being done at the installation site, mount the station to the pole with the provided U-bolts. Use a 1/2" (13mm) wrench to tighten the nuts. Face the solar panel south in the Northern Hemisphere or north in the Southern Hemisphere.

1. For all models except 3nssDR - Attach the antenna to the top of the bracket by twisting it into the connector. Connect the antenna (finger tight) so it does not unscrew. If you have a Temp Alert Station, go to step 5.

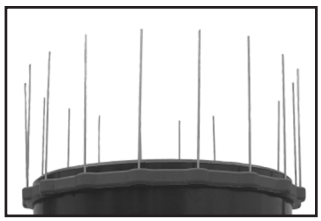
2. For Weather and ET Stations (3n50, 3n40) - Attach the anemometer arm to the front of the bracket using the provided screws. The arm should extend parallel to the bracket. Attach the wind cups and wind vane using the included allen wrench.



3. For ET and Plant Growth Stations (3n50, 3n30) - Slightly loosen the left screw and remove the right screw from the Light Sensor bracket. Rotate the sensor into position and replace the right screw.



4. For ET, Weather and Rain Stations - (3n50, 3n40, 3n20c) - Open the Bird Guard packaging and follow the included instructions.



5. Unlatch the enclosure latches and open the front door of the enclosure. The sensor connection requirements are as follows:
   · Temperature/RH: already connected to port labeled “Temp/RH”on all models except 3580.
   · Rain: Already connected to port labeled “Rain” on ET, Weather and Rain Stations.
   · Wind: For ET and Weather Stations (3n50, 3n40), connect the cable from the anemometer into port labeled Wind.
   · Solar Radiation Sensor: for ET Weather Stations (3n50), connect the cable from the sensor to Port D.
   · PAR Light Sensor: for Plant Growth Stations (3n30), connect the cable from the sensor to Port D.
   · Optional External Sensors: if any were purchased, connect each to an available port.

6. Confirm that all sensor cable connectors are securely pushed into their sockets.

7. If not already installed onsite, mount the station to the pole with the provided U-bolts. Use a 1/2" (13mm) wrench to tighten the nuts. Face the solar panel south in the Northern Hemisphere or north in the Southern Hemisphere.

INITIAL POWER-UP

1. Open the door and slide the power switch to the “ON” position.

2. Monitor the LED. You should see the following signals. The LED will be off for several seconds between these.
   a. Long Green to indicate startup is occurring.
   b. Fast Green/Amber/Red to indicate startup is complete.
   c. Short Amber flash when initial data is sent to SpecConnect.*
   d. Short Green flash indicating the transmission was successful, or a short Red flash to indicate that it failed.*

*Steps c and d do not apply to Pups (models DE, DU, and DA) and data recorders (model DR).

3. Configure the device with one of the two options: Bluetooth with the WatchDog Mobile app on a smartphone (see below) or SpecConnect (non DR models) with computer (see pages 6-7). Please note that for the Weather and ET Stations, the Wind Vane can only be configured (to identify “North”) using WatchDog Mobile.

WINTERIZING

WARNING

If you are removing the station at the end of the growing season and storing it until spring, be sure to open the door and slide the power switch to the “OFF” position. This will preserve the battery until you need it again. Leaving the station powered on without providing sunlight will discharge the battery completely and destroy at least half of its charging capacity.

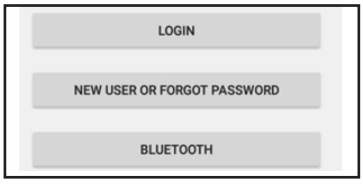
CONFIGURATION

WATCHDOG MOBILE (BLUETOOTH)

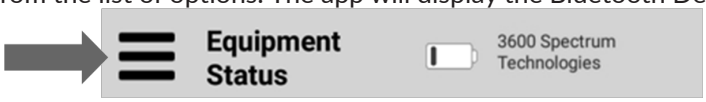
1. Download the free WatchDog Mobile app from the app store (Apple or Google Play) to your phone. If it is already installed, check that you have the latest version.

2. Turn on the station’s Bluetooth radio by pressing and holding the “Select” button until the Status LED lights (less than 1 second). The LED will repeatedly flash once/second until it connects to a smartphone. The flash will be green if the battery level is 80% or above, amber if it is below 80%, and red if it is below 40%.

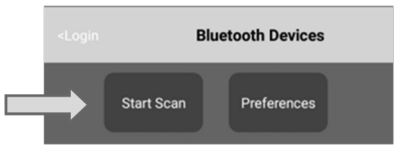
3. After opening the WatchDog Mobile app, there are two ways to connect to the station via Bluetooth.
   Note: Many Android phones require Location to be activated to use Bluetooth.
   a. If you are not sending data to SpecConnect, simply press the “Bluetooth” button. The app will display the Bluetooth Devices screen.

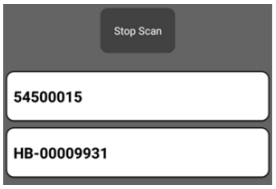


b. If you will be sending data to SpecConnect, press the “Login” button and enter your SpecConnect login credentials. The app will display the Equipment Status screen. Tap the menu button (3 parallel lines) in the top left corner and select “BLUETOOTH” from the list of options. The app will display the Bluetooth Devices screen.



4. In the Bluetooth Devices screen, tap “Start Scan” and select the station’s serial number from the list of found devices.





5. Tap on the settings (gear-shaped) icon. This will display the configuration page.

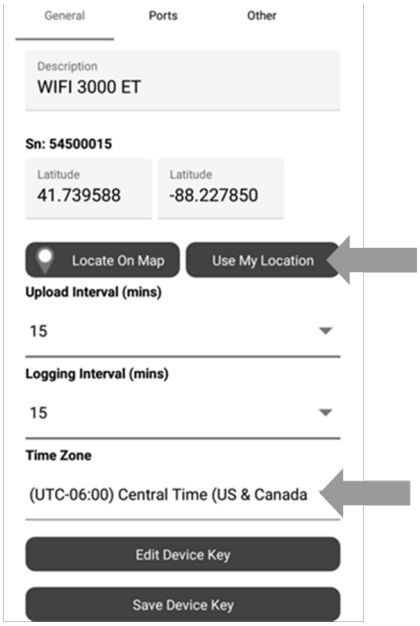
6. Tap the “General” tab located on the top left of the screen.

7. Set Latitude and Longitude by tapping the “Use My Location” button. Alternatively, the “Locate on Map” button can also be used for setting Latitude and Longitude.

8. a. Set the Time Zone using the drop-down menu at the bottom of the screen.
   b. For the 3000 Pup Stations, “Upload Interval” and “Time Zone” are replaced with “Radio Channel”. Set it to the channel used by your Retriever (it defaults to 0).

9. If additional sensors are connected to an external ports, configure them by tapping the “Ports” tab at the top of the page.

10. Once complete, tap the Save icon in the top right corner. For cellular and WiFi versions, changes will appear in SpecConnect within 5 minutes.



DEVICE KEY

Note: To protect the Series 3000 station settings from being modified by other app users with Bluetooth access, you can set a device (write) key, by tapping the Edit Device Key button on the configuration page. This key can be shared with other privileged users to make changes on the device after they have saved the key within their app (Save Device Key). Attempting to change settings on a device without the correct key will generate a “Permission Denied” error.

SET NORTH FOR THE WIND VANE

The Wind Vane on the Weather and ET Stations senses where it is pointing with respect to the anemometer arm, not the Earth. You must use the WatchDog Mobile app to configure the station to “know” which way is North.

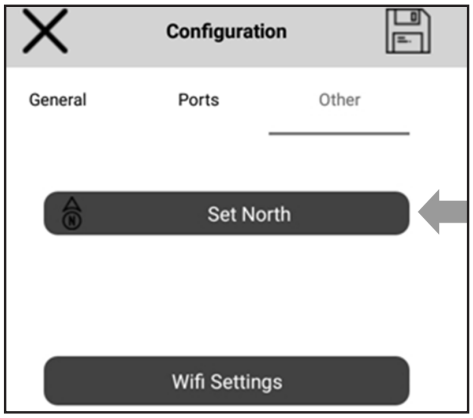
1. If you configured your station using SpecConnect, please follow all the instructions on Page 4 to use the WatchDog Mobile app with Bluetooth connectivity.

2. Tap the “Other” tab located on the top right of the Configuration page.

3. Tap the “Set North” button.

4. Point the wind vane in the north direction. When the “Are you ready?” prompt appears, tap “Yes”.

5. You should see “Success—North Set”. Tap OK, then tap the Save icon in the top right corner.



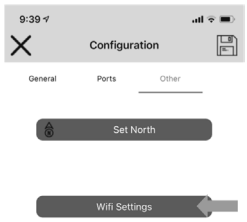
CONNECTING TO A WIFI NETWORK

In order to connect your station to a WiFi network you will need the network's Access Point name (SSID) and its passphrase (password).

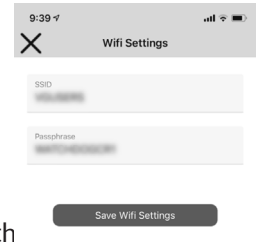
1. If the station is not already connected to your phone, follow the instructions on Page 4 to use the WatchDog Mobile app with Bluetooth connectivity.

2. Tap the "Other" tab located on the top right of the configuration screen.

3. Tap the "WiFi Settings" button.



4. Enter the SSID and the Pass Phrase. Tap the "Save WiFi Settings" button. Then tap the "X" in the upper left corner to exit configuration and display the "Bluetooth Devices" screen.



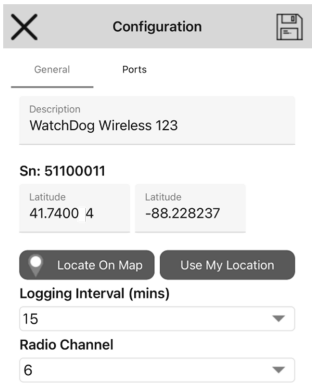
5. To confirm your connection, tap the serial number, then the "thermometer"icon to get current conditions (see Live Readings Page 7).

6. Tap the icon in the upper right and wait up to 60 seconds for the current conditions to display with the "Time Since Last Upload" changed to "0 minutes".

CONNECTING TO A RETRIEVER & PUP NETWORK

If you are setting up a new network, please see the "WatchDog Retriever & Pup Product Manual" for instructions for configuring the Retriever. The Retriever should be running the latest firmware version. Once the Retriever has been configured, and the wireless network created, a nnnnDU, nnnnDE, or nnnnDA Pup Station can be added to the network using the following steps.

1. Change the Radio Channel to the one set in the Retriever. Tap the Save icon.



2. If the network's Retriever is not already in Setup mode (LED flashing AMBER continuously), press and hold its button for 2 seconds.
3. With the 3000 Pup Station at its desired location, press and hold its SELECT button for 6 to 9 seconds. The LED will display the signal strength. If the LED is RED or AMBER, move the station, use an antenna extension, or add a Repeater.
4. After the last Pup is deployed, return to the Retriever and hold the button for 2 seconds to enter Active mode (the LEDs will stop flashing amber). This saves battery life.

NOTE: If the 3000 Pup Station is part of a Retriever and Pup network that uses SpecWare (instead of SpecConnect) to store and analyze data, SpecWare 10 is required to process data from the Retriever.

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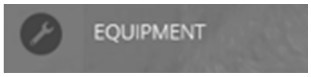
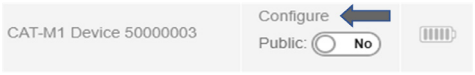
SPECCONNECT

1. Open a web browser and navigate to www.specconnect.net. Log in with credentials.

2. Click on the “Equipment” tab on the left side of the screen.



3. Navigate to the device on the equipment page and click the “Configure” button.



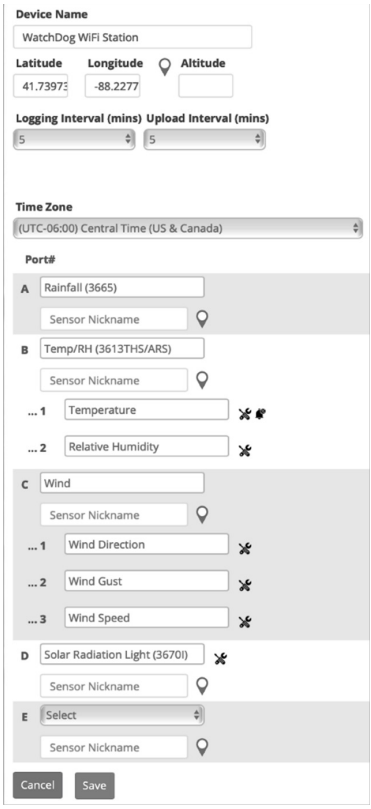
4. Set the time zone (except for Pup Stations).

5. Configure any additional sensors connected to an external port.

6. Make any other desired changes including station or sensor name.

7. Once complete, click the save button in the bottom left corner.

8. The device setup is almost complete. If applicable, the wind vane must be calibrated for North. This must be done at the installation site using a Bluetooth connection to the WatchDog Mobile app on a smartphone (see page 5).



LIVE READINGS

While connected via Bluetooth to the station, the WatchDog Mobile App allows you to check the values the sensors are currently reading.

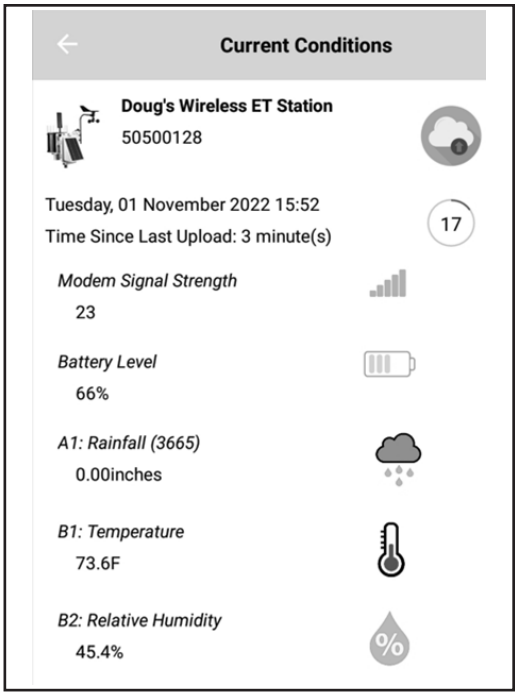
Tap the thermometer icon. This will display the Current Conditions screen. In addition to the sensor readings, it will also display the station serial number and the current date and time. A countdown clock indicates when the reading will be refreshed.

MANUAL DATA UPLOAD

From this screen it is possible to manually perform a data upload. This data will be in addition to the regularly scheduled uploads. This is also a way to confirm the station has a good connection to the web. Initiate the upload by tapping the Cloud button in the upper right corner. If a good connection exists, the time since last upload will be refreshed to 0 minutes.

CURRENT CONDITIONS

The conditions of the station from the last data upload can be viewed in the WatchDog Mobile App or in SpecConnect. This does not require a Bluetooth connection, but you must have a SpecConnect account to see Current Conditions in the App.

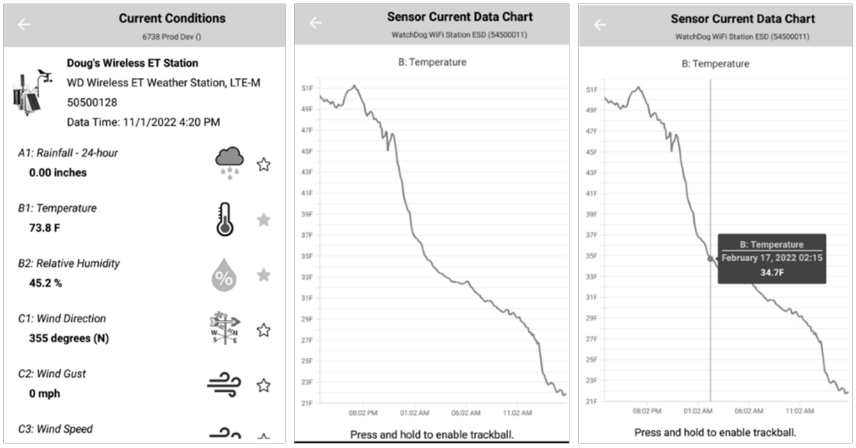


WatchDog Mobile App

1. Select a station from the Equipment Status screen.

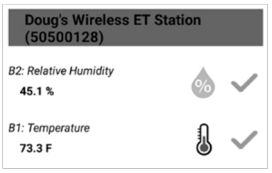
   Select the thermometer shaped icon from the options that are displayed.

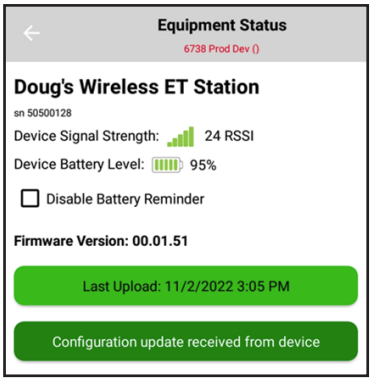
2. The Current Conditions screen will be displayed. In addition to the sensor readings, it will also display the station serial number and the date and time of the last data upload. Tapping on one of the parameters will bring up a graph of that parameter for the last 24 hours. Pressing and holding your finger on the graph will enable the trackball feature which allows you to view the exact value of the data point for a given date and time.



3. If the star icon next to any of the parameters on the current conditions screen is colored yellow, that parameter will appear in the WatchDog App's Favorites section. Tapping the star will add or remove the parameter from the Favorites.

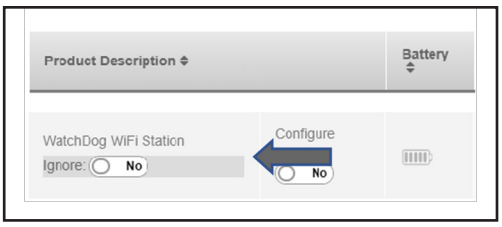
Note: Selecting the gear icon will bring up a configuration screen. Selecting the magnifying glass icon will display the station's communication as it is recorded in SpecConnect.

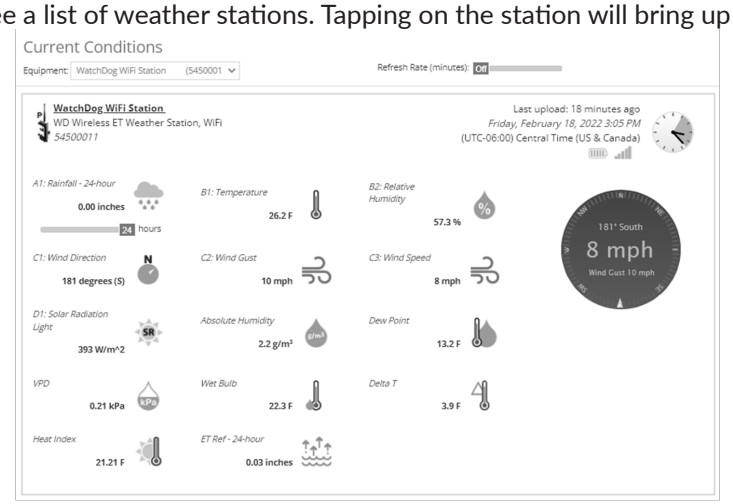




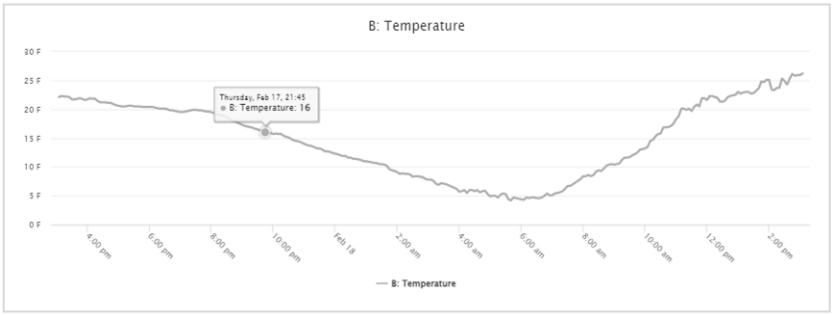
SPECCONNECT

1. From the SpecConnect Equipment page, you will see a list of weather stations. Tapping on the station will bring up a dashboard with the current conditions.





2. A graph of the previous 24 hours of data appears below the dashboard. Floating your cursor over the chart will enable the trackball feature which allows you to view the exact value of the data point for a given date and time.



DOWNLOADING DATA TO A FLASH DRIVE

Logged data can be collected from a WatchDog 3000 station using a USB flash drive. The data will be stored in a file named ssssssss.WD3, where "ssssssss" is the station's serial number. Note that if there is a previous file by that name on the flash drive, the new data will be appended to the existing data file. The file must be imported into SpecWare Pro (version 9.71 or above) to convert it into an ".swd" text file that can be read by Excel.

Open the door and insert the flash drive in the USB port.

Downloading without a smartphone:

1. Press and hold the "Select" button. The Status LED will light green. When it changes to amber, release the button.

2. The Status LED will return to green while the download is occurring. Three green flashes will indicate the download was successful; three red will indicate a problem [probably either a formatting error (it should be FAT32) or the drive is full].

3. Remove the drive and close and latch the door.

Downloading using the WatchDog Mobile smartphone app:

1. Follow the instructions on Page 4 through step 5 to use the WatchDog Mobile app with Bluetooth connectivity.

2. Tap the "USB Drive" icon to take you to the "Save to USB Drive" page.

3. Tap the "Save New Records to USB Drive" button to only download data logged since you last downloaded. Tap the "Save All Records to USB Drive" button to download all logged data on the station.

4. The Status LED will turn to green while the download is occurring. Three green flashes will indicate the download was successful; three red will indicate a problem [probably either a formatting error (it should be FAT32) or the drive is full].

5. Remove the drive and close and latch the door.

IMPORTING DATA INTO SPECWARE

Data downloaded to a USB flash drive (see Page 9) can be imported into SpecWare software. Insert the flash drive containing the data into an available USB Port then follow the instructions below.

Selecting the data file using SpecWare 10

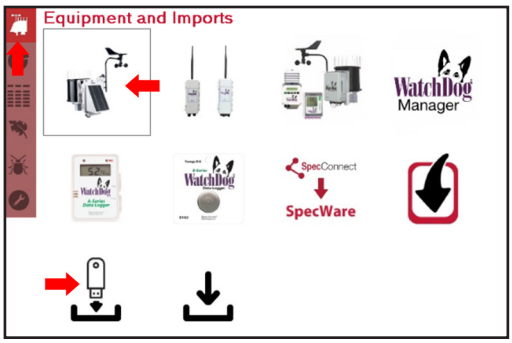
a. Click on the "WatchDog 3000 Data Import" button (see image to the right)


SpecWare 9


SpecWare 10

b. Open the File menu and select the Imports option. Click the "Import WatchDog 3000 files" option. **Selecting the data file using SpecWare 10**

1. Click the Equipment button in upper left corner of the screen to bring up the "Equipment and Imports" screen.

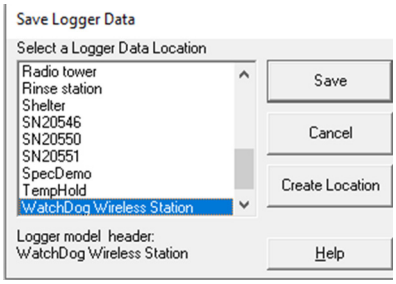


2. Click the 3000 Series button. This will bring up the Download buttons.

3. Click the Download USB Stick File button in the lower left portion of the screen.

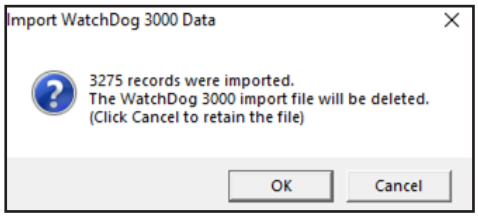
Saving the data to your PC

1. In the Open dialog box, navigate to your USB drive and select the file to be imported. This will bring up the "Save Logger Data" (SpecWare 9) or "Save Data" (SpecWare 10) window. If you have imported data from the station already, select the Logger Location where the data should be saved and click the Save button. If this is the first time importing data from this station, or if you would like to import the data to a different location, that new location must be named. The default Logger Location will be named "WatchDog Wireless Station". Click the Create Location button to bring up a field for typing in a different Logger Location name. The data will be saved as an .SWD file compatible with SpecWare software.



2. Click the Save button.

3. The "Import WatchDog 3000 Data" screen will appear.
   a. Clicking the OK button will clear the data file from the drive.
   b. Clicking the Cancel button will retain the file on the drive.
   Note that if the file is retained, the next download to the drive will add the new data to the end of the files. Over time, this will slow the SpecWare import process significantly as all the old records will be processed again and then deleted as duplicates.



STATUS LED MEANINGS

Depending on the current state of the station, the STATUS LED conveys different information. Except as noted below, the LED color indicates the battery status.
· GREEN = 81 - 100%
· AMBER = 41 - 80%
· RED = 0 - 40%

When connecting or connected via Bluetooth to a smartphone running WatchDog Mobile:
· Quick flash, once per second: Bluetooth is active, but it is not connected to a smartphone.
· On for 1 second, off for four seconds: Connected to the smartphone.

During normal processing with a modem, WiFi, or Pup connection:
· Quick AMBER flash: Start of record upload process.
· Quick GREEN flash: Upload successful.
· Quick RED flash: Upload failed or other communication issue.

During Power-up (turning the ON/OFF switch ON):
· Continuous RED: Fatal firmware error. Update firmware with USB drive. Refer to firmware download page:
www.specmeters.com/firmware

USING THE SELECT BUTTON

Short (under 2 second) press (LED turns GREEN):
Turns Bluetooth on.

2 to 6 second press (LED turns AMBER):
Export Logged Data
· Save all records in station flash memory to a plugged-in USB drive. Time varies by the volume of data stored on the station and the USB flash drive used, generally under one minute.
· 5 rapid Green flashes indicate success; 5 rapid RED flashes indicate failure.
· Bluetooth is turned on.

6 to 9 second press (LED turns RED):
Connection Status
· If the button is released while the LED is RED, cellular, WiFi, and Station Pup units test the modem or radio signal strength. GREEN for 3 seconds if good, AMBER for OK, and RED for poor or no signal.
· For WiFi and Cellular models, the station will attempt to upload to SpecConnect.

Over 9 second press (LED turns off):
Bluetooth firmware update
· After the button is held for over 9 seconds, the LED turns off. When the button is released, the Bluetooth firmware file will be loaded from the USB drive and the Bluetooth update process will begin. If the firmware is successfully loaded from the USB, the LED will perform 5 rapid GREEN flashes, RED for failure. The actual update process takes about 30 seconds. When complete there will be 5 rapid LED flashes, GREEN for success and RED for failure. If successful, Bluetooth is turned on.

Clearing all records from flash memory:
· With the ON/OFF switch set to OFF, press and hold the SELECT button while setting the switch to ON.
· The LED will turn RED.
· Continue holding the button for at least three seconds.
· LED will remain RED until all records are deleted.

ADDITIONAL SENSORS

The WatchDog 3000 Wireless Stations have additional sensor ports for sensor input. The following table lists some of the available optional sensors. See www.specmeters.com for a complete list. Most sensors include a 6' cable with pin-type connector. Items 3667-20, 6460-20, 6470-20 and 6450WD20 have 20' cables.

ITEM #	Description	Measurement Range	Accuracy
3665R	Tipping Bucket Rain Collector	N/A	±2%
3666	Leaf Wetness Sensor	0 (Dry) - 15 (Wet)	N/A
3667 3667-20	External Soil Temperature Sensor	-40°F to 185°F -40°C to 85°C	±1.1°F ±0.6°C
3670I	Silicon Pyranomter	1 to 1250 W/m^2	±5%
3668A 3668I 3668S 3668I3 3668I6 3668S6	Quantum Light Sensor and Sensor Bars	0-3000 µmol m-2s-1	±5%
3676I	UV Light Sensor	0-200 µmol m-2s-1	±5%
6460 6450-20	WaterScout SM100 Soil Moisture Sensor	0% to Saturation (typically 50%)	±3%
6470 6470-20	WaterScout SMEC300 Soil Moisture/EC/Temperature Sensor	VWC: 0% to Saturation EC: 0 to 10 mS/cm Temp: 0 to 122°F (-18°C to 50°C)	VWC: ±3% EC: ±2% Temp: ±1.4°F (0.8°C)
6450WD 6450WD20	WaterMark Soil Moisture Sensor	0-200 cbars	N/A
6451	Irrigation Sensor	Switches at 5psi	±1psi
3673 3674	Input Cables for User Supplied Sensor	0-2.5V 4-20mA	±0.005V ±1%
3671D	Digital Barometric Pressure Sensor	8.86in-Hg to 36.92in-Hg 2.25mm-Hg to 937mm-Hg 300hPa to 1250hPa (mbar)	±0.03in-Hg ±0.76mm-Hg ±1.0hPa

RAIN COLLECTOR ADJUSTMENT

If rain collector is not reading correctly (or at all):

1. Check the inside of the rain bucket for debris such as leaves that may be blocking the grid at the bottom of the bucket. Remove the rain bucket from the base by loosening the four screws, rotating the bucket slightly counter-wise, and lifting it off. Check for any obstructions (spider webs, debris, etc.) that may be preventing the tipping spoon from moving freely. If the hole beneath the grid gets clogged with dirt, the cotter key can temporarily be removed to allow it to be cleared.

2. Using the WatchDog Mobile app, connect to the station via Bluetooth using steps 1 through 5 of the instructions on page 7. Then tap the current conditions (thermometer) icon.

3. Note the current rainfall value. Manually move the tipping spoon back and forth several times. Wait up to 20 seconds for the rainfall value to change. Check that these tips have been recorded. Do this several times.

4. If the tips are being counted, skip to step 6.

5. If the app is not showing any or all of the manual tips of the spoon, it may be that the magnetic sensor on the tipping spoon is too far from the read switch or that the sensor cable is bad. There are two cams holding the axle of the tipping spoon that can be rotated to move the tipping spoon closer to or further away from the read switch. Make this adjustment and repeat step 3. If the app shows that the station recorded the manual tips of the spoon, proceed to step

6. If not, the sensor may need to be sent in for service.

7. If all the tips are being counted, replace the rain bucket and trickle a known amount of water into the bucket. 84 ml of water should register 0.1" (2.5 mm) of water. This is equivalent to 10 tips of the tipping spoon. The best results are attained when the water is added slowly. It is recommended that the water be put in a ziplock bag which is then punctured with a pin to allow the water to slowly enter the rain bucket.

8. If the reading is slightly high or slightly low, the sensor can be calibrated. When the spoon tips, it lands on screws on either side. If sensor is reading high, lower the screws. If it is reading low, raise the screws. It is recommended to adjust the screws a quarter turn and again run a known amount of water through the bucket to determine if additional adjustment is necessary.

9. If the rain collector is reading very high or recording rainfall amounts when there is no rain, it may be that wind is shaking the station and causing the tipping spoon to move.

SPECIFICATIONS

	3210 Temp Alert	3220 Rain Station	3230 Plant Growth Station	3240 Weather Station	3250 ET Station	3540 Weather Station	3550 ET Station	3580 Station
Air Temperature and Relative Humidity	✓	✓	✓	✓	✓	✓	✓	Optional
Rainfall	Optional	✓	Optional	✓	✓	✓	✓	NA
Wind Speed and Direction	Optional	Optional	Optional	✓	✓	✓	✓	Optional
Light	Optional (Additional Port)	Optional (Additional Port)	PAR	Optional (Additional Port)	Solar Radiation	Optional (Additional Port)	Solar Radiation	NA
Additional Sensor Ports	2	2	1	2	1	6	5	8

	Measurement Range	Accuracy
Air Temperature	-40° to 257°F (-40 to 125°C)	±0.54°F (-40 to 194°F) ±0.3°C (-40 to 90°C)
Relative Humidity	10% to 100%	±2% @ 77°F (25°C)
Rainfall	0.01" (.0.254mm) Resolution	±2% at <2" (5 cm) /hr
Wind Speed	0, 1 to 200 mph (0, 1 to 322 km/h)	±2 mph (±3 km/h) ±5%
Wind Direction	0 to 359°, 1° increments	±3°
Solar Radiation	0 to 1500 W/m2	±5%
PAR Light	0 to 3000 µmol/m2/s	±5%

Bluetooth	Version 5.2 for WatchDog Mobil App on Smartphones
External Interfaces	USB Type A Port for Flash Drive AUX Port, modular connector (RS-232 9600bpi, 5.4 to 12 VDC power out) Supplied By: Battery, Solar Panel or 12V Barrel Power in, 5.5/2.1mm barrel, 12VDC
LED	3-Color (Red, Amber, Green)
External Sensor Ports	2.5mm Stereo Jack, 0 to 3.0VDC Analog/Digital Input
Data Capacity	30,000 Records (312 Days at 15 Minute Intervals)
Power	Integrated 3.5W Solar Panel, Optional 12VDC Rechargeable 6V/4.5AH SLA Battery
Battery Life	14 Day Minimum with no Solar Power after Battery is Fully Charged
Waterproof	IP65
Operating Temperature	-22°F to 130°F (-30°C to 55°C)
Dimensions (HxLxW)	Housing: 12" x 19.5" x 11.25" (30.5cm x 49.5cm x 28.6cm)
Weight	9.90lbs (4.49kg)

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.

Spectrum Technologies, Inc.
"To Measure Is To Know"

UK CA
www.specmeters.com

UKCA Declaration of Conformity (DoC) #20221225_0

In accordance with BS EN ISO/IEC 17050-1:2010

Product: Watchdog 3000 Series Station, Data Recorder

Model Name (Product Number): Watchdog Wireless Temp Alert (3210DR, 3510DR)
Watchdog Wireless Rain Station (3220DR, 3520DR)
Watchdog Wireless Plant Growth Station (3230DR, 3230DRP, 3530DR, 3530DRP)
Watchdog Wireless Weather Station (3240DR, 3540DR)
Watchdog Wireless ET Station (3250DR, 3550DR)
Watchdog Wireless Station (3580DR)

Manufacturer:
Name: Spectrum Technologies, Inc.
Address: 3600 Thayer Court, Aurora IL 60504 USA

This declaration is issued under the sole responsibility of the manufacturer.

Object of the Declaration:
The Watchdog 3000 Series Station provides the means to log and transfer weather data to USB thumb drive.

Specifications:
- Battery Powered device (6V/4.5AH SLA Battery)
- 3.4W Solar panel for charging battery
- 49.53 cm (19.5 in) H x 49.53 cm (19.5 in) L x 28.58 cm (11.25 in) W
- LED to indicate Battery status, Radio Signal level, Setup mode
- Optional Sensor inputs

to which this declaration relates, conform with the relevant requirements of the Harmonized Legislations mentioned below. Specifically, but not limited to the following harmonized standards and/or normative documents:

Harmonization Legislation:
2017 No. 1206 Radio Equipment Regulation 2017
2012 No. 3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Safety of Information Technology Equipment
EN 62311:2008 or 2020 Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)
EN 62479:2010 Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (as applied to internal Bluetooth module Silicon Labs BGM13P)

Electromagnetic Compatibility

EN 61000-4-2:2008	Electrostatic Discharge (ESD) Immunity
EN 61000-4-3:2006+ A1:2007+A2:2010	Immunity to radiated radio frequencies and electromagnetic field
EN 61000-6-1:2019	Immunity for residential, commercial, and light-industrial environments
EN 61000-6-3:2007+ A1:2011/AC:2012	Emission standard for residential, commercial, and light-industrial environments
EN 55032:2015 /A11:2020	Electromagnetic compatibility of multimedia equipment – Emission requirements (CISPR 32)
EN 55035:2017	Electromagnetic compatibility of multimedia equipment – Immunity requirements (CISPR 35)
EN 301 489-1 V2.1.1	EMC standard for radio equipment and services; Part 1 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 301 489-1 V2.2.3; 2019-11	EMC standard for radio equipment and services; Part 1: Common technical requirements
EN 301 489-3 V2.1.1; 2019-03	EMC standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices
EN 301 489-17 V3.2.4; 2020-09	EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems
EN 301 489-17 v3.1.1	EMC standard for radio equipment and services; Part 17 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 301 489-17 V3.2.4; 2020-09	EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems

Spectrum Efficiency

EN 300 328 V2.1.1; 2016-11	Wideband Data Transmission Systems; 2.4 GHz Band; Emissions, EMC (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 300 440 V2.2.1 2018-07	Short Range Devices 1-40 GHz; Emissions; EMC

Other Requirements
EN 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Date of issue: 25 December 2022

Thomas Whyte
Senior Electronics Engineer
Email: twhyte@specmeters.com

Spectrum Technologies, Inc.
"To Measure Is To Know"

UK CA
www.specmeters.com

UKCA Declaration of Conformity (DoC) #20221226_0

In accordance with BS EN ISO/IEC 17050-1:2010

Product: Watchdog 3000 Series Station, Digi XBee Module 868LP

Model Name (Product Number): Watchdog Wireless Temp Alert (3210DE, 3510DE)
Watchdog Wireless Rain Station (3220DE, 3520DE)
Watchdog Wireless Plant Growth Station (3230DE, 3230DEP, 3530DE, 3530DEP)
Watchdog Wireless Weather Station (3240DE, 3540DE)
Watchdog Wireless ET Station (3250DE, 3550DE)
Watchdog Wireless Station (3580DE)

Manufacturer:
Name: Spectrum Technologies, Inc.
Address: 3600 Thayer Court, Aurora IL 60504 USA

This declaration is issued under the sole responsibility of the manufacturer.

Object of the Declaration:
The Watchdog 3000 Series Station provides the means to store and transmit weather data.

Specifications:
- Battery Powered device (6V/4.5AH SLA Battery)
- 3.4W Solar panel for charging battery
- 49.53 cm (19.5 in) H x 49.53 cm (19.5 in) L x 28.58 cm (11.25 in) W
- LED to indicate Battery status, WiFi Signal, Setup mode
- Optional Sensor inputs
- Radio module: Digi XB8-DMUS-002

to which this declaration relates, conform with the relevant requirements of the Harmonized Legislations mentioned below. Specifically, but not limited to the following harmonized standards and/or normative documents:

Harmonization Legislation:
2017 No. 1206 Radio Equipment Regulation 2017
2012 No. 3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Safety of Information Technology Equipment
EN 62311:2008 or 2020 Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)
EN 62479:2010 Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (as applied to internal Bluetooth module Silicon Labs BGM13P)

Electromagnetic Compatibility

EN 61000-4-2:2008	Electrostatic Discharge (ESD) Immunity
EN 61000-4-3:2006+ A1:2007+A2:2010	Immunity to radiated radio frequencies and electromagnetic field
EN 61000-6-1:2019	Immunity for residential, commercial, and light-industrial environments
EN 61000-6-3:2007+ A1:2011/AC:2012	Emission standard for residential, commercial, and light-industrial environments
EN 55032:2015 /A11:2020	Electromagnetic compatibility of multimedia equipment – Emission requirements (CISPR 32)
EN 55035:2017	Electromagnetic compatibility of multimedia equipment – Immunity requirements (CISPR 35)
EN 301 489-1 V2.1.1	EMC standard for radio equipment and services; Part 1 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 301 489-1 V2.2.3; 2019-11	EMC standard for radio equipment and services; Part 1: Common technical requirements
EN 301 489-3 V2.1.1; 2019-03	EMC standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices
EN 301 489-17 V3.2.4; 2020-09	EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems
EN 301 489-17 v3.1.1	EMC standard for radio equipment and services; Part 17 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 301 489-17 V3.2.4; 2020-09	EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems

Spectrum Efficiency

EN 300 328 V2.1.1; 2016-11	Wideband Data Transmission Systems; 2.4 GHz Band; Emissions, EMC (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 300 220-2 V3.1.1; 2017-02	(as applied to internal radio module Digi XBee Module 868LP)
EN 300 440 V2.2.1 2018-07	Short Range Devices 1-40 GHz; Emissions; EMC

Other Requirements
EN 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Date of issue: 26 December 2022

Thomas Whyte
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Email: twhyte@specmeters.com

Spectrum Technologies, Inc.
"To Measure Is To Know"

UK CA

www.specmeters.com

UKCA Declaration of Conformity (DoC) #20221227_0

In accordance with BS EN ISO/IEC 17050-1:2010

Product: Watchdog 3000 Series Station, 4G/LTE-M/NB-IoT

Model Name (Product Number):
Watchdog Wireless Temp Alert (3210MU, 3510MU)
Watchdog Wireless Rain Station (3220MU, 3520MU)
Watchdog Wireless Plant Growth Station (3230MU, 3230MUP, 3530MU, 3530MUP)
Watchdog Wireless Weather Station (3240MU, 3540MU)
Watchdog Wireless ET Station (3250MU, 3550MU)
Watchdog Wireless Station (3580MU)

Manufacturer:
Name: Spectrum Technologies, Inc.
Address: 3600 Thayer Court, Aurora IL 60504 USA

This declaration is issued under the sole responsibility of the manufacturer.

Object of the Declaration:
The Watchdog 3000 Series Station provides the means to store and transmit weather data.

Specifications:
- Battery Powered device (6V/4.5AH SLA Battery)
- 3.4W Solar panel for charging battery
- 49.53 cm (19.5 in) H x 49.53 cm (19.5 in) L x 28.58 cm (11.25 in) W
- LED to indicate Battery status, Cell Signal, Setup mode
- Optional Sensor inputs
- Radio module: NimbeLink NL-SW-LTE-QBG96

to which this declaration relates, conform with the relevant requirements of the Harmonized Legislations mentioned below. Specifically, but not limited, to the following harmonized standards and/or normative documents:

Harmonization Legislation:
2017 No. 1206 Radio Equipment Regulation 2017
2012 No. 3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Safety of Information Technology Equipment
EN 62311:2008 or 2020 Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (as applied to internal NimbeLink NL-SW-LTE-QBG96)
UNE EN 60950-1:2007 + A11:2009 + CORR:2007 + A1:2011 + A12:2011 + AC:2012 + A2:2014 (as applied to internal NimbeLink NL-SW-LTE-QBG96)

Electromagnetic Compatibility

EN 61000-4-2:2008	Electrostatic Discharge (ESD) Immunity
EN 61000-4-3:2006+ A1:2007+A2:2010	Immunity to radiated radio frequencies and electromagnetic field
EN 61000-6-1:2019	Immunity for residential, commercial, and light-industrial environments
EN 61000-6-3:2007+ A1:2011/AC:2012	Emission standard for residential, commercial, and light-industrial environments
EN 55032:2015 /A11:2020	Electromagnetic compatibility of multimedia equipment – Emission requirements (CISPR 32)
EN 55035:2017	Electromagnetic compatibility of multimedia equipment – Immunity requirements (CISPR 35)
EN 301 489-1 V2.1.1	EMC standard for radio equipment and services; Part 1 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 301 489-1 V2.2.0	EMC standard for radio equipment and services; Part 1 (as applied to internal NimbeLink NL-SW-LTE-QBG96)
EN 301 489-1 V2.2.3; 2019-11	EMC standard for radio equipment and services; Part 1: Common technical requirements
EN 301 489-3 V2.1.1; 2019-03	EMC standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices
EN 301 489-17 V3.2.4; 2020-09	EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems
EN 301 489-17 v3.1.1	EMC standard for radio equipment and services; Part 17 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 301 489-17 V3.2.4; 2020-09	EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems
Draft EN 301 489-19 V2.1.0	EMC standard for radio equipment and services; Part 19 (as applied to internal NimbeLink NL-SW-LTE-QBG96)
Draft EN 301 489-52 V1.1.0	EMC standard for radio equipment and services; Part 52 (as applied to internal NimbeLink NL-SW-LTE-QBG96)

Spectrum Efficiency

EN 300 328 V2.1.1; 2016-11	Wideband Data Transmission Systems; 2.4 GHz Band; Emissions, EMC (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 300 440 V2.2.1 2018-07	Short Range Devices 1-40 GHz; Emissions; EMC
EN 303 413 V1.1.1/	Satellite Earth Stations and Systems (SES); Global Navigation Satellite System (GNSS) receivers (as applied to internal NimbeLink NL-SW-LTE-QBG96)
EN 301 511 V12.5.1	
EN 301 908-1 V11.1.1/	IMT cellular networks; Harmonised Standard covering the essential requirements (as applied to internal NimbeLink NL-SW-LTE-QBG96)
EN 301 908-2 V11.1.2	

Other Requirements
EN 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Date of issue: 27 December 2022

Thomas Whyte
Senior Electronics Engineer
Email: twhyte@specmeters.com

Spectrum Technologies, Inc.
"To Measure Is To Know"

UK CA

www.specmeters.com

UKCA Declaration of Conformity (DoC) #20221229_0

In accordance with BS EN ISO/IEC 17050-1:2010

Product: Watchdog 3000 Series Station, LTE-CAT 4 with 2G/3G Fallback

Model Name (Product Number):
Watchdog Wireless Temp Alert (3210CE, 3510CE)
Watchdog Wireless Rain Station (3220CE, 3520CE)
Watchdog Wireless Plant Growth Station (3230CE, 3230CEP, 3530CE, 3530CEP)
Watchdog Wireless Weather Station (3240CE, 3540CE)
Watchdog Wireless ET Station (3250CE, 3550CE)
Watchdog Wireless Station (3580CE)

Manufacturer:
Name: Spectrum Technologies, Inc.
Address: 3600 Thayer Court, Aurora IL 60504 USA

This declaration is issued under the sole responsibility of the manufacturer.

Object of the Declaration:
The Watchdog 3000 Series Station provides the means to store and transmit weather data.

Specifications:
- Battery Powered device (6V/4.5AH SLA Battery)
- 3.4W Solar panel for charging battery
- 49.53 cm (19.5 in) H x 49.53 cm (19.5 in) L x 28.58 cm (11.25 in) W
- LED to indicate Battery status, Cell Signal, Setup mode
- Optional Sensor inputs
- Radio module: NimbeLink NL-SW-LTE-TC4EU

to which this declaration relates, conform with the relevant requirements of the Harmonized Legislations mentioned below. Specifically, but not limited to the following harmonized standards and/or normative documents:

Harmonization Legislation:
2017 No. 1206 Radio Equipment Regulation 2017
2012 No. 3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Safety of Information Technology Equipment
EN 62311:2008 or 2020 Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)
EN 62479:2010 Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (as applied to internal NimbeLink NL-SW-LTE-TC4EU)
UNE EN 60950-1:2007 + A11:2009 + CORR:2007 + A1:2011 + A12:2011 + AC:2012 + A2:2014 (as applied to internal NimbeLink NL-SW-LTE-TC4EU)

Electromagnetic Compatibility

EN 61000-4-2:2008	Electrostatic Discharge (ESD) Immunity
EN 61000-4-3:2006+ A1:2007+A2:2010	Immunity to radiated radio frequencies and electromagnetic field
EN 61000-6-1:2019	Immunity for residential, commercial, and light-industrial environments
EN 61000-6-3:2007+ A1:2011/AC:2012	Emission standard for residential, commercial, and light-industrial environments
EN 55032:2015 /A11:2020	Electromagnetic compatibility of multimedia equipment – Emission requirements (CISPR 32)
EN 55035:2017	Electromagnetic compatibility of multimedia equipment – Immunity requirements (CISPR 35)
EN 301489-1 V2.1.1	EMC standard for radio equipment and services; Part 1 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 301489-1 V2.2.0	EMC standard for radio equipment and services; Part 1 (as applied to internal NimbeLink NL-SW-LTE-TC4EU)
EN 301489-1 V2.2.3; 2019-11	EMC standard for radio equipment and services; Part 1: Common technical requirements
EN 301489-3 V2.1.1; 2019-03	EMC standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices
EN 301489-17 V3.2.4; 2020-09	EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems
EN 301489-17 v3.1.1	EMC standard for radio equipment and services; Part 17 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 301489-17 V3.2.4; 2020-09	EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems
Draft EN 301489-19 V2.1.0	EMC standard for radio equipment and services; Part 19 (as applied to internal NimbeLink NL-SW-LTE-TC4EU)
Draft EN 301489-52 V1.1.0	EMC standard for radio equipment and services; Part 52 (as applied to internal NimbeLink NL-SW-LTE-TC4EU)

Spectrum Efficiency

EN 300328 V2.1.1; 2016-11	Wideband Data Transmission Systems; 2.4 GHz Band; Emissions, EMC (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 300440 V2.2.1 2018-07	Short Range Devices 1-40 GHz; Emissions; EMC
EN 301908-1 V11.1.1/	IMT cellular networks; Harmonised Standard covering the essential requirements (as applied to internal NimbeLink NL-SW-LTE-TC4EU)
EN 301908-2 V11.1.2	

Other Requirements
EN 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Date of issue: 29 December 2022

Thomas Whyte
Senior Electronics Engineer
Email: twhyte@specmeters.com

Spectrum Technologies, Inc.
"To Measure Is To Know"

UK CA
www.specmeters.com

UKCA Declaration of Conformity (DoC) #20221228_0

In accordance with BS EN ISO/IEC 17050-1:2010

Product: Watchdog 3000 Series Station, Wi-Fi 802.11 b/g/n

Model Name (Product Number):
Watchdog Wireless Temp Alert (3210WF, 3510WF)
Watchdog Wireless Rain Station (3220WF, 3520WF)
Watchdog Wireless Plant Growth Station (3230WF, 3230WFP, 3530WF, 3530WFP)
Watchdog Wireless Weather Station (3240WF, 3540WF)
Watchdog Wireless ET Station (3250WF, 3550WF)
Watchdog Wireless Station (3580WF)

Manufacturer:
Name: Spectrum Technologies, Inc.
Address: 3600 Thayer Court, Aurora IL 60504 USA

This declaration is issued under the sole responsibility of the manufacturer.

Object of the Declaration:
The Watchdog 3000 Series Station provides the means to store and transmit weather data.

Specifications:
- Battery Powered device (6V/4.5AH SLA Battery)
- 3.4W Solar panel for charging battery
- 49.53 cm (19.5 in) H x 49.53 cm (19.5 in) L x 28.58 cm (11.25 in) W
- LED to indicate Battery status, WiFi Signal, Setup mode
- Optional Sensor inputs
- Radio module: Telit GS2011MIES

to which this declaration relates, conform with the relevant requirements of the Harmonized Legislations mentioned below. Specifically, but not limited to the following harmonized standards and/or normative documents:

Harmonization Legislation:
2017 No. 1206 Radio Equipment Regulation 2017
2012 No. 3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Safety of Information Technology Equipment
EN 62311:2008 or 2020 Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)
EN 62479:2010 Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (as applied to internal Bluetooth module Silicon Labs BGM13P)

Electromagnetic Compatibility

EN 61000-4-2:2008	Electrostatic Discharge (ESD) Immunity
EN 61000-4-3:2006+ A1:2007+A2:2010	Immunity to radiated radio frequencies and electromagnetic field
EN 61000-6-1:2019	Immunity for residential, commercial, and light-industrial environments
EN 61000-6-3:2007+ A1:2011/AC:2012	Emission standard for residential, commercial, and light-industrial environments
EN 55032:2015 /A11:2020	Electromagnetic compatibility of multimedia equipment – Emission requirements (CISPR 32)
EN 55035:2017	Electromagnetic compatibility of multimedia equipment – Immunity requirements (CISPR 35)
EN 301 489-1 V2.1.1	EMC standard for radio equipment and services; Part 1 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 301 489-1 V2.2.0	EMC standard for radio equipment and services; Part 1 (as applied to internal Telit GS2011MIES)
EN 301 489-1 V2.2.3; 2019-11	EMC standard for radio equipment and services; Part 1: Common technical requirements
EN 301 489-3 V2.1.1; 2019-03	EMC standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices
EN 301 489-17 V3.2.4; 2020-09	EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems
EN 301 489-17 v3.1.1	EMC standard for radio equipment and services; Part 17 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 301 489-17 V3.2.4; 2020-09	EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems

Spectrum Efficiency

EN 300 328 V2.1.1; 2016-11	Wideband Data Transmission Systems; 2.4 GHz Band; Emissions, EMC (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 300 328 V2.2.2; 2021-07	Wideband Data Transmission Systems; 2.4 GHz Band; Emissions, EMC (as applied to Telit GS2011MIES)
EN 300 440 V2.2.1 2018-07	Short Range Devices 1-40 GHz; Emissions; EMC

Other Requirements
EN 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Date of issue: 28 December 2022

Thomas Whyte
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Spectrum Technologies, Inc.
"To Measure Is To Know"

CE
www.specmeters.com

RE-D EU Declaration of Conformity (DoC) #20211107_0

In accordance with European Parliament and Council Decision No. 768/2008/EC Annex II
we, Spectrum Technologies, Inc., a corporation validly organized and existing under the laws of the United States of America, having its principal place of business at 3600 Thayer Court, Aurora IL 60504 USA
declare under our sole responsibility that the below named

Product: Watchdog 3000 Series Station, LTE CAT-4 with 2G/3G Fallback
Model Name (Product Number):
Watchdog Wireless Temp Alert (3210CE)
Watchdog Wireless Rain Station (3220CE)
Watchdog Wireless Plant Growth Station (3230CE, 3230CEP)
Watchdog Wireless Weather Station (3240CE)
Watchdog Wireless ET Station (3250CE)

Object of the Declaration:
The Watchdog 3000 Series Station provides the means to store and transmit weather data.

Specifications:
- Battery Powered device (6V/4.5AH SLA Battery)
- 3.4W Solar panel for charging battery
- 49.53 cm (19.5 in) H x 49.53 cm (19.5 in) L x 28.58 cm (11.25 in) W
- LED to indicate Battery status, Cell Signal, Setup mode
- Optional Sensor inputs

to which this declaration relates, conform with the relevant requirements of the Harmonized Legislations mentioned below. Specifically, but not limited, to the following harmonized standards and/or normative documents:

Harmonization Legislation:
2014/53/EU Radio Equipment Directive
2011/65/EU Restriction of Hazardous Substances Directive
2012/19/EU Waste Electrical and Electronic Equipment Directive (WEEE)

Article 3.1(a) Safety of Information Technology Equipment
EN 62311:2008 Low voltage (LVD) Directive
EN IEC 62368-1:2020 Audio/video, information and communication technology equipment - Part 1: Safety requirements
IEC 60950-1:2005 + CORR:2006 + A1:2009 + A2:2013
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (as applied to internal NimbeLink NL-SW-LTE-TC4EU)
UNE EN 60950-1:2007 + A11:2009 + CORR:2007 + A1:2011 + A12:2011 + AC:2012 + A2:2014 (as applied to internal NimbeLink NL-SW-LTE-TC4EU)

Article 3.1(b) Electromagnetic Compatibility

EN 61000-4-2:2008	Electrostatic Discharge (ESD) Immunity
EN 61000-4-3:2006+ A1:2007+A2:2010	Immunity to radiated radio frequencies and electromagnetic field
EN 61000-6-1:2019	Immunity for residential, commercial, and light-industrial environments
EN 61000-6-3:2007+ A1:2011/AC:2012	Emission standard for residential, commercial, and light-industrial environments
EN 55032:2015 /A11:2020	Electromagnetic compatibility of multimedia equipment – Emission requirements (CISPR 32)
EN 55035:2017	Electromagnetic compatibility of multimedia equipment – Immunity requirements (CISPR 35)
EN 301489-1 V2.1.1	EMC standard for radio equipment and services; Part 1 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 301489-1 V2.2.0	EMC standard for radio equipment and services; Part 1 (as applied to internal NimbeLink NL-SW-LTE-TC4EU)
EN 301489-1 V2.2.3; 2019-11	EMC standard for radio equipment and services; Part 1: Common technical requirements
EN 301489-3 V2.1.1; 2019-03	EMC standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices
EN 301489-17 V3.2.4; 2020-09	EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems
EN 301489-17 v3.1.1	EMC standard for radio equipment and services; Part 17 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 301489-17 V3.2.4; 2020-09	EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems
Draft EN 301489-19 V2.1.0	EMC standard for radio equipment and services; Part 19 (as applied to internal NimbeLink NL-SW-LTE-TC4EU)
Draft EN 301489-52 V1.1.0	EMC standard for radio equipment and services; Part 52 (as applied to internal NimbeLink NL-SW-LTE-TC4EU)

Article 3.2 Spectrum Efficiency

EN 300328 V2.1.1; 2016-11	Wideband Data Transmission Systems; 2.4 GHz Band; Emissions, EMC (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 300440 V2.2.1 2018-07	Short Range Devices 1-40 GHz; Emissions; EMC
EN 301908-1 V11.1.1/ EN 301908-2 V11.1.2	IMT cellular networks; Harmonised Standard covering the essential requirements (as applied to internal NimbeLink NL-SW-LTE-TC4EU)

Article 3.3 Other Requirements
EN 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Date of issue: 7 November 2021

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Spectrum Technologies, Inc.
"To Measure Is To Know"
www.specmeters.com

RE-D EU Declaration of Conformity (DoC)

In accordance with European Parliament and Council Decision No. 768/2008/EC Annex III
we, Spectrum Technologies, Inc., a corporation validly organized and existing under the laws of the United States of America, having its principal place of business at 3600 Thayer Court, Aurora IL 60504 USA
declare under our sole responsibility that the below named

Product: WatchDog 3000 Series Station
Model Name (Product Number): WatchDog 3210 Temp/RH Alert Station (3210DE)
WatchDog 3220 Rain Station (3220DE)
WatchDog 3240 Weather Station (3240DE)
WatchDog 3250 Weather Station (3250DE)

Object of the Declaration:
Solar-Powered Weather Station

to which this declaration relates, conform with the relevant requirements of the Harmonized Legislations mentioned below. Specifically, but not limited, to the following harmonized standards and/or normative documents:

Harmonization Legislation:
2014/53/EU Radio Equipment Directive
2011/65/EU Restriction of Hazardous Substances Directive
2012/19/EU Waste Electrical and Electronic Equipment Directive (WEEE)

Article 3.1(a) Safety of Information Technology Equipment
EN IEC 62368-1:2020 — Audio/video, information and communication technology equipment - Part 1: Safety requirements
EN 62311:2008 — (as applied to internal radio module Digi XBee Module 868LP)
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (as applied to internal Bluetooth module Silicon Labs BGM13P)

Article 3.1(b) Electromagnetic Compatibility
EN 61000-6-1:2019 — Immunity for residential, commercial, and light-industrial environments
EN 61000-6-3:2007+ A1:2011/AC:2012 — Emission standard for residential, commercial, and light-industrial environments
EN 55032:2015 /A11:2020 — Electromagnetic compatibility of multimedia equipment – Emission requirements (CISPR 32)
EN 55035:2017 — Electromagnetic compatibility of multimedia equipment – Immunity requirements (CISPR 35)
EN 301 489-1 V2.1.1 — EMC standard for radio equipment and services; Part 1 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 301 489-1 V2.2.3; 2019-11 — EMC standard for radio equipment and services; Part 1: Common technical requirements
EN 301 489-3 V2.1.1; 2019-03 — EMC standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices
EN 301 489-17 v3.1.1 — EMC standard for radio equipment and services; Part 17 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 301 489-17 V3.2.4; 2020-09 — EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems

Article 3.2 Spectrum Efficiency
EN 300 220-2 V3.1.1; 2017-02 — (as applied to internal radio module Digi XBee Module 868LP)
EN 300 328 V2.1.1; 2016-11 — Wideband Data Transmission Systems; 2.4 GHz Band; Emissions, EMC (as applied to internal Bluetooth module Silicon Labs BGM13P)

Article 3.3 Other Requirements
EN 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Michael J. Dunning
Director of Product Strategy

Spectrum Technologies, Inc.
"To Measure Is To Know"
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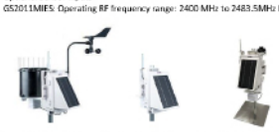
RE-D EU Declaration of Conformity (DoC) #20210903_1

In accordance with European Parliament and Council Decision No. 768/2008/EC Annex III
we, Spectrum Technologies, Inc., a corporation validly organized and existing under the laws of the United States of America, having its principal place of business at 3600 Thayer Court, Aurora IL 60504 USA
declare under our sole responsibility that the below named

Product: Watchdog 3000 Series Station, Wi-Fi 802.11 b/g/n
Model Name (Product Number): Watchdog Wireless Temp Alert (3210WF)
Watchdog Wireless Rain Station (3220WF)
Watchdog Wireless Plant Growth Station (3230WF, 3230WFP)
Watchdog Wireless Weather Station (3240WF)
Watchdog Wireless ET Station (3250WF)

Object of the Declaration:
The Watchdog 3000 Series Station provides the means to store and transmit weather data.

Specifications:
- Battery Powered device (6V/4.5AH SLA Battery)
- 3.4W Solar panel for charging battery
- 49.53 cm (19.5 in) H x 49.53 cm (19.5 in) L x 28.58 cm (11.25 in) W
- LED to indicate Battery status, Cell Signal, Setup mode
- Optional Sensor inputs
- GS2011MIES: Operating RF frequency range: 2400 MHz to 2483.5MHz Max radio frequency power transmitted: 19.7 dBm



to which this declaration relates, conform with the relevant requirements of the Harmonized Legislations mentioned below. Specifically, but not limited, to the following harmonized standards and/or normative documents:

Harmonization Legislation:
2014/53/EU Radio Equipment Directive
2011/65/EU Restriction of Hazardous Substances Directive
2012/19/EU Waste Electrical and Electronic Equipment Directive (WEEE)

Article 3.1(a) Safety of Information Technology Equipment
EN 62311:2008 Low voltage (LVD) Directive
EN IEC 62368-1:2020 Audio/video, information and communication technology equipment - Part 1: Safety requirements
IEC 60950-1:2005 + CORR:2006 + A1:2009 + A2:2013
EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (as applied to internal Bluetooth module Silicon Labs BGM13P)

Article 3.1(b) Electromagnetic Compatibility
EN 61000-4-2:2008 — Electrostatic Discharge (ESD) Immunity
EN 61000-4-3:2006+ A1:2007+A2:2010 — Immunity to radiated radio frequencies and electromagnetic field
EN 61000-6-1:2019 — Immunity for residential, commercial, and light-industrial environments
EN 61000-6-3:2007+ A1:2011/AC:2012 — Emission standard for residential, commercial, and light-industrial environments
EN 55032:2015 /A11:2020 — Electromagnetic compatibility of multimedia equipment – Emission requirements (CISPR 32)
EN 55035:2017 — Electromagnetic compatibility of multimedia equipment – Immunity requirements (CISPR 35)
EN 301 489-1 V2.1.1 — EMC standard for radio equipment and services; Part 1 (as applied to Internal Bluetooth module Silicon Labs BGM13P)
EN 301 489-1 V2.2.0 — EMC standard for radio equipment and services; Part 1 (as applied to Telit GS2011MIES)
EN 301 489-1 V2.2.3; 2019-11 — EMC standard for radio equipment and services; Part 1: Common technical requirements
EN 301 489-3 V2.1.1; 2019-03 — EMC standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices
EN 301 489-17 V3.2.4; 2020-09 — EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems
EN 301 489-17 v3.1.1 — EMC standard for radio equipment and services; Part 17 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 301 489-17 V3.2.4; 2020-09 — EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems

Article 3.2 Spectrum Efficiency
EN 300 328 V2.1.1; 2016-11 — Wideband Data Transmission Systems; 2.4 GHz Band; Emissions, EMC (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 300 328 V2.2.2; 2021-07 — Wideband Data Transmission Systems; 2.4 GHz Band; Emissions, EMC (as applied to Telit GS2011MIES)
EN 300 440 V2.2.1 2018-07 — Short Range Devices 1-40 GHz; Emissions; EMC

Article 3.3 Other Requirements
EN 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Date of Issue: 3 September 2021

Thomas Whyte
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Spectrum Technologies, Inc.
"To Measure Is To Know"
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RE-D EU Declaration of Conformity (DoC) #20210831_0

In accordance with European Parliament and Council Decision No. 768/2008/EC Annex III
we, Spectrum Technologies, Inc., a corporation validly organized and existing under the laws of the United States of America, having its principal place of business at 3600 Thayer Court, Aurora IL 60504 USA
declare under our sole responsibility that the below named

Product: Watchdog 3000 Series Station, 4G/LTE-M/NB-IoT
Model Name (Product Number): Watchdog Wireless Temp Alert (3210MU)
Watchdog Wireless Rain Station (3220MU)
Watchdog Wireless Weather Station (3240MU)
Watchdog Wireless ET Station (3250MU)

Object of the Declaration:
The Watchdog 3000 Series Station provides the means to store and transmit weather data.

Specifications:
- Battery Powered device (6V/4.5AH SLA Battery)
- 3.4W Solar panel for charging battery
- 49.53 cm (19.5 in) H x 49.53 cm (19.5 in) L x 28.58 cm (11.25 in) W
- LED to indicate Battery status, Cell Signal, Setup mode
- Optional Sensor inputs

to which this declaration relates, conform with the relevant requirements of the Harmonized Legislations mentioned below. Specifically, but not limited, to the following harmonized standards and/or normative documents:

Harmonization Legislation:
2014/53/EU Radio Equipment Directive
2011/65/EU Restriction of Hazardous Substances Directive
2012/19/EU Waste Electrical and Electronic Equipment Directive (WEEE)

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Article 3.1(b) Electromagnetic Compatibility
EN 61000-4-2:2008 — Electrostatic Discharge (ESD) Immunity
EN 61000-4-3:2006+ A1:2007+A2:2010 — Immunity to radiated radio frequencies and electromagnetic field
EN 61000-6-1:2019 — Immunity for residential, commercial, and light-industrial environments
EN 61000-6-3:2007+ A1:2011/AC:2012 — Emission standard for residential, commercial, and light-industrial environments
EN 55032:2015 /A11:2020 — Electromagnetic compatibility of multimedia equipment – Emission requirements (CISPR 32)
EN 55035:2017 — Electromagnetic compatibility of multimedia equipment – Immunity requirements (CISPR 35)
EN 301 489-1 V2.1.1 — EMC standard for radio equipment and services; Part 1 (as applied to Internal Bluetooth module Silicon Labs BGM13P)
EN 301 489-1 V2.2.0 — EMC standard for radio equipment and services; Part 1 (as applied to Internal NimbeLink NL-SW-LTE-QBG96)
EN 301 489-1 V2.2.3; 2019-11 — EMC standard for radio equipment and services; Part 1: Common technical requirements
EN 301 489-3 V2.1.1; 2019-03 — EMC standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices
EN 301 489-17 V3.2.4; 2020-09 — EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems
EN 301 489-17 v3.1.1 — EMC standard for radio equipment and services; Part 17 (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 301 489-17 V3.2.4; 2020-09 — EMC standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems
Draft EN 301 489-19 V2.1.0 — EMC standard for radio equipment and services; Part 19 (as applied to internal NimbeLink NL-SW-LTE-QBG96)
Draft EN 301 489-52 V1.1.0 — EMC standard for radio equipment and services; Part 52 (as applied to internal NimbeLink NL-SW-LTE-QBG96)

Article 3.2 Spectrum Efficiency
EN 300 328 V2.1.1; 2016-11 — Wideband Data Transmission Systems; 2.4 GHz Band; Emissions, EMC (as applied to internal Bluetooth module Silicon Labs BGM13P)
EN 300 440 V2.2.1 2018-07 — Short Range Devices 1-40 GHz; Emissions; EMC
EN 303 413 V1.1.1/ — Satellite Earth Stations and Systems (SES); Global Navigation Satellite System (GNSS) receivers (as applied to internal NimbeLink NL-SW-LTE-QBG96)
EN 301 511 V12.5.1 — IMT cellular networks; Harmonised Standard covering the essential requirements (as applied to
EN 301 908-1 V11.1.1/ — internal NimbeLink NL-SW-LTE-QBG96)
EN 301 908-2 V11.1.2

Article 3.3 Other Requirements
EN 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Date of Issue: 31 August 2021

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