



Instruction Manual  
Environmental Monitoring Unit

Watchdog 1000 Series  
Firmware Version 3



# Contents

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## **Specifications**

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### **Overview**

The Watchdog 1000 Environmental Monitoring Units provide remote environmental monitoring and alarming capability needed to detect climate conditions in data centers. The Watchdog 1000 Environmental Monitoring Units are equipped with a built-in web server. Web pages, including graphs, are generated by the unit to monitor environmental conditions within the cabinet. No software other than a web browser is required for operation and several data formats are available. The Watchdog 1000 have a built-in temperature sensor. The Watchdog 1000 has 16 expansion ports for the connection of external sensors and 3 I/O ports for optional remoter sensors. Watchdog 1000 support the use of network cameras.

### **Environmental**

#### **Temperature**

Operating:	10°C (50°F) min	45°C (104°F) max
Storage:	-25°C (-13°F) min	65°C (149°F) max

#### **Humidity**

Operating:	5% min	95% max	(non-condensing)
Storage:	5% min	95% max	(non-condensing)

#### **Elevation**

Operating:	0 m (0 ft) min	2000 m (6561 ft) max
Storage:	0 m (0 ft) min	15240 m (50000 ft) max

### **Electrical**

6-12 Volts DC, 2 Amps

Power Over Ethernet (POE) Enabled

### **Networking**

#### **Protocols**

HTTP, HTTPS (SSL/TLS), SMTP, POP3, ICMP, DHCP, TCP/IP, NTP, Telnet, Syslog

#### **Ethernet Link Speed**

10 Mbit; half-duplex

### **Data Formats**

HTML, SNMP, CSV/Plain Text, XML

## **EMC Verification**

This Class A device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

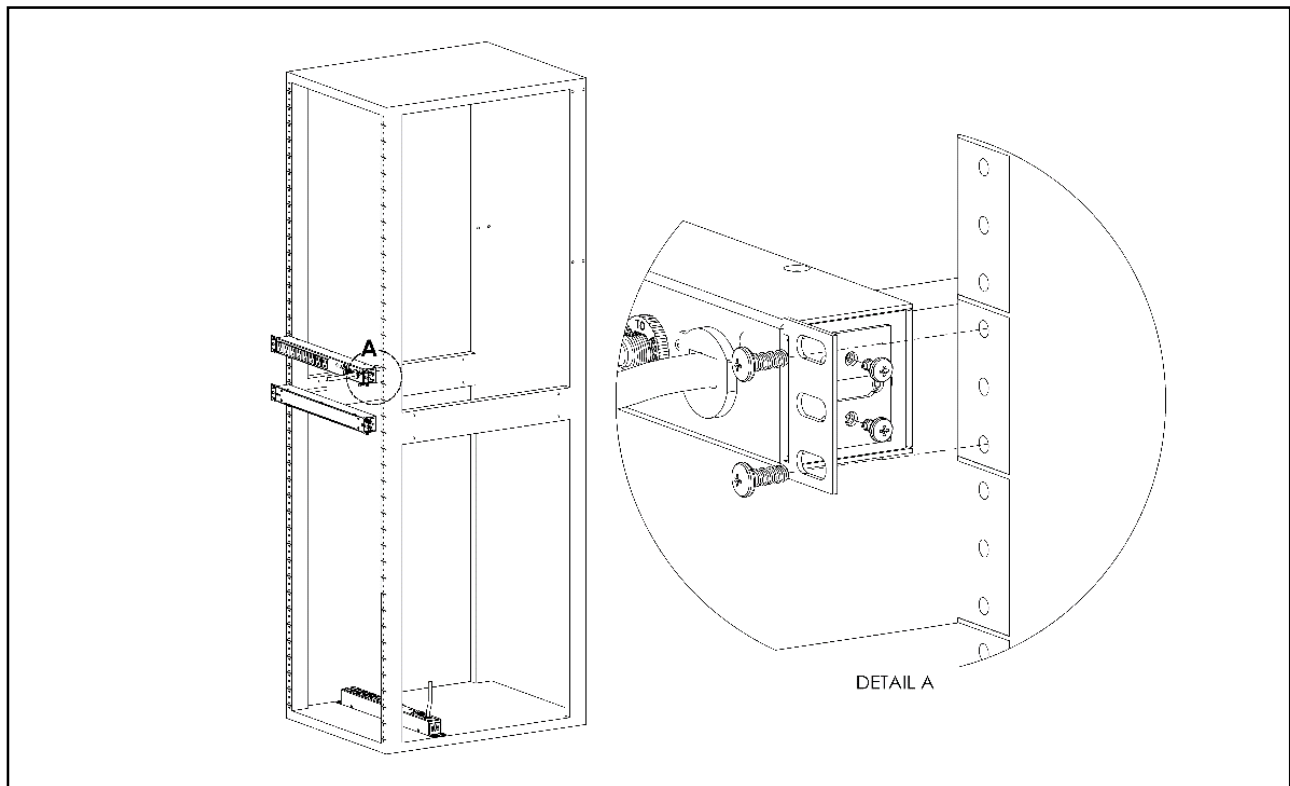
## Installation

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### Guidelines

- If the Watchdog 1000 Environmental Monitoring Unit is installed in a cabinet the ambient temperature of the rack should be no greater than 45°C.
- Install the Watchdog 1000 Environmental Monitoring Unit such that the amount of airflow required for safe operation of equipment is not compromised.
- Mount the Watchdog 1000 Environmental Monitoring Unit so that a hazardous condition is not achieved due to uneven mechanical loading.

### Mounting



**Figure 1: 19" Horizontal/Panel Mount Brackets (7938)**

Using the 19" horizontal/panel mount brackets, attach Environmental Monitoring Unit to rack as shown

## **Network Overview**

This product comes preconfigured with a default IP address set. Simply connect to the Environmental Monitoring Unit and access the web page with your browser.

## **Default IP Address**

Watchdog 1000 units have a default IP address for initial setup and access to the unit if the assigned address is lost or forgotten. Once an IP address is assigned to a unit, the default IP address is no longer active. To restore the default IP address, press and hold for approximately 20 seconds the reset button for approximately 20 seconds. The reset button is located below the network connector. The idle and activity lights on the network connector will both light up when the IP address has been reset.

**Note:** Pressing the reset button will restore the default IP address and will also clear all password settings.

The Configuration page allows you to assign the network properties or use DHCP to connect to your network. Access to the unit requires the IP address to be known, so use of a Static IP or reserved DHCP is recommended. The default address is shown on the front of the unit:

- **IP Address:** 192.168.123.123
- **Subnet Mask:** 255.255.255.0
- **Gateway:** 192.168.123.1

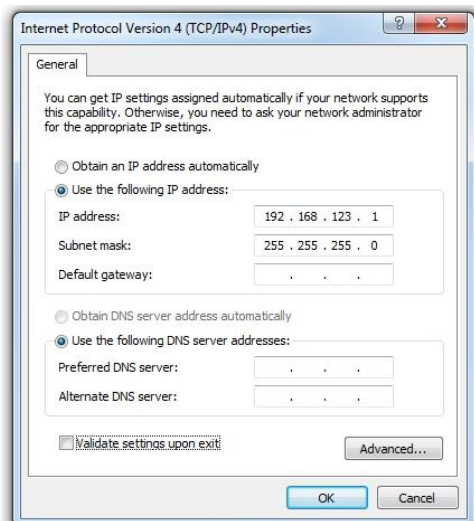
## **Initial Setup**

Connect the Watchdog 1000 unit to your computer using a crossover cable or hub/switch.

## **Windows OS**

Navigate to the Local Area Network Adapter Connections Properties and change the Internet Protocol Version 4 (TCP/IPv4) Properties. Select "Use the following IP address". Use these settings:

- **IP Address:** 192.168.123.1
- **Subnet Mask:** 255.255.255.0
- **Gateway:** Leave blank



**Figure 2: Network settings for initial setup. Images varies depending on Windows versions.**

Save changes.

The unit should now be accessible in a web browser via the unit's permanent IP address: <http://192.168.123.123/>. See Unit Configuration (page 17) for details.

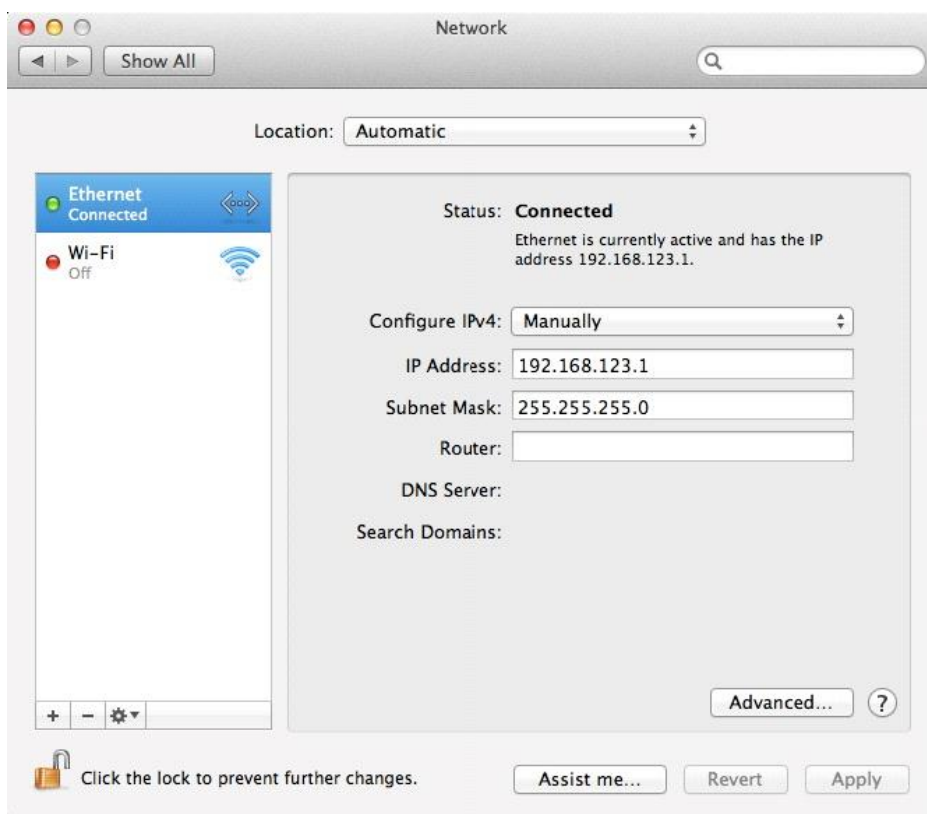
## Mac OS

Open System Preferences via the Dock or the Apple menu.

Select "Network" under "Internet & Network."

Select "Ethernet" from the list on the left side of the window and enter these settings on the right side of the window:

- **Configure:** Manually
- **IP Address:** 192.168.123.1
- **Subnet Mask:** 255.255.255.0
- **Router:** Leave blank



**Figure 3: Mac OS network settings for initial setup. Image varies depending on Mac versions.**

Apply changes.

The unit should now be accessible in a web browser via the unit's permanent IP address: <http://192.168.123.123/>. See Unit Configuration (page 17) for details.

# Web Interface

## Overview

The unit is accessible via a standard, unencrypted HTTP connection as well as an encrypted HTTPS (SSL) connection. The following web pages are available:

## Sensors Page

The front page, *Sensors*, gives both instantaneous and historical views of the unit's data. Real time readings are provided for all sensor data next to historical graphs.

Optional cameras may be added and their live snapshots are shown on this page. On Watchdog 1000 unit, plug-and-play sensors appear below the internal sensors when attached.

The menu bar allows access to the rest of the Environmental Monitoring Unit's functionality.

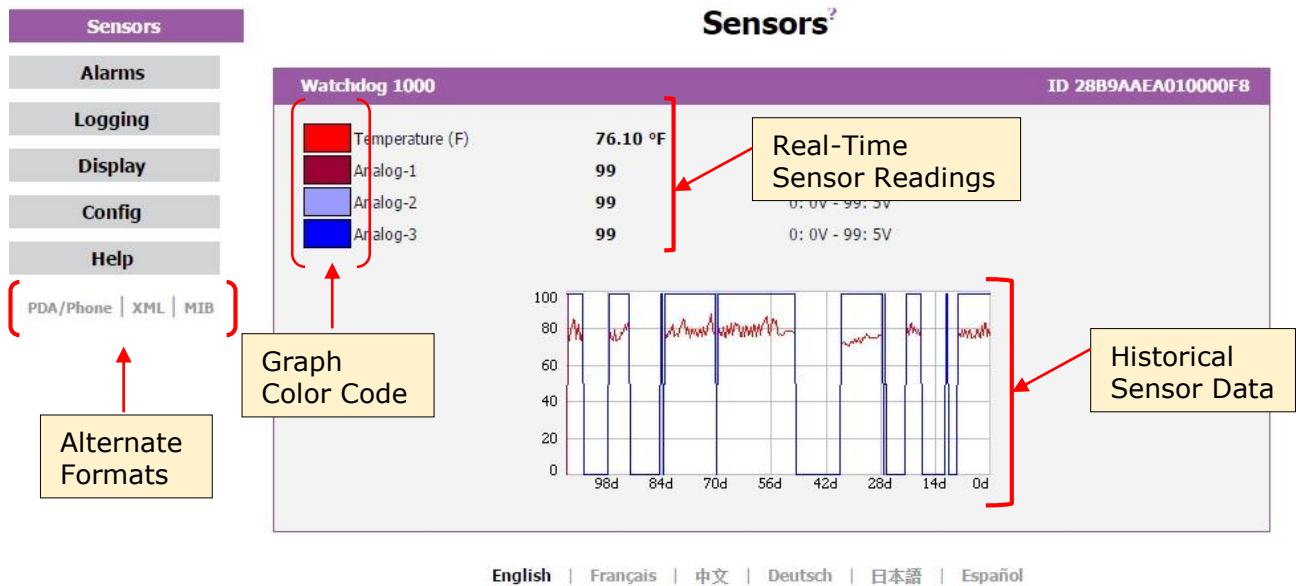


Figure 4: Sensors Page – Internal Temperature Sensor



## Logging Page

The *Logging* page allows the user to access the historical data by selecting the desired sensors and time range to be graphed. Selected sensor values are logged into the data file at a rate of one point per minute. Please note that although data is logged once per minute, all sensor data used in the real time display and alarm functions is read at least once every 5 seconds for internal sensors and once every 30 seconds for external sensors. Recorded data is available for download in a comma-separated values (CSV) file.

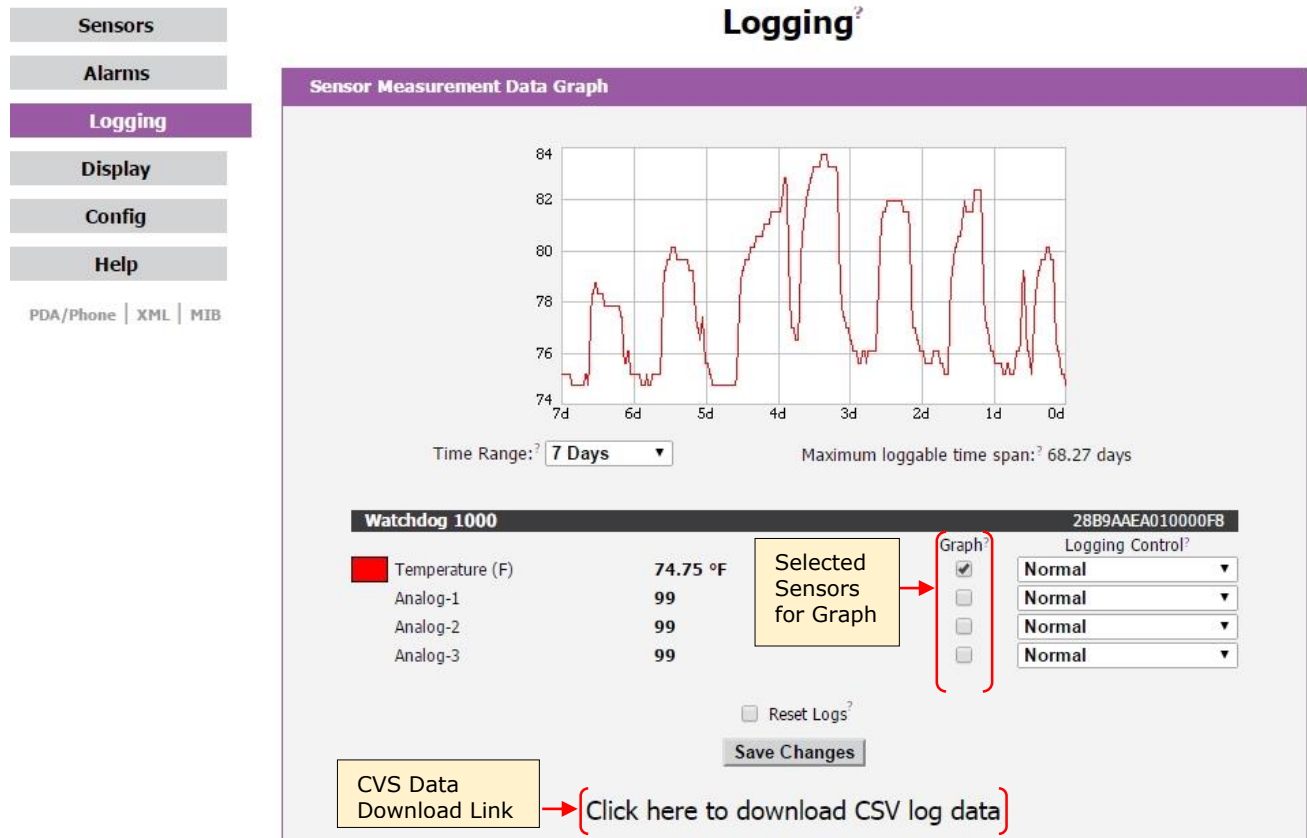


Figure 5: Logging Page

## Display Page

The *Display* page allows the user to assign friendly names to internal and attached sensors as well as change the default temperature unit of measure for sensors. The display page also allows the user to select between the default and classic web page layouts. The default interface displays a vertical menu bar to the left of the main window, while the classic interface displays a horizontal menu bar across the top of the screen.

The screenshot shows the 'Display' configuration page with a vertical sidebar on the left containing menu items: Sensors, Alarms, Logging, Display (highlighted), Config, and Help. Below the sidebar are links for PDA/Phone, XML, and MIB. The main content area is titled 'Display' and is divided into three sections:

- General:** Contains dropdown menus for Default Language (English), Date Format (USA (MM/DD/YY)), Temperature Unit (Fahrenheit), Internal Temperature Offset (0), and Interface Type (Default). A 'Save Changes' button is at the bottom.
- Devices:** Shows a table with columns for Unique Address (28B9AAEA010000F8), Device Type (climate), and Friendly Name (Watchdog 1000). There is a checkbox for 'Remove all unplugged devices' and a 'Save Changes' button.
- Analog Sensors:** Contains a table with columns for Sensor, Friendly Name, Min, Max, and Unit. The Min and Max columns are circled in red, and a yellow box labeled 'Analog Scale Adjustment' has an arrow pointing to the Unit column. A 'Save Changes' button is at the bottom.

At the bottom of the page, there are language selection links: English | Français | 中文 | Deutsch | 日本語 | Español.

Figure 6: Display Page

## Alarms Page

The *Alarms* page allows the user to establish alarm conditions for each sensor reading. Alarm conditions can be established with either high or low trip thresholds. The alarms are displayed in different sections based on the device the alarm is associated with. Alarm notification options include Email and SNMP Trap. See Alarms (page 22) for details.

**Sensors**

**Alarms**

**Logging**

**Display**

**Config**

**Help**

PDA/Phone | XML | MIB

### Alarms<sup>?</sup>

**Watchdog 1000** ID 28B9AAEA01000F8

Temperature (C) trips if **Below** threshold: **-999.0**

Alarm must remain tripped for **0** (min) before notification<sup>?</sup>

Repeat every:<sup>?</sup> **No Repeat**

**E-mail**<sup>?</sup>

- (E-mail 1)
- (E-mail 2)
- (E-mail 3)

**Untripped**

**Save Changes** **Add New Alarm**

### Alarm Behavior

Unplugged Alerts:<sup>?</sup> **Enabled**

**Save Changes**

[English](#) | [Français](#) | [中文](#) | [Deutsch](#) | [日本語](#) | [Español](#)

Figure 7: Alarms Page

## Configuration Page

The *Configuration* page has five sub-tabs; *Network*, *Monitoring*, *Diagnostics*, *Event Log*, and *Admin*. See Unit Configuration (page 17) for details.

### Configuration Network Tab

The user can enter and update the network settings on the *Network* tab of the *Configuration* page. See Unit Configuration section for details.

The screenshot shows the 'Configuration' page with a sidebar on the left containing menu items: Sensors, Alarms, Logging, Display, Config (highlighted), Network (highlighted), Monitoring, Diagnostics, Event Log, Admin, and Help. Below the sidebar are links for PDA/Phone, XML, and MIB. The main content area is titled 'Configuration' and has a 'Network' sub-tab selected. The 'Network' section shows 'Current Network Configuration set statically' and 'Link Speed: 10Mbps/half-duplex'. It offers three radio button options for configuration: 'Use DHCP for Network Configuration and DNS Server Addresses', 'Use DHCP for Network Configuration and Static DNS server addresses', and 'Use Static Network Configuration and DNS server addresses' (which is selected). Below these are input fields for IP Address (192.168.140.205), Subnet Mask (255.255.255.0), Gateway (192.168.140.254), Primary DNS Server (208.67.222.222), and Secondary DNS Server (208.67.222.220). A 'Save Changes' button is at the bottom right. The 'Web Server' section below has a 'Protocols' dropdown set to 'HTTP and HTTPS', 'HTTP Port' set to 80, 'HTTPS Port' set to 443, and 'Telnet Service' dropdown set to 'Enabled'. Another 'Save Changes' button is at the bottom right. At the bottom of the page, there are language selection links: English, Français, 中文, Deutsch, 日本語, and Español.

Figure 8: Configuration Network Tab

## Configuration Monitoring Tab

The user can enter and update the email alert, SNMP, and camera settings on the *Monitoring* tab of the *Configuration* page. See Unit Configuration section (page 17) for details.

Sensors

Alarms

Logging

Display

**Config**

Network

**Monitoring**

Diagnostics

Event Log

Admin

Help

FOA/Phone | XML | HEB

### Configuration

#### E-mail

Protocols: No Authentication (email relay)

SMTP Servers:

SMTP Port:

"From" E-mail Address:

Send alarms to this recipient:	Always	Business Hours <sup>1</sup>	All Hours <sup>2</sup>	SMS <sup>3</sup>
To E-mail Address 1: <input style="width: 80%;" type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To E-mail Address 2: <input style="width: 80%;" type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To E-mail Address 3: <input style="width: 80%;" type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To E-mail Address 4: <input style="width: 80%;" type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To E-mail Address 5: <input style="width: 80%;" type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### Business Hours

Start Time:

End Time:

Sun Mon Tue Wed Thu Fri Sat

Week Days:

#### System Status E-Mail Reports

Report Time:  hour  min  
(0-23) (0-59)

Report Period: 24 hours

E-mail Destinations:

Delete This Report:

#### SNMP

SNMP Service: Enabled

Temperature Precision: 1x degree C/F

Read Community:

Listen port for GET:

Trap Community:

Write Community:

Trap Type: V2C Notify

Trap IP Address:port 1:

192.168.140.140

Trap IP Address:port 2:

#### Initial SNMPv3 data

Unauthenticated User:

Authenticated Manager:

Manager Authentication Password:

Manager Privacy Password:

Trap User:

Trap Authentication Password:

Trap Privacy Password:

#### Cameras

Cam 1, IP Address:

Model: No camera

Username:

Password:

Cam 2, IP Address:

Model: No camera

Username:

Password:

Cam 3, IP Address:

Model: No camera

Username:

Password:

Cam 4, IP Address:

Model: No camera

Username:

Password:

English | Français | 中文 | Deutsch | 日本語 | Español

**Figure 9: Configuration Monitoring Tab**

## Configuration Diagnostics Tab

The user can update the Syslog settings on the *Diagnostics* tab of the *Configuration* page.

- Sensors
- Alarms
- Logging
- Display
- Config
- Network
- Monitoring
- Diagnostics
- Event Log
- Admin
- Help

PDA/Phone | XML | MIB

### Configuration<sup>?</sup>

Syslog

Facility: LOCAL0 ▾

Daemon Address:port 1:

[Save Changes](#)

Syslog Configuration

Subsystems	Severity							
	emergency	alert	critical	error	warning	notice	inform	debug
<i>os</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>lwip</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>socket</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>macphy</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>flashfl</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>webserv</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>spi0dev</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>device</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>host</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>setvars</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>dynweb</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>snmp</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>alarms</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>email</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>rtclock</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>sntp</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>dns</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>datalog</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>graphin</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>firmwar</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>msgcatlg</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

[Save Changes](#)

English | Français | 中文 | Deutsch | 日本語 | Español

**Figure 10: Configuration Diagnostics Tab**

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Revision Date: 02/24/2015

## Configuration Event Log Tab

The user can view the Event Log and update the Memory Syslog settings on the *Event Log* tab of the *Configuration* page.

- Sensors
- Alarms
- Logging
- Display
- Config
- Network
- Monitoring
- Diagnostics
- Event Log
- Admin
- Help

PDA/Phone | XML | MIB

### Configuration

NVRAM Event Log

Click here to view NVM event log

[Clear NVM event log](#)

Memory Syslog

```

1/29/2015 23:28:00 setvars:var_init: Reading data from flash succeeded. Merged data will be written
1/29/2015 23:27:59 setvars:var_init: size of block in flash: 20524, current block 20524.
1/29/2015 23:27:59 setvars:var_init: Current firmware rev [1071], data in flash from rev [1072].
1/29/2015 23:27:59 setvars:var_init: token_read=[VARS BLOCK HERE], from address 0x80440000.
1/29/2015 23:27:59 setvars:var_netstack_push: secondary dns address set to static value: 8.8.4.4
1/29/2015 23:27:59 setvars:var_netstack_push: primary dns address set to static value: 8.8.8.8
1/29/2015 23:27:59 setvars:var_netstack_push: gateway set to 192.168.123.1.
1/29/2015 23:27:59 setvars:var_netstack_push: netmask set to 255.255.255.0.
1/29/2015 23:27:59 setvars:var_netstack_push: IP address set to 192.168.123.123.
1/29/2015 23:27:59 socket :set static IP to 192.168.123.123
1/29/2015 23:27:59 setvars:var_netstack_push: DHCP status set to 0.
1/29/2015 23:27:59 setvars:var_netstack_push: MAC address was set to 00:19:85:E0:0E:48.
1/29/2015 23:27:59 setvars:var_netstack_push: secondary dns address set to static value: 8.8.4.4
1/29/2015 23:27:59 setvars:var_netstack_push: primary dns address set to static value: 8.8.8.8
1/29/2015 23:27:59 setvars:var_netstack_push: gateway set to 0.0.0.0.
1/29/2015 23:27:58 setvars:var_netstack_push: netmask set to 0.0.0.0.
1/29/2015 23:27:58 setvars:var_netstack_push: IP address set to 0.0.0.0.
1/29/2015 23:27:58 socket :set static IP to 0.0.0.0
1/29/2015 23:27:58 setvars:var_netstack_push: DHCP status set to 0.
1/29/2015 23:27:58 setvars:var_netstack_push: MAC address was set to 00:19:85:E0:0E:48.
                    
```

Memory Syslog

Subsystems	Severity							
	emergency	alert	critical	error	warning	notice	inform	debug
os	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
lwip	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
socket	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
macphy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
flashfl	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
webserv	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
spi0dev	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
host	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
setvars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
dynweb	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
snmp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
alarms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
email	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
rtclock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
sntp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
dns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
datalog	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
graphin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
firmwar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
msgcatlg	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

E-mail   Send logs now

[Save Changes](#)

English | Français | 中文 | Deutsch | 日本語 | Español

**Figure 11: Configuration Event Log Tab**

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Revision Date: 02/24/2015

## Configuration Admin Tab

The user can set the system clock and administrative information on this tab. Additionally the user can set administrator and account passwords. See Unit Configuration (page 17) section for details.

- Sensors
- Alarms
- Logging
- Display
- Config
- Network
- Monitoring
- Diagnostics
- Event Log
- Admin
- Help

PDA / Phone | XML | RSS

### Configuration

**All Parameters**

[Reset ALL to Default Values](#)

[Refresh DNS Cache](#)

**Reboot**

[Reboot](#)

**RS2 Disclaimer**

Warning: If you turn off or delete your configuration or otherwise delete the configuration of these components will carry over to that device as well.

There are no warranties, express or implied by this action, by the operation of law or otherwise, of enabling this feature. GEIST DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY, SATISFACTION, AND FITNESS FOR A PARTICULAR PURPOSE.

Geist express warranties will not be enlarged, diminished, or affected by and no obligation or liability will arise out of Geist rendering of technical or other advice or service in connection with the alarms being set on the RS2.

The foregoing warranties and remedies are exclusive and in lieu of all other warranties and remedies. THERE ARE NO WARRANTIES SET FORTH ABOVE—ONLY THE EXCLUSION OF ALL IMPLIED WARRANTIES.

[Disabled](#)

Accept

[Enable](#) [Disable](#)

**System Clock, set to GMT**

Set Clock method: NTP Server

GMT to local, (+/-)hh:mm -05:00

NTP primary server 192.43.244.18  
192.43.244.18

NTP secondary server 129.8.15.28  
129.8.15.28

Sync to NTP server period (seconds) 1800

[Save Changes](#)

**Daylight Saving Time**

**DST is DISABLED**

Enable DST: Disabled

[Save Changes](#)

**Name and Password Configuration**

NOTE 1: If Account currently has a password, leaving Old Password blank results in no changes to that account.  
NOTE 2: Administrator password may be used in the Old Password field of any account.  
NOTE 3: If setting New Password to blank, Account Name must also be blank.  
NOTE 4: If New Password is not blank, Account Name must not be blank.

**Administrator Account Name**

Old Password

New Password

New Password Again  (again, to confirm)

Warning: Reset your password. Loss of password may require 18 hours to recover.

**Control Account Name**

Old Password

New Password

New Password Again  (again, to confirm)

Warning: Reset your password. Loss of password may require 18 hours to recover.

**View Only Account Name**

Old Password

New Password

New Password Again  (again, to confirm)

Warning: Reset your password. Loss of password may require 18 hours to recover.

[Save Changes](#)

**Admin Info**

Contact Name: John Doe

Contact Email: john.doe@foo.com (required)

Contact Phone: 000.123.5678

Device Location: Somewhere (required)

Device Description:  (optional)

[Save Changes](#)

**Saved Configuration XML File**

XML File: Choose File No file chosen

[Upload Local XML File](#)

[Download Current XML File](#)

**SSL Certificate and Private Key**

**SSL Certificate and Private Key are INVALID**

SSL Certificate File: Choose File No file chosen

SSL Private Key File: Choose File No file chosen

[Upload SSL Files](#)

[Erase SSL Data](#)

**Upload System Firmware**

Firmware package file: Choose File No file chosen

[Upload New Firmware](#)

English | Français | 中文 | Deutsch | 日本語 | Español

**Figure 12: Configuration Admin Tab**



## Unit Configuration

### Network Configuration

The unit's network configuration is set on the *Network* tab of the *Configuration* page. Settings pertaining to the unit's network connection are:

The image shows two screenshots of a configuration interface. The top screenshot is titled 'Network' and shows 'Current Network Configuration set statically' with a link speed of '10Mbps/half-duplex'. It has three radio button options: 'Use DHCP for Network Configuration and DNS Server Addresses', 'Use DHCP for Network Configuration and Static DNS server addresses:', and 'Use Static Network Configuration and DNS server addresses:'. The third option is selected. Below are input fields for IP Address (192.168.140.225), Subnet Mask (255.255.255.0), Gateway (192.168.140.254), Primary DNS Server (10.1.0.98), and Secondary DNS Server (10.1.0.99). A 'Save Changes' button is at the bottom. The bottom screenshot is titled 'Web Server' and shows a 'Protocols' dropdown set to 'HTTP and HTTPS', 'HTTP Port' set to 80, 'HTTPS Port' set to 443, and 'Telnet Service' set to 'Enabled'. A 'Save Changes' button is at the bottom.

**Figure 13: Network Configuration**

- **DHCP:** Allows the unit to request a dynamic IP address from a server on the network.
- **Static IP Address/Net Mask/Gateway:** When not using a dynamic address, enter static network configuration information here.
- **Telnet Service:** Enable or disable the built-in Telnet server. See Telnet (page 20) for details.
- **HTTP Services:** Enables/disables access via HTTP and HTTPS. Available options are: HTTP and HTTPS, HTTP only, and HTTPS only. It is not possible to disable the web interface completely.
- **HTTP/HTTPS Server Port:** Changes the TCP port that each server listens on.
- **DNS Servers:** Allows the unit to resolve host names for Email, NTP and SNMP servers as well as cameras.

## Time and Date

The system clock is set on the *Admin* tab of the *Configuration* page. The unit comes preconfigured with the IP addresses of two NIST time servers and is set to the Central Time Zone (-0500 GMT). Should a local time server be preferred, enter its IP address into the "NTP primary server" box and click the "Save Changes" button. Clearing the time server addresses and clicking "Save Changes" will set the time servers back to the defaults. The unit attempts to contact the time servers during boot up and periodically while running. Until a time server is contacted or the system clock is manually set, all log time stamps will present time as the number of seconds since the unit was powered up and graphs will not be shown.

System Clock, set to GMT

Set Clock method: **NTP Server**

GMT to local, (+/-)hh:mm: **-05:00**

NTP primary server: **192.43.244.18**  
192.43.244.18

NTP secondary server: **129.6.15.28**  
129.6.15.28

Sync to NTP server period (seconds): **1800**

**Save Changes**

**Figure 14: Time Settings**

The time, date, IP address and friendly name of the unit are displayed in the top of each web page.

IP Address: 192.168.140.225  
Local Time: Fri, 01/30/15 17:19:01

**Figure 15: Time and Date Display**

**Note:** The time and date are not adjusted for daylight savings time. Setting the time zone offset forward and backward an hour will cause a gap or overwriting of logs, respectively.

## E-Mail

The unit is capable of sending e-mail to as many as five addresses at once. Most SMTP and ESMTP servers are compatible. Authentication options are None, POP3 (POP-before-SMTP) or ESMTP. The e-mail configuration is set on the *Monitoring* tab of the *Configuration* page.

E-mail

Protocols: **No Authentication (email relay)**

SMTP Server: \_\_\_\_\_

SMTP Port: **25**

"From" E-mail Address: \_\_\_\_\_

Send alarms to this recipient:

	Always	Business Hours?	After Hours?	SMS?
To E-mail Address 1: _____	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
To E-mail Address 2: _____	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
To E-mail Address 3: _____	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
To E-mail Address 4: _____	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
To E-mail Address 5: _____	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>

**Save Changes**

**Send Test E-Mail**

**Figure 16: E-Mail Configuration**

An SMTP server as well as "From" and "To" addresses are required to send e-mails. Some mail servers may require a username and password. In most cases, the username does not have to match the "From" address, but does need to be a valid user on the authenticating server. Microsoft Exchange servers will have to be set to allow SMTP relay from the IP address of the unit. In addition, a test email can be sent from the bottom of the *Monitoring* tab of the *Configuration* page.

**Note:** The unit cannot receive e-mails. The POP3 server is used strictly for authentication and is not required when using None or ESMTTP.

## Status Reports

When enabled, the unit will periodically send a full status report to all "To" e-mail addresses selected for the report. The report includes current unit data from all attached sensors as well as alarm states. Reporting frequency options are: weekly, hourly, every 2, 3, 4, 6, 8, 12, 24, or 48 hours. E-mail addresses are selected when the report is created by checking the corresponding e-mail destination box. Allowing the cursor to hover over an e-mail destination box will display the e-mail address that the box is associated with.

**Figure 17: Email Report Settings**

## SNMP

The unit supports retrieval of all data via Simple Network Management Protocol (SNMP) v1, v2c, and v3. In addition, alarm traps can be sent to up to two IP addresses. The SNMP configuration is entered on the *Monitoring* tab of the *Configuration* page.

**Figure 18: SNMP Configuration**

The default community string is "public" and the MIB is downloadable via a link at the top of the unit's web page.

## Accounts and Passwords

The unit offers account security options that are entered on the *Admin* tab of the *Configuration* page. There are three levels of account security:

- **Administrator:** Password protects the Display, Alarms and Configuration pages.
- **Control Access:** Password protects the Control Actions and Control Settings pages.
- **View-Only:** Password protects the Sensors, PDA, WAP and XML pages.

**Name and Password Configuration**

NOTE 1: If Account currently has a password, leaving Old Password blank results in no changes to that account.  
NOTE 2: Administrator password may be used in the Old Password field of any account.  
NOTE 3: If setting New Password to blank, Account Name must also be blank.  
NOTE 4: If New Password is not blank, Account Name must not be blank.

Administrator Account Name?   
Old Password   
New Password   
New Password Again  (again, to confirm)  
Warning: Record your password. Loss of password may require 48 hours to recover.

Control Account Name?   
Old Password   
New Password   
New Password Again  (again, to confirm)  
Warning: Record your password. Loss of password may require 48 hours to recover.

View Only Account Name?   
Old Password   
New Password   
New Password Again  (again, to confirm)  
Warning: Record your password. Loss of password may require 48 hours to recover.

**Save Changes**

**Figure 19: Account Configuration**

User account names may include alphanumeric characters, spaces and underscores. Passwords may include alphanumeric characters and underscores.

**Note:** The Administrator account must be active to enable the Control Access and View-Only accounts.

**Note:** The Control Access account must be active to enable the View-Only account.

**Note:** The account names "root" and "admin" are disabled for security reasons and cannot be re-enabled.

**Warning:** Record your passwords. To reset lost passwords, follow the instructions for resetting the unit's IP address and passwords given in the Default IP Address section. To generate a temporary recovery password to access the unit, contact customer service from a location where the unit can be accessed via the internet.

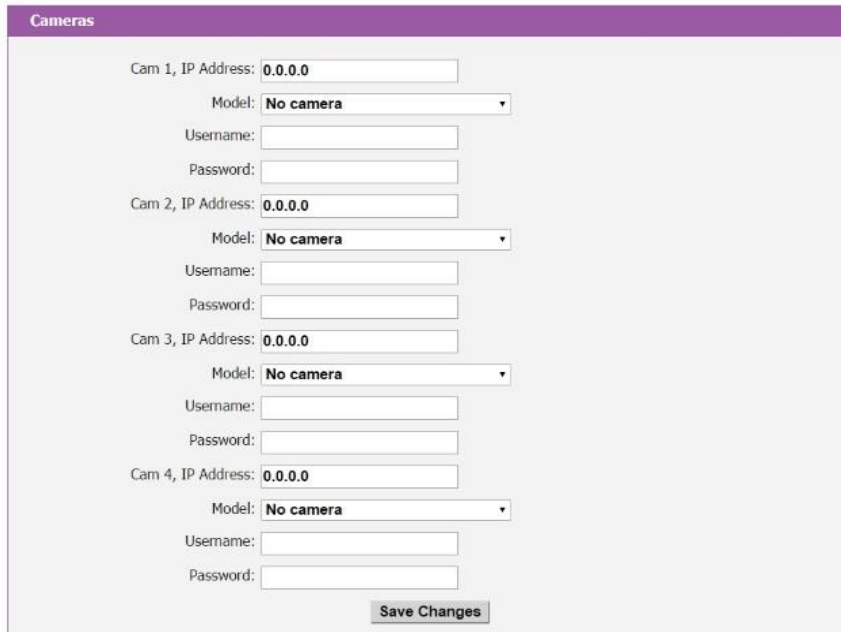
## Telnet

The unit provides a Telnet server for basic monitoring via the command line. The Administrator account must be enabled to use the Telnet interface. Type "help" after logging in to the unit to see a list of available commands. The Telnet service can be disabled under "Web Server" on the *Network* tab of the *Configuration* page.

**Note:** All data sent via Telnet is unencrypted. Some settings can be changed and user names and network settings are available via Telnet. In secure environments, it is recommended that Telnet be disabled.

## Camera Configuration

Enter the domain names/IP addresses and models of up to four IP-addressable network cameras in the "Cameras" section of the *Monitoring* tab on the *Configuration* page. The unit will present a linked snapshot from each camera on the *Sensors* page.



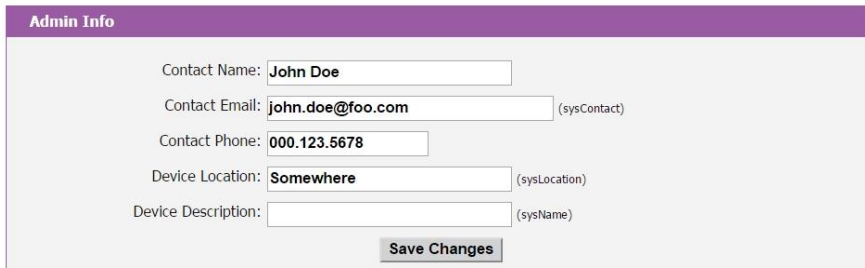
The screenshot shows a web interface titled "Cameras" with a purple header. It contains four identical camera configuration sections. Each section has the following fields: "Cam 1, IP Address:" (value: 0.0.0.0), "Model:" (dropdown menu: No camera), "Username:" (text input), and "Password:" (text input). The same fields are repeated for Cam 2, Cam 3, and Cam 4. At the bottom right of the form is a "Save Changes" button.

**Figure 20: Configuration and Supported Models**

**Note:** Each camera must be set to allow anonymous access to enable this feature.

## Admin Information

Information entered in the "Admin Info" section of the *Admin* tab of the *Configuration* page will show up at the bottom of the unit's web interface.



The screenshot shows a web interface titled "Admin Info" with a purple header. It contains the following fields: "Contact Name:" (value: John Doe), "Contact Email:" (value: john.doe@foo.com, with a small "(sysContact)" label to the right), "Contact Phone:" (value: 000.123.5678), "Device Location:" (value: Somewhere, with a small "(sysLocation)" label to the right), and "Device Description:" (text input, with a small "(sysName)" label to the right). At the bottom right of the form is a "Save Changes" button.

**Figure 21: Admin Information Fields**

Unit Location: Somewhere  
Unit Description:  
Admin: **John Doe** or Call 000.123.5678  
Support: **Manuals, support@geistglobal.com** or Call 800.432.3219 / +1.402.474.3400  
Copyright © 2003-2015 Geist All Rights Reserved.

**Figure 22: Admin Information Display**

# Alarms

## Alarm Notifications

The Watchdog 1000 support two types of alarm notification:

- **E-Mail:** The unit can be configured to send alarm e-mails to up to five recipients.
- **SNMP:** The unit can be configured to send SNMP traps to up to two trap servers.

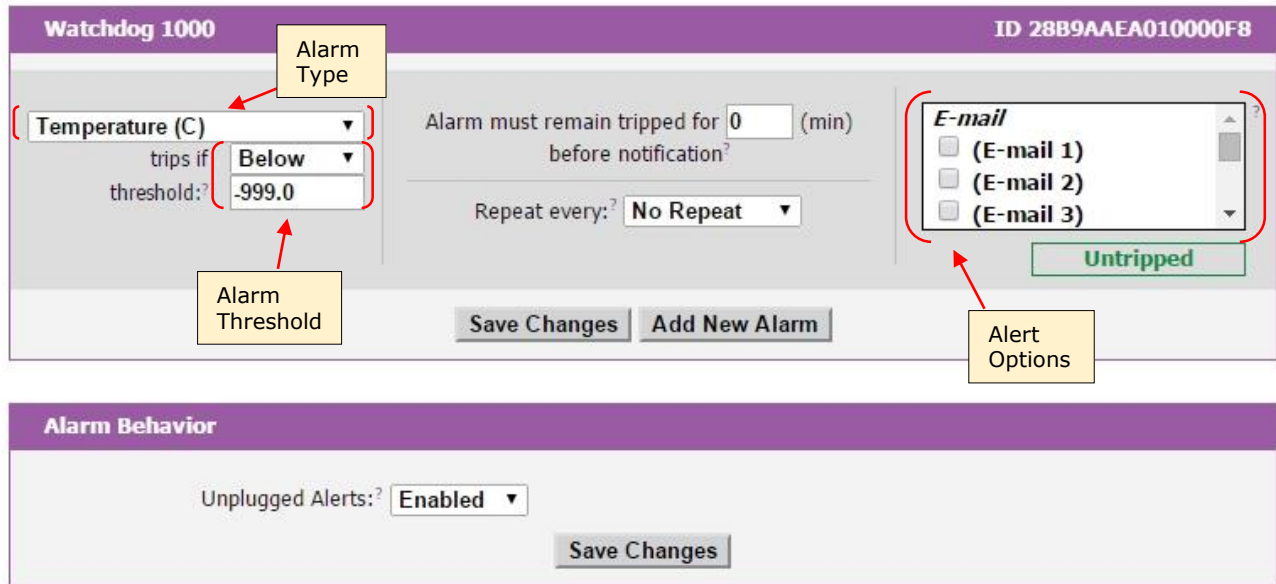


Figure 23: Alarm State Menu

The unit is capable of any combination of the above alarms at once. Alarm type combinations are selected per alarm via the check boxes which are displayed for each alarm on the Alarms page.

## Alarm Types

The Watchdog 1000 provide three types of alarm messages via E-Mail and SNMP:

- **Trip:** Occurs when a sensor value goes above a high trip threshold or below a low trip threshold.
- **Clear:** Occurs when a sensor already in the Tripped or Unplugged state goes back into its normal range.
- **Unplugged:** Occurs when a sensor with an alarm set loses contact with the main unit due to the sensor being physically unplugged or another communications error.

Alarms can be added for each internal device or external sensor displayed on the Alarms page. An alarm is added by pressing the "Add New Alarm Button" and selecting the sensor value to be monitored from a drop down menu.

## Thresholds

The user must set a trip threshold and type for each alarm that is added to the Alarms page. The threshold type is chosen as either "High Trip" or "Low Trip" from a drop down menu when the alarm is created. The threshold value is typed into a data window when the alarm is created. Alarms are triggered based on the selected sensor's data and the trip threshold type and value. Alarm settings can be edited or deleted at any time.

Analysis of each unit is recommended before setting alarm thresholds as some of the values monitored by the unit are relative values, whose scale will differ slightly between units. Allow each unit to operate under normal, steady-state conditions for several hours before setting alarm thresholds. By allowing the sensors to operate for several hours, the user can better understand what the normal variations are; thereby allowing the user to choose alarm thresholds that will not trigger numerous false alarms.

**Note:** Changes in settings take a few moments to become active. Rapidly resetting alarm values may not provide the desired results. Allow up to 2 minutes after changing a setting before modifying it again.

## Sensors

---

### Overview

All internal sensors are measured every 5 seconds. External sensors are measured every 10 to 30 seconds, depending on the number of devices connected. Sensor data collected by the Watchdog 1000 provides useful trend analysis data. While all values are not absolute in relation to a known unit, trend analysis of the data allows users to view changes and draw useful conclusions about what is happening over time in the monitored environment.

### Internal Sensors

The Watchdog 1000 contain the following onboard sensor:

- **Temperature:** Measures temperature and can be displayed in °C or °F. The accuracy is  $\pm 1$  °F from -50 °F to 185 °F. Note: This sensor may be heated by internal circuitry in the unit; a temperature offset is available to re-calibrate.

### Temperature Offset

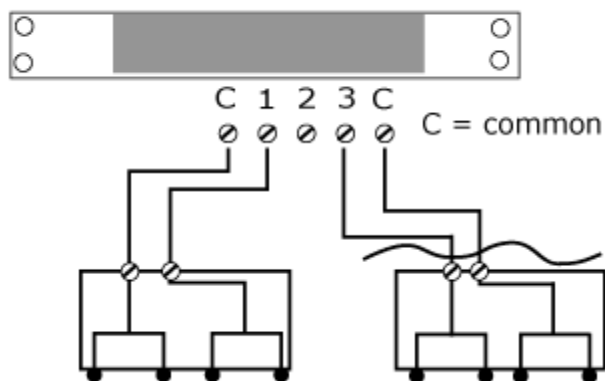
The internal temperature sensor is pre-calibrated at the factory and the values reported by this sensor are accurate. However, due to low airflow and normal board heating, the temperature sensor may read a few degrees higher than any external sensors that are attached. To counteract this, an offset of up to -7 °C or °F is configurable on the *Display* Page.

### I/O Sensors

The Watchdog 1000 unit comes equipped with three I/O ports for connecting additional external sensors such as Water and Door Sensors. The three ports are designed to accept a 0-5 Vdc analog input; alternatively, an internal 100K pull up resistor to 5 V allows for the use of dry contacts. The I/O port input is converted to a digital number ranging from 0 to 99 and is displayed on the *Sensors* page. Unused I/O ports will display a value of 99.

Water sensors act as conductivity bridges. Moisture across the contacts causes the value to drop. Door switches can be wired in a serial connection; if the chain is broken the entire group is classified as open. The limiting factor on the I/O ports is the length of the wire, found to be around 400'.

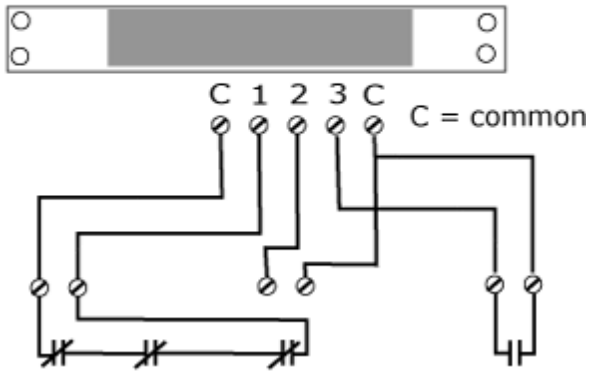
### Water Sensors



**Figure 24: Water Sensor Wiring Example**



## Door Switches - Extended



**Figure 25: Door Sensor Wiring Example**

### **Additional Optional I/O Sensors**

- **RWS:** Water Sensor
- **RDPS:** Door Sensor
- **SA-1:** Smoke Alarm
- **RCP-2:** 125 V City Power Monitor
- **WSK-10:** 10' Water Sensing Cable Kit
- **WSK-40:** 40' Water Sensing Cable Kit
- **-48 VDCM:** Power Monitor
- **30 VDCM:** Power Monitor

## **Remote Sensors**

### **Available Sensors**

- **RT:** Temperature
- **GTHD:** Temperature / Humidity / Dew Point
- **GT3HD:** Temperature / Humidity / Dew Point with ability to add two RT sensors
- **RTAFHD3:** Temperature / Air Flow / Humidity / Dew Point
- **CCAT:** Converts analog I/O Sensors to Remote Digital Sensors

\*RTAF, RTAFH & RTHD sensors have been discontinued and replaced by the RTAFHD3 sensor. Some Geist R-Series devices may require a firmware update to allow for proper compatibility with the new RTAFHD3 sensors.

If your Geist R-Series device is using firmware version 2.xx you will want to make sure you are using firmware version 2.94 or newer.

If your Geist R-Series device is using firmware version 3.xx you will want to make sure you are using firmware version 3.5.0 or newer.

Please contact Geist Support at 800-432-3219 if you need assistance locating your current version or upgrading to the new firmware version

### **RTAFHD3 Compatibility**

The (G)RTAFHD3 sensor cannot be utilized in combination with the discontinued (G)RTAF and (G)RTAFH sensors or (G)RTHD sensors built prior to 2010. If you desire to add (G)RTAFHD3 sensors to an existing installation currently utilizing incompatible sensors, please contact Customer Service for installation options.

### **Connecting Remote Sensors**

Plug-and-play remote sensors may be attached to the unit at any time via the RJ-12 connectors on the face of the unit. A splitter may be used to add additional sensors to the Watchdog 1000. Each sensor has a unique serial number and is automatically discovered and added to the web page. Up to sixteen sensors may be connected.

The display order of the sensors on the web page is determined by the serial number of each sensor. Friendly names for each sensor can be customized on the *Display* page.

**Note:** The sensor uses Cat. 3 wire and RJ12 connectors. Wiring must be straight-through: reverse polarity will temporarily disable all sensors until corrected.

**Note:** The sensors use a serial communication protocol and are subject to network signaling constraints dependent on shielding, environmental noise, and length of wire. Typical installations allow runs of up to 600 feet of sensor wire.

## **Data Logging and Display**

All data collected by the unit can be graphed. The *Logging* page allows the user to select graphed content to be logged. Selected sensor values are logged into the data file at a rate of one point per minute. The number of selected sensors determines the maximum data logging time span. This period is calculated and displayed on the *Logging* page. The oldest data will be deleted when the onboard memory fills up in order to make room for new data.

## Accessories

---

### IP-Addressable Network Cameras

The unit is able to interface with up to four IP-addressable network cameras. A live snapshot from each camera will be displayed on the unit's *Sensors* page underneath the main unit's graph. Clicking on a snapshot opens the camera's website in a new browser window.



**Figure 26: Camera Images**

Camera model and IP address are entered on the *Monitoring* tab of the *Configuration* page.

**Note:** Some cameras require additional software downloads to display live video in a web browser.

### RSC Integration

For users with multiple units, Geist RSC software offers:

- Convenient, single-window monitoring of multiple units via simple web-based interface
- Streamlined firmware updating
- Consolidation of alarm settings

See <http://www.geistglobal.com> for more information.

### Alternate Data Formats

In addition to the full access, control and configuration available via a desktop web browser, the unit presents data in multiple formats for easy integration with other monitoring systems. Data formats available via links on the unit's web page are:

PDA/Phone | XML | MIB

**Figure 27: Alternate Format Links**

- **PDA/Phone:** Presents data in a format best-suited for PDA or cellular phone web browsers.
- **XML:** Extensible Markup Language. Presents data in a structured tree for use with automated scripts and monitoring systems.
- **MIB:** Management Information Base. Downloads the MIB for use with SNMP monitoring tools.

## Technical Support

---

### **Firmware Version**

The firmware version is located in the upper right section of the web interface header, represented by v3.y.xx. Before contacting support, it is recommended that the Environmental Monitoring Unit first be updated to the latest firmware version. If this is not possible, please have the unit's existing firmware version number available when contacting technical support.



**Figure 28: Web Page Header**

### **Firmware Updates**

Keep your unit updated with the latest firmware releases or sign up for notifications at the following website: <http://www.geistglobal.com/support>.

### **Resetting the Unit**

Should the Environmental Monitoring Unit lose communication, the processor may be manually rebooted by momentarily removing power from the unit.

### **Service and Maintenance**

No service or maintenance is required. Do not attempt to open the unit or you may void the warranty. No serviceable parts inside.

### **More Technical Support**

<http://www.geistglobal.com>  
(800) 432-3219  
Email: [support@geistglobal.com](mailto:support@geistglobal.com)  
Or contact your distributor.

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## **Revision History**

Revision	Date	Notes	Approved By
1.0	10/14/2009	Initial Version	BGP, JP, AK
1.1	7/1/2010	Minor Text Edits	BGP
1.2	10/15/2010	RTAFHD3 Information Added	BGP
1.3	4/27/2012	Added GT3HD and GTHD	CG
1.4	6/22/2012	Changed logo and web address	SR
1.5	6/25/2013	Added `G` to product names	SR
2.0	2/13/2015	Changed product names and screenshots.	QN