



Watchdog Wi Instruction Manual

geistglobal.com



Table of Contents

Introduction	4
Welcome.....	4
About this Manual	7
Revision History.....	7
Organization of the Manual.....	7
Audience Profile.....	8
On-line Documentation.....	8
Reporting Document Errors.....	8
Conventions.....	8
Software	8
Hardware	9
Safety	10
Figures	11
Tables	11
Chapter 1 - Product Specifications	12
Overview.....	12
Warranty	12
Technical Specifications	14
Environmental	20
Temperature.....	20
Humidity	20
Elevation	20
Networking	21
Ethernet	21
Protocols	21
User Interfaces.....	21
Regulatory Compliance	21
Underwriters Laboratories (UL).....	21
Federal Communications Commission (FCC).....	22
Chapter 2 - System Overview	23
Indicators.....	23
Chapter 3 - Installation	25
Wiring.....	25
Setup.....	27
Connections	27
Windows	29
Mac	32
Set IP Address	33
Deploy Sensors	35

Chapter 4 - Final Checkout	37
Web Interface.....	37
Sensors.....	41
System.....	49
Communications.....	54
Admin.....	62
Modbus Communications.....	72
Watchdog Wi Channel Pairs.....	76
Watchdog Wi Range Extender.....	78
Troubleshooting.....	95
Updating Firmware	95
Technical Support	98
Troubleshooting	99
IP Address Reset	101
Product-Specific Safety Notices.....	103
General Safety	103
Live Circuits Safety	103
Equipment Grounding	104
Electrostatic Discharge	104
Explosive Environment	104
Servicing and Adjustments	104
Repairs and Modifications	104

Introduction

Welcome

Notice to Users

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Use and Disclosure Restrictions

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Recovery Act Buy American

Geist products adhere to the Buy American provisions of the American Recovery and Reinvestment Act of 2009 (Recovery Act). All Geist goods manufactured in our Lincoln, Nebraska, plant have undergone substantial transformation during production.

Trade Agreements Act (TAA)

Geist goods manufactured in our Lincoln, Nebraska, plant have undergone substantial transformation during production. These Geist products adhere to U.S. Trade Agreements Act and can be supplied for GSA Schedules and other government contracts.

Geist Policy on Conflict Minerals

This document details Geist's corporate policy regarding the use of conflict minerals. The policy expressed in this document should be considered to cover the Geist and Geist Europe divisions of PCE Inc.

Section 1502 of the Dodd-Frank Act which was passed by the US Congress in 2010 requires certain companies to annually disclose their use of conflict minerals. Conflict minerals covered under this act include tantalum, tin, tungsten, and gold.

Although Geist is not directly subjected to the requirements of the Dodd-Frank Act, Geist recognizes that all companies within the electronics manufacturing industry supply chain are impacted by this legislation. Geist supports the intent of the law, which is the reduction of violence within the Democratic Republic of the Congo and will take several actions to both advance the goals of the Dodd-Frank Act and to provide exceptional support to our customers.

- Geist will work with our direct suppliers to identify purchased components and materials that contain tin, tantalum, tungsten or gold.
- Geist will work with our direct suppliers to trace sources of any tin, tantalum, tungsten or gold used in our products back to the smelter.
- Geist will document our efforts to trace tin, tantalum, tungsten, and gold minerals back to the smelter and will accurately report the results to our customers.
- Geist will continue to monitor industry progress in identifying conflict-free smelters and will adjust corporate policy as the electronics supply chain becomes more fully documented.

Geist will not require that our direct suppliers source only conflict-free minerals until an adequate number of smelters has been reliably identified and audited by The Electronic Industry Citizenship Coalition (EICC) and the Global e-Sustainability Initiative (GeSI) to service the electronic industry supply chain. Mandating a conflict-free supply chain before an adequate number of smelters has been identified will prohibit the use of all tin, tantalum, tungsten, and gold originating in the Democratic Republic of the Congo and surrounding countries. This prohibition would cut off the sole income source for many artisanal miners within the region and may result in increased violence within the Democratic Republic of the Congo in direct opposition to the goals of the Dodd-Frank Act. Geist will work continuously with our direct suppliers in order to annually increase the percentage of documented conflict-free minerals that are used in our products until all products can be certified as conflict-free.

WEEE Declaration

Geist Europe is obligated to finance the cost of the collection, treatment, recovery and environmentally sound disposal of all products sold by Geist Europe into the UK market this includes:

- New WEEE (displaying ‘the crossed out wheeled bin symbol’) that Geist Europe has placed onto the market after the 13th August 2005.
- Historic WEEE (not displaying ‘the crossed out wheeled bin symbol’), when Geist Europe is supplying new WEEE that is intended to replace the historic WEEE and is of equivalent type or fulfills the same function even if the historic WEEE was manufactured by a third party.

Please contact Geist Europe on 01823 275100 for further details or to arrange collection. (UK Only)

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07/31/2017

About this Manual

This document provides an overview of Geist product(s), the major topics covered include:

- Copyright, Trademarks, and Disclosure Restrictions.
- Instructions for installing, powering and using the equipment.
- Information that will aid in managing and maintaining the equipment.

Revision History

Revision	Date	Notes	Approved By
1.0	8/31/2017	Original Published Version	JB

Organization of the Manual

This Geist document contains the following Watchdog Wi product information:

- Product Specifications - This chapter describes the major product characteristics and its functional role within the system. Where appropriate, reference to cabling among product components and to other Geist product(s) is provided.
- Pre-Installation - This chapter provides pre-installation information for the preparation and use of Geist product(s). Subjects discussed in this chapter must be considered prior to performing the installation of the Geist product.
- Installation - This chapter provides procedures required to adequately mechanically and electrically attach Geist product into supporting systems.
- Final Checkout - The final checkout/power-up procedures after product installation are provided in this chapter. The procedures in this chapter provide for an orderly system power-up sequence and ensure proper operation of this product.

Audience Profile

This document is intended for use by authorized technicians experienced with some of similar product types and for personnel requiring guidance for equipment installation, operation, maintenance, and support.

On-line Documentation

This document is available on-line and within the corresponding [Geist Product Manuals](#). Additional Geist product supporting [Videos](#), [Product Literature](#) and [Case Studies](#) can be found on the [Geist Resource](#) page.

Product firmware updates can be found and downloaded from the [Geist Support](#) site, under [Firmware Updates](#).

Should this product fail within its warranty period and be in need of repair or replacement, a Return Material Authorization may be obtained on-line from the [RMA Form](#) link located within the [Geist Support](#) site.

Reporting Document Errors

Should you discover any error or identify a deficiency in this document, please take time to contact us at the following Watchdog Wi email address:

Geist-Documents@geistglobal.com

Please be sure to provide us with the document name, part number, and page number(s). Also please provide us with description of the error or the deficiency for the document. If you would like for us to contact you, please provide us with your name and contact information.

Thank you for your time. We appreciate any comments and feedback you can provide.

Conventions

The information contained within this document is established around the framework of various conventions, which are defined as follows:

Software

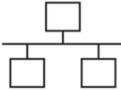
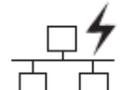
- Release Management: Product name, Version control ; (GU V 3.0.0)
 - Product Name: Name of Hardware Platform
 - Version control: V(ersion) Platform #, Major #, Minor #

Hardware

Product Classification

- Power Distribution Unit
 - Basic
 - Monitored only
 - Switched only
 - Monitored + Switched
- Environmental Monitoring
- Cooling
- Data Center Infrastructure Management (DCIM)

Figure 1 Overlay Symbology Guide

	Ethernet		Activity / Idle
	Power over Ethernet		Power
	Serial		Amps
	Remote Display		Reboot
	Remote Sensors		Silence
	Uplink		Scroll
	Temp		GU Right
	Sensor Configuration		GU Left
		GU Center	

The chart above depicts the symbols used on Geist overlays.

Safety

This document contains varying levels of alerts pertaining to product and user safety. The alerts are visually presented with graphics and text per Geist equipment guidelines.

The representations are:



DANGER

INDICATES AN **IMMINENT** HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN **DEATH OR SERIOUS INJURY**.



WARNING

INDICATES A **POTENTIAL** HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN **DEATH OR SERIOUS INJURY**.



CAUTION

INDICATES A **POTENTIAL** HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN **PRODUCT DAMAGE AND MINOR TO MODERATE INJURY**.



NOTE

Provides useful information that is beneficial for operation and usage of this product.

Figures

Figures presented in this document are identified and designated as follows:

'Figure:', Chapter # - Image #

Example:

Figure 1-1 Name and/or Title goes here



Tables

Tables presented in this document are identified and designated as follows:

'Table:', Chapter # - Image #

Example:

Table 1-1 Name and/or Title goes here

Column 1	Column 2	Column 3	Column 4	Column 5
Text	Text	Text	Text	Text
Text	Text	Text	Text	Text
Text	Text	Text	Text	Text
Text	Text	Text	Text	Text

Chapter 1 - Product Specifications

Overview

The Watchdog Wi is a wireless sensor network manager that receives signals from wireless devices and relays them to facilities monitoring systems as SNMP, Modbus TCP/IP, Modbus RTU, BACnet/IP, and BACnet MS/TP signals.

If this product is used in any manner other than that specified by the manufacturer, the protection provided by the equipment may be impaired.

Warranty

Figure 1-1 Watchdog Wi



Product Warranty

Seller warrants to the Ultimate Purchaser (the purchaser who buys for use and not for resale) that all products furnished under this order and which are manufactured by Seller will conform to final specifications, drawings, samples and other written descriptions approved in writing by Seller, and will be free from defects in materials and workmanship. These warranties shall remain in effect for a period of two (2) years after shipment. If the Seller installs the equipment or supplies technical direction of installation by contract, said one year shall run from the completion of installation, provided installation is not unreasonably delayed by Ultimate Purchaser. Parts replaced or repaired in the warranty period shall carry the unexpired portion of the original warranty. A unit placed with the purchaser on consignment and then later purchased will be warranted for two (2) years from the time the Seller receives notification of the Purchaser's intent to purchase said consigned item.

Products are NOT life and safety certified. In no event shall the Seller be liable for loss, damage, or expense directly or indirectly arising from the use of the units, or from any other cause, except as expressly stated in this warranty. Seller makes no warranties,

express or implied, including any warranty as to merchantability or fitness for a particular purpose or use. Seller is not liable for and Purchaser waives any right of action it has or may have against Seller for any consequential or special damages arising out of any breach of warranty, and for any damages Purchaser may claim for damage to any property or injury or death to any person arising out of its purchase or the use, operation, or maintenance of the product. Seller will not be liable for any labor subcontracted or performed by Purchaser for preparation of warranted item for return to Seller's factory or for preparation work for field repair or replacement. Invoicing of Seller for labor either performed or subcontracted by Purchaser will not be considered as a liability by the Seller.

The liability of Seller hereunder is limited to replacing or repairing at Seller's factory or on the job site at Seller's option, any part or parts which have been returned to the Seller and which are defective or do not conform to such specifications, drawings or other written descriptions; provided that such part or parts are returned by the Ultimate Purchaser within ninety (90) days after such defect is discovered. The Seller shall have the sole right to determine if the parts are to be repaired at the job site or whether they are to be returned to the factory for repair or replacement. All items returned to Seller for repair or replacement must be sent freight, prepaid to its factory. Purchaser must obtain Seller's Return Goods Authorization prior to returning items. The above conditions must be met if warranty is to be valid. Seller will not be liable for any damage done by unauthorized repair work, unauthorized replacement parts, from any misapplication of the item, or for damage due to accident, abuse, or act of God.

This warranty shall be exclusive of any and all other warranties express or implied and may be modified only by writing signed by any officer of the Seller. This warranty shall extend to the Ultimate Purchaser but to no one else. Accessories supplied by Seller but manufactured by others carry any warranty the manufacturers have made to Seller and which can be passed on to the Ultimate Purchaser.

Seller makes no warranty with respect to whether the products sold hereunder infringe any patent, U.S. or foreign, and Purchaser represents that any specially ordered products do not infringe any patent. Purchaser agrees to indemnify and hold Seller harmless from any liability by virtue of any patent claims where Purchaser has ordered a product conforming to Purchaser's specifications, or conforming to Purchaser's specific design.

Purchaser has not relied and shall not rely on any oral representation regarding the Product sold hereunder and any oral representation shall not bind Seller and shall not be part of any warranty.

The Watchdog Wi is not a field-serviceable item and must be sent back to Geist for mechanical repair. Only Geist certified service personnel is allowed to access the interior of this equipment, and power must be disconnected (unplugged) from the Watchdog Wi any time the unit is mechanically serviced. Physically unplug power from the unit any time you are making wiring connections to or from the Watchdog Wi.

Geist cannot accept an item for repair without a Return Materials Authorization number, which must be provided by Geist.

Technical Specifications

Table 1-1 Watchdog Wi Technical Specifications

<i>Power</i>		
	Voltage Rating	24VAC, 50/60Hz; 24VDC, 600mA
	Current Rating	600mA max
Wired Relay Outputs		Two (2) Dry Contact, Form C, 1A @ 24VDC resistive, 0.5A @ 120VAC
<i>Communications Ports</i>		
	<i>Ethernet</i>	10/100 BASE-T, RJ-45 connector; 500VAC RMS isolation
	RS-232	DB9 female connector; 9600 baud; No parity, 8 data bits, 1 stop bit
	RS-485	1200, 2400, 9600 or 19200 baud (selectable); Parity: none, even or odd, 8 data bits, 1 stop bit
<i>Protocols</i>		
	TCP/IP, HTML, TFTP, SNMP	V1: V2C MIB-2 compliant; NMS Manageable with Get
	Modbus (EIA-485)	Modbus Slave; RTU mode; Supports function codes 03
	Modbus TCP/IP UDP/IP	Modbus Slave; TCP/IP transmission protocol
	BACnet/IP	ASHRAE STD 135- 2004 Annex J
	BACnet MS/TP	RS-485

Wireless Communications		
	Frequency Range	868-870MHz / 902-928MHz
	Max Number of Wireless Sensors Per Manager	Geist recommends not exceeding 250 sensors per Watchdog Wi; 400 sensors per Watchdog Wi may be accomplished with range extenders, but signal conflict will increase.
	Antenna	Three (3) 900MHz with RP/SMA connectors
Web Interface Login Security		Eight (8) users and passwords can be configured
Indicators		
	RX A	1 green LED
	RX B	1 green LED
	TX/RX C	1 green LED
	Diagnostics	1 green LED
	System	1 multicolor LED
	RO1 RO2	1 green LED per relay output
	RS485 Network Status	1 green LED for transmit, 1 Green LED for receive
	RJ45 Network Status	2 green LEDs
	Device Status	1 multicolor LED
Operating Environment		
	Temperature	32°F to 122°F (0°C to 50°C)
	Humidity	5% to 95% RH non-condensing
	Altitude	15,000ft (4572m) max. 9,842ft (3000m) max. if applying more than

		150V, 50/60Hz to the relays from overvoltage category II circuit.
<i>Storage Temperature</i>		-4°F to 185°F (-20°C to 85°C)
<i>Mounting</i>		19" Rack Mount or Wall Mount
<i>Dimensions</i>		9.7"W x 4.8"D x 1.8"H (24.6cmW x 12.2cmD x 4.6cmH)
<i>Weight</i>		2.7lb (1.23kg)
<i>Certifications</i>	ETL listed; conforms to UL 61010-1, EN 61010; certified to CSA C22.2 NO, 61010.1; RoHS compliant; FCC ID X7J-A11072401 and MCQ-XB900HP; IC 8975A-A11072401 and 1846A-XB900HP	

Table 1-2 Watchdog Wi Range Extender Technical Specifications

<i>Power</i>	5VDC @ 400mA max.
<i>USB Communications Port</i>	Serial port emulation for firmware upgrades and diagnostics
<i>Range</i>	Up to 1,000 ft (305m) indoors, direct line of sight to Watchdog Wi or another Watchdog Wi Range Extender. Up to 600 ft (183m) direct line of sight to Watchdog Wi sensors.

		Up to 270 ft (82.3m) through one wall to Watchdog Wi sensors.
		Up to 100 ft (30.5m) through multiple walls to Watchdog Wi sensors.
<i>Indicators</i>		
	RX A	1 green LED
	RX B	1 green LED
	TX/RX C	1 green LED
	Diagnostics	1 green LED
	System	1 multicolor LED
<i>Operating Environment</i>		
	<i>Temperature</i>	32°F to 140°F (0°C to 60°C)
	<i>Humidity</i>	5% to 95% RH non-condensing
	<i>Altitude</i>	15,000ft (4572m) max.
<i>Storage Temperature</i>		-4°F to 185°F (-20°C to 85°C)
<i>Mounting</i>		Freestanding, wall mount (included)
<i>Dimensions</i>		4.5"W x 4.8"D x 1.6"H (11.4cmW x 12.2cmD x 4.1cmH)
<i>Weight</i>		1.2lb (0.534kg)
<i>Certifications</i>	ETL listed; conforms to UL 61010-1, EN 61010; EN 61326-1; EN 301489-1; certified to CSA C22.2 NO, 61010.1; RoHS compliant; FCC ID X7J-A11072401 and MCQ-XB900HP; IC	

	8975A-A11072401 and 1846A-XB900HP		
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Table 1-3 Watchdog Wi Sensor Technical Specifications

<i>Power</i>		3.6V AA lithium battery
<i>Battery Life</i>		Up to 5 years when system spans full operating range Up to 8 years at room temperature up to 122°F (50°C) Up to 12 years at room temperature
<i>Shelf Life</i>		10 years in quiescent mode with battery installed
<i>Transmission</i>		
	<i>Interval</i>	10-20 seconds (random)
	<i>Frequency</i>	900 MHz
	<i>Range</i>	Up to 600 ft (183m) line of sight
<i>Temperature Sensor Accuracy</i>		
	<i>Typical</i>	+/- 0.2°C from 10°C to 60°C +/- 0.5°C from -40°C to 85°C
	<i>Maximal</i>	+/- 0.4°C from 10°C to 60°C +/- 1.0°C from -40°C to 85°C
<i>Temperature and Humidity Sensor Accuracy</i>		
	Typical Temperature	+/- 0.3°C from -40°C to 85°C

	Maximal Temperature	+/- 0.4°C from -40°C to 85°C	
	Typical Humidity	+/- 2% from 0%RH to 100%RH, 0°C to 85°C	
	Maximal Humidity	+/- 3% from 0%RH to 100%RH at 25°C	
	NOTE: The sensor shows the best performance over the range of 20%RH to 80%RH, 5°C to 60°C. Prolonged exposure outside of that range will impact humidity accuracy.		
<i>Operating Environment</i>			
	<i>Temperature</i>	-13°F to 185°F (-25°C to 85°C)	
	<i>Altitude</i>	-200ft to 15,000ft (-70m to 4572m) max.	
Mounting	Free standing, magnets (included), 1U screw, 15mm mini din rail, zip ties		
<i>Dimensions</i>	2.8"L x 1.1"W x 1.1"H (7.1cmL x 2.8cmW x 2.8cmH)		
<i>Weight</i>	0.08lb (0.036kg)		
Certifications	FCC ID XJ7-A11072401; IC 8975A-A11072401		

Environmental

The operational environmental limits pertaining to Temperature, Humidity and Elevation are as defined below.

Temperature

Table 1-4 Temperature Limits

	Minimum	Maximum
Operating	0°C (32°F)	60°C (140°F)
Storage	-20°C (-4°F)	85°C (185°F)

Humidity

Table 1-5 Humidity Limits

	Minimum	Maximum
Operating	5%	95% (non-condensing)
Storage	5%	95% (non-condensing)

Elevation

Table 1-6 Elevation Limits

	Minimum	Maximum
Operating	0 m (0 ft)	4,572 m (15,000 ft)
Operating (if applying >150V to relays)	0 m (0 ft)	3,000 m (9,842 ft)
Storage	0 m (0 ft)	15,240 m (50,000 ft)

Networking

The product communications requirements are identified below.

Ethernet

10/100 BASE-T, RJ45 connector; 500VAC RMS isolation.

Protocols

TCP/IP, HTML, TFTP, SNMP	V1: V2C MIB-2 compliant; NMS Manageable with Get; IPv4; IPv6
Modbus (EIA-485)	Modbus Slave; RTU mode; Supports function codes 03
Modbus TCP/IP UDP/IP	Modbus Slave; TCP/IP transmission protocol
BACnet/IP	ASHRAE STD 135-2004 Annex J
BACnet MS/TP	RS-485
Terminal Emulation (RS232)	VT100 compatible

User Interfaces

Web browser access (Ethernet); eight users and passwords can be configured.

Regulatory Compliance

Geist products are regulated for Safety, Emissions, and Environment Impact per the below agencies and policies.

Underwriters Laboratories (UL)

UL Standards are used to assess products; test components, materials, systems and performance; and evaluate environmentally sustainable products, renewable energies, food and water products, recycling systems and other innovative technologies.

The UL standards specific to this equipment are:

ETL listed; conforms to UL 61010-1, EN 61010; certified to CSA C22.2 NO, 61010.1
IC: 1846A-XB900HP

Federal Communications Commission (FCC)

The Federal Communications Commission (FCC) regulates interstate and international communications by radio, television, wire, satellite, and cable in all 50 states, the District of Columbia and U.S. territories. An independent U.S. government agency overseen by Congress, the commission is the United States' primary authority for communications laws, regulation and technological innovation.

The FCC standards specific to this equipment are:

FCC Class A Part 15

Chapter 2 - System Overview

The Watchdog Wi System is designed to allow monitoring of environmental conditions without the inconvenience of fixed wiring. This allows a single network connection to accurately relay vital environmental data collected from multiple sensor locations.

Indicators

The LEDs on the Watchdog Wi indicate the status of a variety of actions.



Table 2-1 Watchdog Wi LED Indicators

LED	Label	Description
1	RX A	The Watchdog Wi is receiving information over antenna A.
2	RX B	The Watchdog Wi is receiving information over antenna B.
3	TX /RX C	The Watchdog Wi is either receiving or transmitting information over antenna C
4	Diagnostic	Used for customer support and troubleshooting

5	System	Indicates on which radio communications channel set the manager is operating: Blue blink pattern - Watchdog Wi is operating on the primary channel set. Green blink pattern - Watchdog Wi is operating on the alternate channel set.
6	RO1 RO2	The relay output is activated
7	RS485 RX TX	RS485 Receive/Transmit status LED

Chapter 3 - Installation

The Watchdog Wi can be rack or wall mounted, or left free standing. The Watchdog Wi ships with rack mount tabs. Wall mount tabs are sold separately.

Mount the Watchdog Wi in either the front or the back of a 19-inch rack - You will need two of the L-shaped rack mount tabs (included with the Watchdog Wi). Remove the screws from the sides of the Watchdog Wi, put the tabs in place, and reapply the screws. Mount the device in the front or the back of your rack. Use the preferred anchoring method as suggested by the rack manufacturer to mount the unit securely.

If you would prefer to mount the Watchdog Wi on a wall, wall mount tabs (sold separately) provide a secure solution. Remove the screws from the sides of the Watchdog Wi, put the wall mount tabs in place, and reapply the screws. Mount the device securely in the desired location.

Wiring

Power Supply and Ground Connections

Geist recommends powering the Watchdog Wi from a UPS supply so the device can send alarm notifications during a power outage. The device can be powered through either the jack or the power supply terminal block, but you must use only one of these power options at a time - you cannot connect the power jack and terminal block power simultaneously or damage will occur.

Power must be supplied from a Class I or Class II limited energy circuit, 24V with a maximum available current of 6A or a Class 2 circuit. When necessary, be sure to unplug the unit for complete disconnection.

If you would like to connect protected Earth ground to the unit, a threaded insert is provided on the enclosure. Connect an 18AWG ground wire from the threaded insert ground terminal to a suitable Earth ground. Plug the provided wall adapter into the jack at P1 and a UPS outlet. The wall adapter has a five foot (1.524m) power cord. If you're providing your own power supply, connect 24VDC to the unit through the power terminal block.

Figure 3-1 Power Supply and Grounding Connections



Wired Relay Outputs

The Watchdog Wi accommodates two wired relay outputs. Any relay output connections must be made with double insulated wire (jacketed multi-conductor cable). If you wish to use this functionality, wire the connections now.

Figure 3-2 Wired Relay Output Connection



Setup

Connections

RJ45 Ethernet Connection

The Watchdog Wi has an internal 10/100BASE-T Ethernet port that is used for configuration. The Ethernet port supports Web browser access, email (SMTP), BACnet slave, Modbus slave, and SNMP. The device can connect directly to a PC with a crossover cable, or it can connect to a PC through a hub or switch, with CAT5 cables.

Figure 3-3 Ethernet Connection to a PC Using a Crossover Cable



Ethernet Port

EIA-232 COM Connection

The Watchdog Wi can be connected directly to a PC through its EIA-232 port. This is useful for IP configuration, firmware downloads, and troubleshooting. The EIA-232 connection is only used as a temporary connection. Connect the straight through, 9-pin serial cable as shown.

Figure 3-4 EIA-232 COM Connection



EIA-232 Connection

Modbus EIA-485 Connections

The Watchdog Wi can function as a Modbus Slave over an EIA-485, 2-wire hardware connection, as shown. When using the EIA-485 port for Modbus RTU communication, Geist recommends an 18AWG shielded twisted pair stranded copper wire for the connection, using no more than 2000 feet (609.6m) of wire at this specification. If longer runs are needed, please contact Geist.

Figure 3-5 EIA-485 Connection



EIA-485 Connection

Antenna

The Watchdog Wi is shipped with three 900 MHz antennas. Plug each antenna into its appropriate jack on the back of the Watchdog Wi and tighten the connections firmly.

Figure 3-6 Antenna Connections



Once the antennas are secure, you'll need to ensure proper antenna position. Antennas A and B can be close together, but to avoid signal interference they both need to be as far away from antenna C as possible. Extend the leader cables on the antennas to their fullest lengths and secure the antennas as far away from the Watchdog Wi, and as high off the ground as possible.

Windows

- **Windows 2000 / XP / Server 2003:**

Click the **Start** button, choose **Settings**, then **Network Connections**.

- **Windows 7 / Server 2008:**

Click the **Start** button, then choose **Control Panel >> Adjust Your Computer's Settings >> View Network Status and Tasks >> Change Adapter Settings**.

(Alternatively, on some Windows 7 machines, this may be **Start**, then **Settings >> Control Panel >> Network and Sharing Center >> Change Adapter Settings**.)

- **Windows 8 / Server 2012:**

Move the mouse cursor to the bottom or top right corner of the screen, click the **Settings** icon, then select **Control Panel**. Change the view type from **Category** to **Large** or **Small Icons** if necessary, then select **Network and Sharing Center**, then **Change Adapter Settings**.

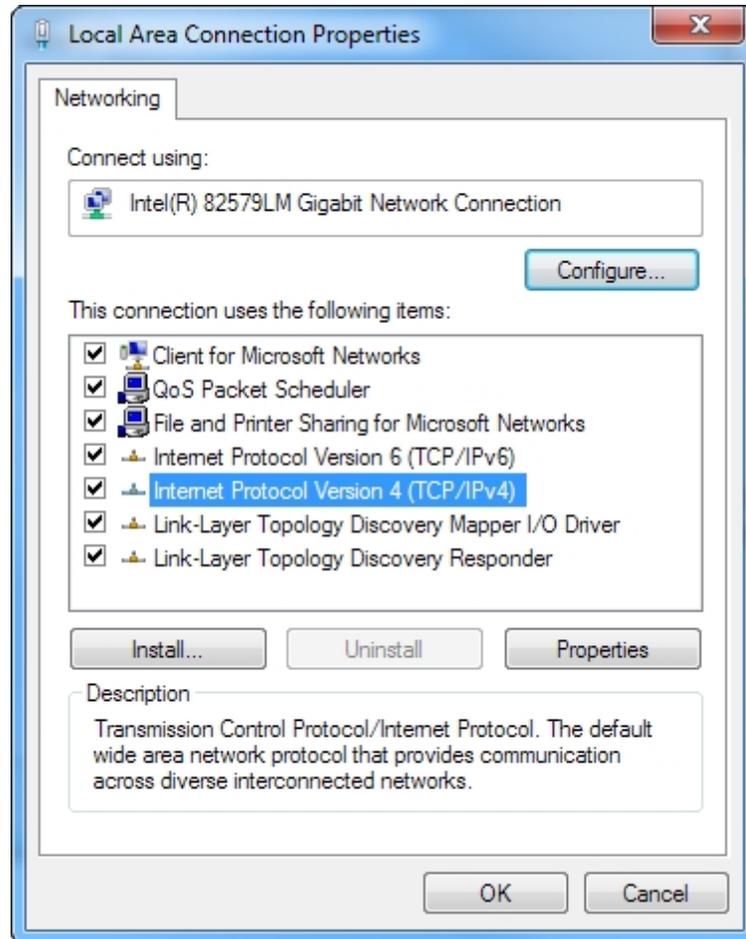
- **Windows 10:**

Click the **Start** button, then choose **Network & Internet**, then click **Change adapter options**.

Locate the entry under **LAN or High-Speed Internet** or **Local Area Connection** which corresponds to the network card (NIC) which the unit is connected to. (Note: Most computers will only have a single Ethernet NIC installed, but a WiFi or 3G adapter will also show as a NIC in this list, so be sure to choose the correct entry.)

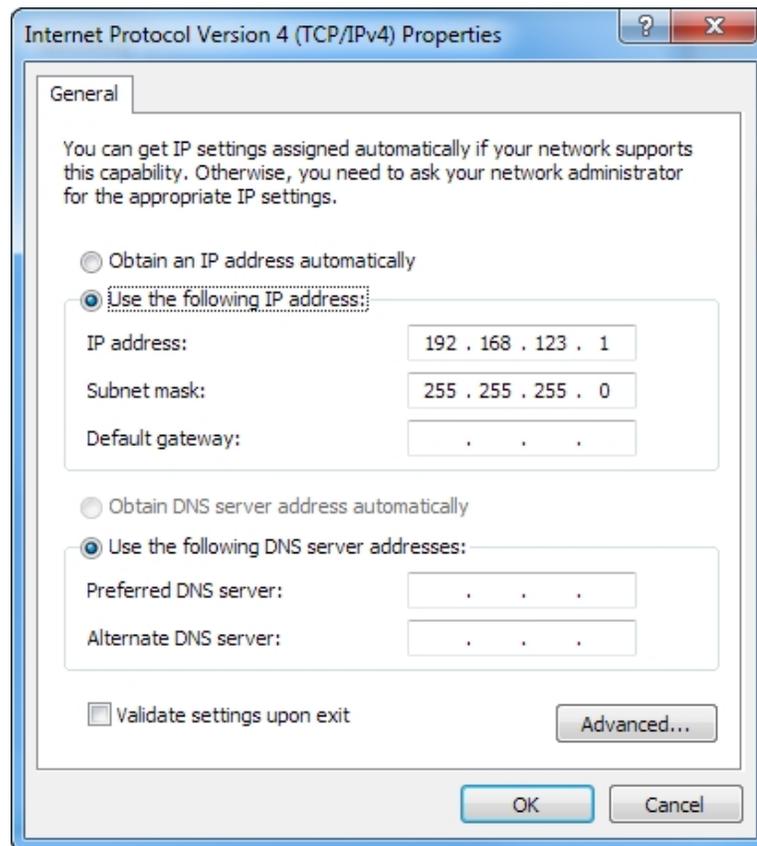
Double-click on the network adapter's entry in the **Network Connections** list to open its status dialog box, then click the **Properties** button to open the **Local Properties** window.

Figure 3-7 Windows Network Settings



Find the entry titled "**Internet Protocol Version 4 (TCP/IPv4)**" in the list, then click the **Properties** button to open the **Internet Protocol Properties** window. If you see more than one TCP/IP entry, as in the example above, the computer may be configured for IPv6 support as well as IPv4; make sure to select the entry for the IPv4 protocol.

Figure 3-8 Windows TCP/IPv4 Settings



Choose the **Use the following Watchdog Wi IP address** option, then set **IP address** to 192.168.123.1 and **Subnet Mask** to 255.255.255.0. For this initial setup, **Default Gateway** and the **DNS Server** entries can be left blank. Select **OK**, then **OK** again to close both the **Internet Protocol Properties** and **Local Properties** windows.

Once the NIC settings are configured properly, you should be able to access the unit by typing `http://192.168.123.123` into the address bar of your web browser. If you are setting up the unit for the first time, or if the unit has been reset back to factory defaults via the network-reset button, the unit will require you to create an Admin account and password before you can proceed.

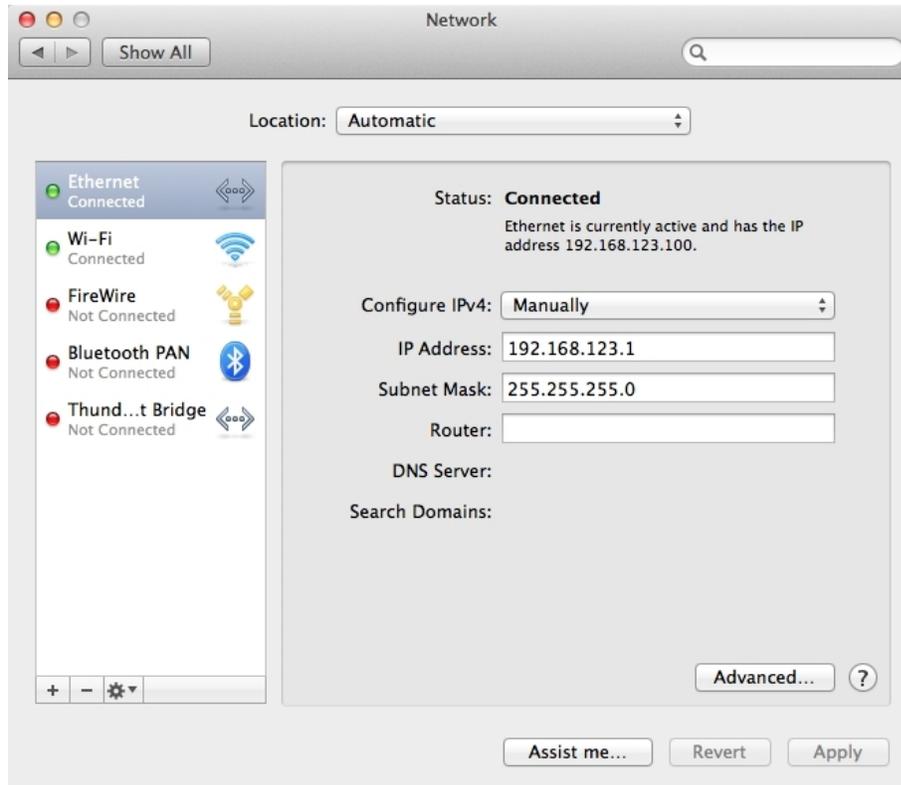
Once you have created the Admin account and logged into it, the unit's default **Sensors** page should come up by default. Navigate to the **System** tab, then the **Network** page to configure the device's network properties. The unit's IP Address, Subnet Mask, Gateway, and DNS settings can either be assigned manually, or acquired via DHCP.

Note that the new settings will take effect instantly when the **Save** button is clicked, so the browser will no longer be able to reload the web page from the 192.168.123.123 address and will probably display a "page not found" or "host unavailable" message. This behavior is normal. Once you have finished configuring the unit's IP address, simply repeat the steps above, and change the computer's Ethernet NIC card settings back to the ones you wrote down prior to changing them, to restore its normal network and internet settings.

Mac

Click the **System Preferences** icon on the Dock, and choose **Network**.

Figure 3-9 Mac Network Settings



Be sure **Ethernet** is highlighted on the left side of the NIC window. (In most cases, there will only be one Ethernet entry on a Mac.)

Select **Manually** from the **Configure IPv4** drop-down list, then set **IP Address** to 192.168.123.1 and **Subnet Mask** to 255.255.255.0. (The **Router** and **DNS Server** settings can be left blank for this initial setup.) Click **Apply** when finished.

Once the NIC settings are configured properly, you should be able to access the unit by typing `http://192.168.123.123` into the address bar of your web browser. If you are setting up the unit for the first time, or if the unit has been reset back to factory defaults via the network-reset button, the unit will require you to create an Admin account and password before you can proceed.

Once you have created the Admin account and logged into it, the unit's default **Sensors** page should come up by default. Navigate to the **System** tab, then the **Network** page to configure the device's network properties. The unit's IP Address, Subnet Mask, Gateway, and DNS settings can either be assigned manually, or acquired via DHCP.

Note that the new settings will take effect instantly when the **Save** button is clicked, so the browser will no longer be able to reload the web page from the 192.168.123.123 address

and will probably display a "page not found" or "host unavailable" message. This behavior is normal. Once you have finished configuring the unit's IP address, simply repeat the steps above, and change the computer's Ethernet NIC card settings back to the ones you wrote down prior to changing them, to restore its normal network and internet settings.

Set IP Address

The Watchdog Wi will not communicate over a user's network the first time it is connected. This is because the manufacturer programs the device with a default IP address: 192.168.123.123 , Subnet Mask: 255.255.255.0 . This default address must be changed to an IP address that corresponds with the user's network before the Watchdog Wi can communicate over the network. There are two ways to set the Watchdog Wi 's IP address: via the web browser or via the EIA-232 interface.

Set the IP Address Using a Web Browser



NOTE

If you have not set an IP address before, consult your IT Department for support.



NOTE

The default IP address for the Watchdog Wi is 192.168.123.123
The default Subnet Mask is 255.255.255.0
There is no default user name or password.

Contact your IT Department to obtain an available IP address, Subnet Mask, and default Gateway.

Plug a crossover network cable into the laptop or workstation that will be used to configure the Watchdog Wi. You'll need to change the IP address and Subnet Mask of your computer so it can communicate with the Watchdog Wi in its factory-configured state. Before you change anything, write down the original IP address and Subnet Mask of your computer - you'll need to revert back to these original settings once the Watchdog Wi is configured.

Change the IP address and Subnet Mask of the computer from its existing address to one that will allow it to communicate with the Watchdog Wi , such as (192.168.123.1). It may be beneficial to set the IP address to one that is one number different from the Watchdog Wi's IP address (192.168.123.123).

Connect the other end of the crossover cable to the Ethernet port on the back of the Watchdog Wi. Access the Watchdog Wi through a Web browser — type the Watchdog Wi 's IP address (192.168.123.123) into the location bar.

From the Watchdog Wi's Dashboard, select the *System Configuration* link on the left side of the page, then click the IP link to access the IP configuration tab. Change the IP address, Subnet Mask, and default Gateway to the one provided by your IT Department, or change it to 0.0.0.0 to enable DHCP. Press the *Save Changes* button. The Watchdog Wi will save the new IP address, Subnet Mask and default Gateway and then reboot itself. Change the IP address of the computer back to its original IP address. If the computer was configured as DHCP (the network domain controller assigns an IP address) return it to this state. This may require assistance from your IT Department, or you may need to consult the computer's manual. The computer and the Watchdog Wi are now both configured to communicate on the network. Both should be accessible via the network. Connect the PC and the Watchdog Wi to the network. From the PC web browser, type in the new IP address of the Watchdog Wi. Enter the user name and password as stated above to verify network access to the device.

Set the IP Address via EIA-232 Connection

To use the EIA-232 interface:

Contact your IT Department to obtain an available IP address, Subnet Mask, and default Gateway.

Use a 9-pin male-female straight through serial cable to connect the EIA-232 port on the Watchdog Wi to a terminal or PC running terminal emulation software (HyperTerminal).

Set the appropriate communication port to 9600 baud , NO parity , 8 data bits , 1 stop bit , (9600/N/8/1) , and no software or hardware flow command .

Once the terminal emulation software starts, press *Enter* on the keyboard and the Watchdog Wi boot prompt should appear, (MGR> or MGR boot>). If the boot prompt does not appear, check the communication settings and make sure the unit is powered on.

From the boot prompt type *IP* then type one space and type the IP address your IT Department provided for the unit. If you'd like to enable DHCP, type 0.0.0.0 as the IP address. Press the enter key. For example, IP 192.168.103.211 The Watchdog Wi will reboot after the IP address is changed.

From the boot prompt type *NM* then type one space and type the Subnet Mask address your IT Department provided for the unit. Press the enter key. For example, NM 255.255.255.0 The Watchdog Wi will reboot after the Subnet Mask is changed.

From the boot prompt type *DG* then type one space and type the Default Gateway address your IT Department provided for the unit. Press the enter key. For example, DG 192.168.103.1 The Watchdog Wi will reboot after the Default Gateway is changed.

The IP address is now set and the Watchdog Wi can be accessed through a Web browser using the new IP address.

Deploy Sensors

Once all wiring is complete and the Watchdog Wi is communicating on your network, you are ready to deploy your sensors. There are two different ways to configure sensors to communicate with a Watchdog Wi :

1. Use the Sensor Discovery Wizard

The sensor discovery wizard is the recommended method to use when associating sensors with a Watchdog Wi . It has a variety of benefits, including the ability to pick and choose which specific sensors are added to a particular Watchdog Wi installation. Since sensor discovery turns off automatically once the wizard is closed, using the wizard eliminates the possibility that sensor discovery will accidentally be left on once you have finished adding sensors to this install.

2. Manually Launch Sensor Auto Discovery

You can also add sensors to a system if you manually toggle on and off sensor auto discovery. Sensor auto discovery differs from the sensor discovery wizard in a few ways. First and foremost, you have to manually turn sensor auto discovery on and off. Under normal operating conditions and by default, sensor auto discovery is turned OFF. If you do not turn off sensor auto discovery, the Watchdog Wi will continue to attempt to locate new sensors - this can contaminate your list of active sensors with sensors that do not actually exist. If you choose to use sensor auto discovery, make sure you toggle it off when you are done and click the Save Changes button to effect the change.

Sensor auto discovery does not allow you to choose which sensors are added to your system. It will automatically add all sensors transmitting within the Watchdog Wi 's range. This can be an inconvenience if you have multiple Watchdog Wi s operating in the same environment. If you use sensor auto discovery, you run the risk of displaying the same sensors on multiple managers.

Set Notification Parameters For Your Sensors

Watchdog Wi sensors can be configured to trigger alarm and warning messages when their reading surpass set notification thresholds. Alarm and warning parameters can be set per individual sensor or across all sensors at once.

Global Sensor Settings

Global sensor settings are configured in a couple places in the user interface. Logged sensor data and battery alarm are set in the Admin screens.

Global alarm and warning parameters can be set by following the directions in Final Checkout/System/Alarms. If you choose to use this option, note that the settings will be applied ONLY to the fields for which you check the check boxes. They will be applied across all the sensors, and will overwrite any settings you have previously configured. Don't forget to click the Save Changes button to apply the setting across your system.

Individual Sensor Configuration

If you'd prefer not to use the global settings, you can configure your sensors one at a time. You can configure the parameters sensor by sensor. Remember to click the Save Changes button on each page to apply the settings.

Sensor Mounting Tips

The electronics in Watchdog Wi sensors are not waterproof. Watchdog Wi sensors need to be mounted in a safe location where they will not come into contact with water or condensation.

Sensors can be secured with magnets (included), screws, zip ties, or on a 15mm DIN rail.

Each sensor's serial number is unique, and you will need to refer to this number throughout the life span of the sensor. When you mount the sensor, ensure that the sensor's serial number is accessible.

Although each sensor has a unique serial number, the Watchdog Wi will also assign each sensor an index number. This is listed as the ID # in the upper right corner of each sensor's individual configuration page. If you'd like, place a label or other marking on the sensor case to show its index number.

Figure 3-10 Sensor Serial Number and Index Number

#	Name	Location	Serial	Type	Reading(s)	Age (Seconds)	Battery	Status
1	IDF #2	Geist Training A	08E874DB	WTS	712°F	3	3.62V	👍
2	Cabinet 1 T/H	Mo office	A054E5B3	WTH	70.1°F 55.90kH	10	3.62V	👍

Showing 1 to 2 of 2 entries

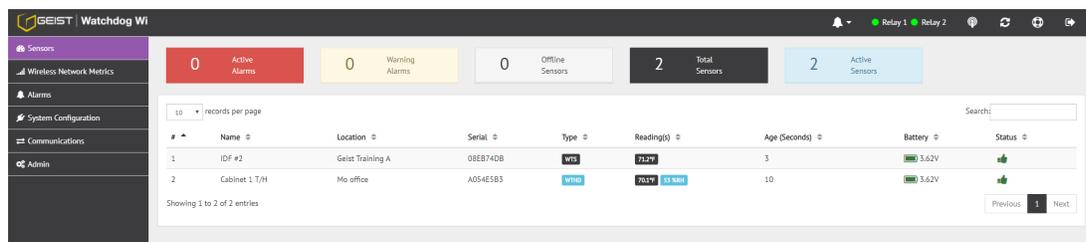
Chapter 4 - Final Checkout

Web Interface

Use the Watchdog Wi web interface to monitor and configure your Watchdog Wi network. To access the Web interface, you must first configure the Watchdog Wi to communicate via the Internet.

Use the Dashboard to access and view the data collected and managed by the Watchdog Wi.

Figure 4-1 Dashboard Navigation



Dashboard Navigation Options

Option Description

Left Side Navigation items each have their own documented section within this chapter.

Section A

These blocks reflect the current status of the sensors connected to the Watchdog Wi .

Section B

This is your view of the sensors associated with this Watchdog Wi.

A drop down lets you choose how many sensors display per page. Select 10, 25, 50, or 100, depending on your preference.

Use the Search field to display only the sensors whose data contains the term for which you are searching.

The sensors name is a shortcut to that specific sensor's data and configuration information.

When you look at the table of sensors in this section, note that each heading has a set of arrows next to it. These arrows allow you to sort the data in this table by that column, in either ascending or descending order. For instance, if you click on the arrows next to the Serial Number heading, the arrow pointing up gets much darker, and all the data in the table is sorted by the Serial Number field from lowest

to highest. If you click that arrow again, the arrow pointing down gets much darker, and the data in the table is sorted by the Serial Number filled in ascending order, from highest to lowest.

Page numbers also appear in the lower right side of this section. Click the appropriate number to move among the pages.

Header Icons

There are a series of icons on the upper right side of the dashboard. Use the icons to quickly access a variety of information and activities.

Figure 4-2 Alarm Bell Icon



No matter where you are within the user interface, the alarm bell is a quick and easy way to know if you have any active alarms on your unit. It will be red if you have an active alarm, and will be white when there are no active alarms. It is also a shortcut to the Alarms Page, where you can dig deeper into any alarms on this Watchdog Wi .

Figure 4-3 Relay Output Status Icon



Click on this link to access a modal window that provides a quick way to view the status of the Watchdog Wi 's relay outputs. Click the X in the upper right corner of the box to close the modal window.

Figure 4-4 Relay Status Modal



Figure 4-5 Sensor Discovery Wizard Icon

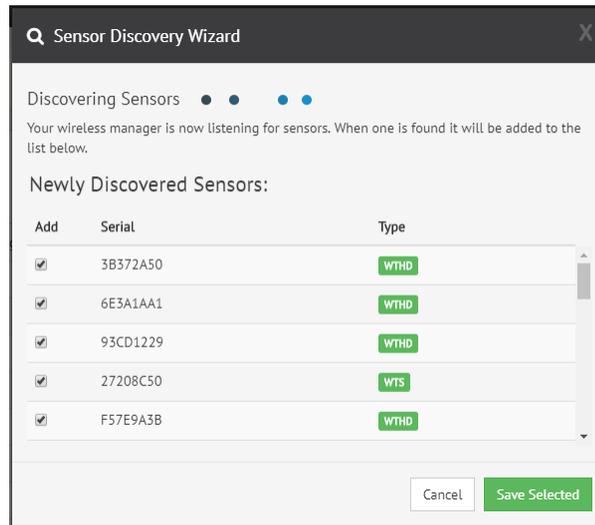


The Watchdog Wi is equipped with a Sensor Discovery Wizard. Run the wizard when you need to install or locate new sensors. The wizard will discover available sensors and enter them into the Sensors page of the website.

Install all your sensors in the desired locations. Be sure to pull the tabs to activate the batteries in the sensors.

Click on the icon to launch the Sensor Discovery Wizard. Click the Begin Discovery button.

Figure 4-6 Sensor Discovery Wizard Modal

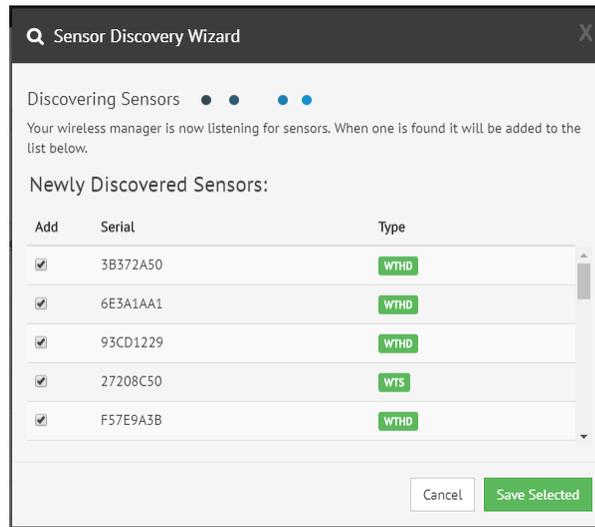


The wizard will locate all sensors within the range of the Watchdog Wi that are not already associated with this unit. They will all list in the modal window. Each sensor has a checkbox in front of it. If you would like the sensor to be associated with this Watchdog Wi, leave the checkbox checked. Uncheck the boxes next to the sensors that should NOT be configured within this Watchdog Wi at this time. Verify the serial numbers of the sensors to ensure you're adding the correct sensors.

The animated ball image will continue as long as the modal window is open, so you don't have to wait for it to stop before you make your selections.

Once you've selected the appropriate sensors, click the Save Selected link.

Figure 4-7 Sensor Discovery Wizard Selection



Sensor Discovery Wizard - Select the Sensors for This Watchdog Wi

Click the Close button to close the modal and return to the Sensors page of the website.

Figure 4-8 Close the Sensor Discovery Wizard



The selected sensors will be added to the system and will appear at the end of the list of sensors on the dashboard. Confirm the placement of all the new sensors in the sensor list.

From this point you have two options:

1. Use the sensor's serial number to locate it in the list and configure it. Be sure to click the Save Changes button on every page.
2. Configure global alarm and warning settings for all the sensors.

Once you have configured all you alarm parameters, your sensor discovery is complete. Be sure to save a copy of the system configuration.

Figure 4-9 Refresh Icon



Click this icon to manually check for system and sensor status updates. The Watchdog Wi will refresh all its data and poll all connected devices for their most recent data. The

Refresh link is especially helpful if the system's refresh rate is set at a long interval, or when new equipment is connected to the system. Instead of waiting for the Watchdog Wi to refresh on its own, click the link to force a system refresh.

Figure 4-10 Support Information Icon



This pop up window displays a variety of information specific to your device in a singular location. Direct links to network and wireless metrics are also available from this modal. If you need to contact Geist's technical support team, you'll be asked for the information found on the support information modal window.

Figure 4-11 Support Information

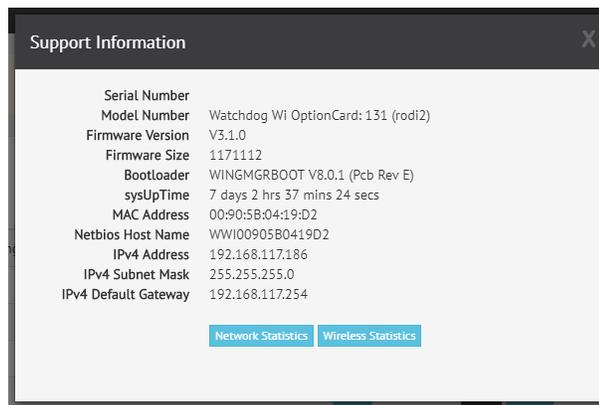


Figure 4-12 Sign In/Out Icon



Use this option to sign into and out of the Watchdog Wi user interface.

Sensors

The Sensors page allows users to view all the sensors accessible through the Watchdog Wi and also serves at the unit's dashboard view.

The drop down menu allows you to decide how many sensors will be displayed per page.

The search field allows you to display only the sensors that meet your specific search criteria.

The page displays a sensor number, the sensor's name - which is also a link to that sensor's individual configuration and data page, the sensor's location, the sensor's serial

number, the sensor type (model description), current value reading, the age - the amount of time that's passed since the last reading was transmitted, battery life, and an icon that denotes the sensor's current status.

Arrows next to each column heading allow the data to be sorted, in ascending or descending order, by that column.

Figure 4-13 Sensors Page

#	Name	Location	Serial	Type	Reading(s)	Age (Seconds)	Battery	Status
1	IDF #2	Geist Training A	08E874DB	WTS	73.2°F	3	3.62V	👍
2	Cabinet 1 T/H	Mo office	A054E5B5	WTS	70.5°F 55.9kPa	10	3.62V	👍

Sensor Page Field Descriptions

Attribute Description

#	The sensor's specific number. This number is uneditable, and is assigned by the Watchdog Wi.
Name	A unique name, configurable for each sensor. The sensor's name is a link. Click on the sensor's name to go to the that sensor's configuration and data page.
Location	A label used to note the sensor's physical location, or any other necessary descriptive information.
Type	The sensor's model and type.
Reading(s)	Displays the current sensor reading.
Age	Amount of time that has passed, in seconds, since the Watchdog Wi has received a broadcast signal from this sensor.
Battery	The amount of battery life left in the 3.6V AA Lithium battery in this sensor.
Status	An icon that tells, at a glance, the status of the sensor.

Individual Sensor Pages

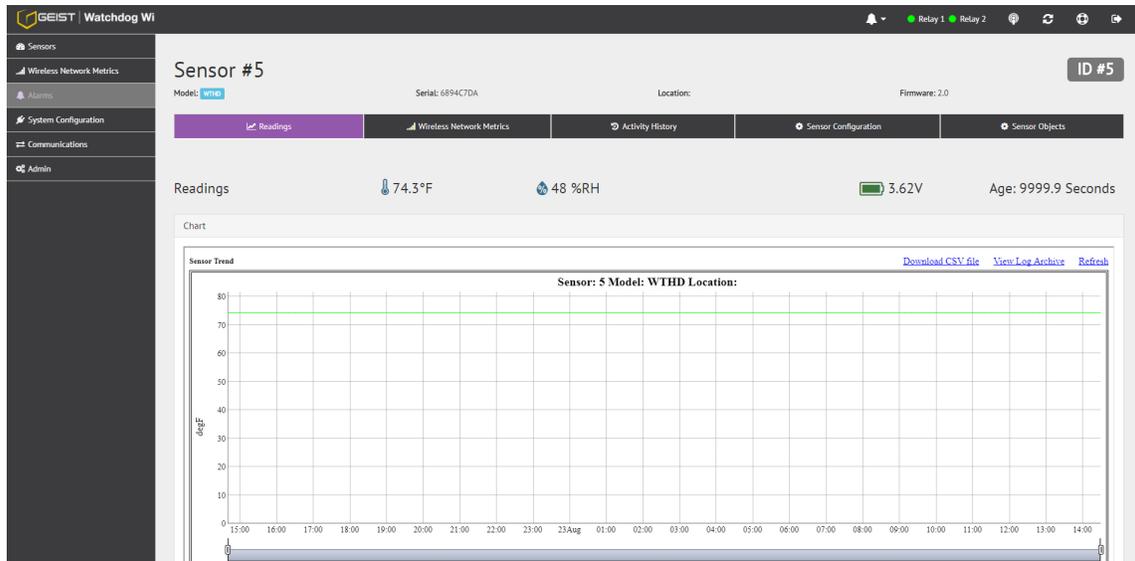
Whether you're viewing Watchdog Wi the sensors through the Sensor page or the Alarm page, each sensor's name is a clickable link. Click this link to access the sensor's individual data and configuration page.

All fields in the following Watchdog Wi table will not be available for each sensor. Only the configurable options that apply to each sensor are displayed in that sensor's configuration menu. Each individual sensor page has five tabs. Editable options are as follows:

Readings

This page tells you the current reading of the sensor and its battery life. There is a trend chart on this page and links that allow you to download the trended data and view the sensor's log archive. Sensor logging is configured in the Admin > Sensors menu.

Figure 4-14 Sensors Page Readings Tab

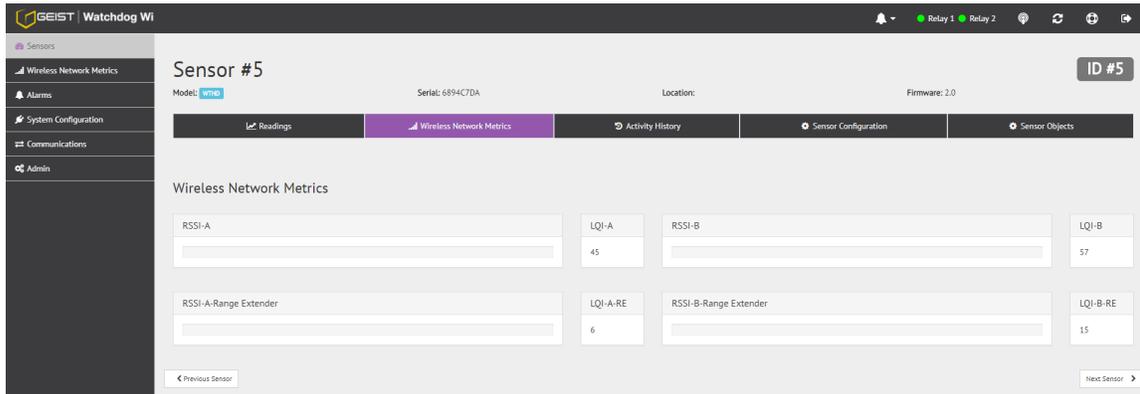


Wireless Network Metrics

This page shows the wireless network metrics for this individual sensor. RSSI metrics for the manager and range extender system components can be found under the Wireless Network Metrics link in the left side navigation. These sensor metrics are provided for advanced users with a strong knowledge of RF. You may also need to provide them to your technician if you engage in a technical support call.

Independently, the RSSI and LQI variables do not provide much insight. But you can use them together, over time, to maximize the performance of your wireless network.

Figure 4-15 Sensors Page Wireless Metrics Tab



Wireless Network Metrics Field Descriptions

Attribute Description

RSSI This is the Received Signal Strength Indicator. It represents the received power of the signal. This number will always be a negative value.

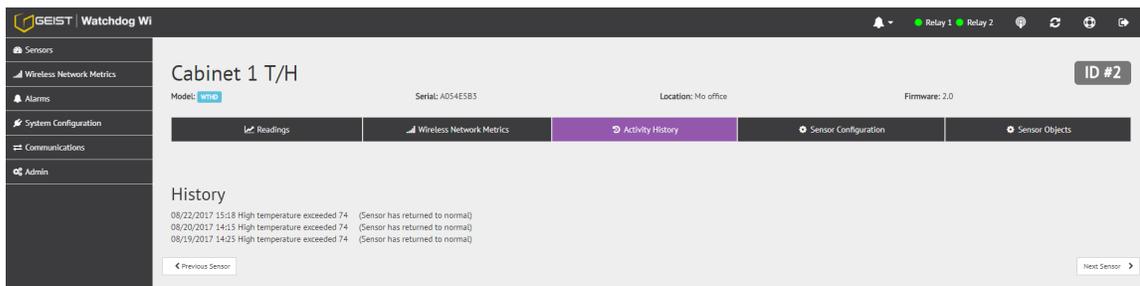
To maximize the performance of this system, get the RSSI value as close to zero as you can. If you are working to maximize this Watchdog Wi system, the RSSI value will likely plateau close to -30. The closer you can get your reading to -30, the better performance you'll see.

LQI This is the Link Quality Indicator. It is an indication of the level of noise that's disrupting the radio. This number will always be a positive value. To maximize the performance of this system, work to get this value as close to zero as possible. High LQI values - above 25 or 30 - indicate a noisy environment.

Activity History

This page shows the activity history for this sensor.

Figure 4-16 Sensors Page Activity History Tab



Sensor Configuration

Use this page to configure your sensor. All fields in the following Watchdog Wi table will not be available for each sensor. Only the configurable options that apply to each sensor are displayed in that sensor's configuration menu.

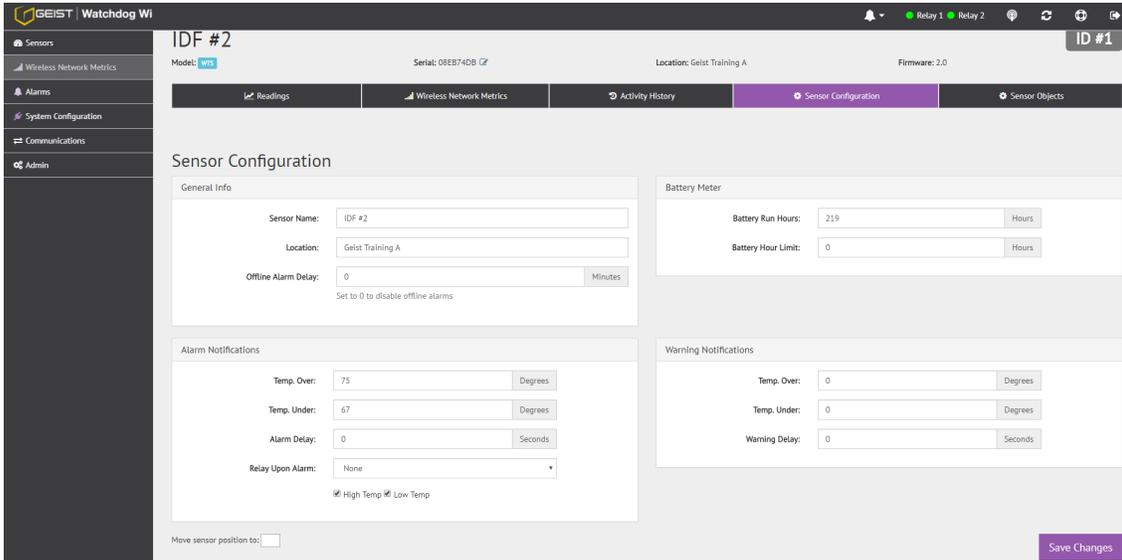
If you wish to configure settings globally for your sensors, that option is available on the Admin > Alarms page.



NOTE

When the desired edits have been made, click the Save Changes button to save the changes. If the Save Changes button is not selected, the new configuration will not be updated and saved.

Figure 4-17 Sensors Page Configuration Tab



Individual Sensor Page - Sensor Configuration Tab Options

Option Description

General Info

Sensor Name Enter a name for this sensor.

Location Enter the sensor's physical location.

Offline Alarm Delay	If the sensor goes offline, how much time should pass before an alert is generated? 0 = Offline alarms are disabled.
Dewpoint Display	If you have a temperature/humidity sensor, a calculated dew point can be displayed. Select Yes to activate this option.
Battery Meter	Allows you to manually track the amount of battery life left for this sensor. You must access the Admin > Sensors configuration page and select the "Run Hours" option from the Battery Meter Type drop down if you wish to use this functionality.
Battery Run Hours	Enter the number of hours the sensor has been running. Set this value to 0 each time you replace the battery if you are manually tracking battery life.
Battery Hour Limit	Designate the number of hours the battery on the sensor can run before a battery alarm notification is triggered.
Alarm Notifications	
<i>Temp Over</i>	Enter a high temperature alarm threshold - if the temperature rises above this value, a high temperature alarm is generated.
<i>Temp Under</i>	Enter a low temperature alarm threshold - if the temperature drops below this value, a low temperature alarm is generated.
<i>Humidity Over</i>	Enter a high humidity alarm threshold - if the humidity rises above this value, a high humidity alarm is generated.
<i>Humidity Under</i>	Enter a low humidity alarm threshold - if the humidity drops below this value, a low humidity alarm is generated.
<i>Alarm Delay</i>	The number of seconds that pass between the time the system goes into alarm and the time that alarm is enunciated.
Relay Upon Alarm	If the sensor goes into alarm, will it activate a relay? If so, designate which relay or relays it will activate. Default = None
Warning Notifications	
<i>Temp Over</i>	Enter a high temperature warning threshold - if the temperature rises above this value, a high temperature warning is generated.
<i>Temp Under</i>	Enter a low temperature warning threshold - if the temperature drops below this value, a low temperature warning is generated.
<i>Humidity Over</i>	Enter a high humidity warning threshold - if the humidity rises above this value, a high humidity warning is generated.

Humidity Under Enter a low humidity warning threshold - if the humidity drops below this value, a low humidity warning is generated.

Warning Delay The number of seconds that pass between the time the system goes into a warning state and the time that warning is enunciated.

Footer Buttons - Remember to click the Submit Changes button for the sensor you're currently configuring before you move to another sensor's configuration page.

<Previous Sensor Configure the previous sensor in the list.

Next Sensor> Configure the next sensor in the list.

Sensor Objects

This page denotes the individual Modbus, BACnet, and SNMP objects provided for this particular sensor.

Figure 4-18 Sensors Page Objects Tab

The screenshot displays the 'Sensor Objects' configuration page for a sensor identified as 'IDF #2'. The interface includes a sidebar with navigation options like 'Sensors', 'Wireless Network Metrics', 'Alarms', 'System Configuration', 'Communications', and 'Admin'. The main content area shows the sensor's details: Model: IDF #2, Serial: 08E874DB CF, Location: Geist Training A, and Firmware: 2.0. Below this, there are tabs for 'Readings', 'Wireless Network Metrics', 'Activity History', 'Sensor Configuration', and 'Sensor Objects' (which is currently selected). The 'Sensor Objects' section contains a table listing various Modbus, BACnet, and SNMP objects.

Field	Value	Modbus	Bacnet	SNMP
Model	84 (TS)	40001 (int16)	*	1.3.6.1.4.1.21239.1271.2.3.1.2.1
Serial #	08E874DB	40002 (int32)	*	1.3.6.1.4.1.21239.1271.2.3.1.3.1
Name	IDF #2	40004 (int16)	*	1.3.6.1.4.1.21239.1271.2.3.1.4.1
Reading 1	71.9°F	40013 (int16 x10)	ai001	1.3.6.1.4.1.21239.1271.2.3.1.6.1
Reading 2		40014 (int16)	ai002	1.3.6.1.4.1.21239.1271.2.3.1.7.1
Reading 3		40015 (int32)	ai003	1.3.6.1.4.1.21239.1271.2.3.1.8.1
Battery Level	3.62 V	40017 (int16 x100)	av004	1.3.6.1.4.1.21239.1271.2.3.1.9.1
Out Of Service	0	40018 (int16)	*	1.3.6.1.4.1.21239.1271.2.3.1.10.1
Sensor Reading Age	4	40019 (int16)	av001	1.3.6.1.4.1.21239.1271.2.3.1.11.1
Offline Delay	0	40020 (int16)	*	1.3.6.1.4.1.21239.1271.2.3.1.12.1
Battery Run Hours	219	*	av002 *	
Battery Hour Limit	0	*	av003 *	
Battery Replacement Alarm	false	*	bv001 *	

System

Wireless Network Metrics

This page shows the wireless network metrics for your sensors. RSSI and LQI metrics for the system components can be found under the Wireless Network Metrics link in the left side navigation.

These metrics are provided for advanced users with a strong knowledge of RF. You may also need to provide them to your technician if you engage in a technical support call.

Figure 4-19 Wireless Network Metrics

#	Name	Serial	Type	Rssi-A	Rssi-B	Rssi-RE-A	Rssi-RE-B	Age
1	IDF #2	08EB74DB	WTS	-35dBm	-47dBm			10
2	Cabinet 1 T/H	A054E3B3	WHD			-95dBm	-95dBm	0
3	Sensor #3	2EB5251A	WTS					9999
4	Sensor #4	51CF9F8D	WTS					9999
5	Sensor #5	6894C7DA	WHD					9999

Showing 1 to 5 of 5 entries

Wireless Network Metrics Field Descriptions

Attribute Description

RSSI

This is the Received Signal Strength Indicator. It represents the received power of the signal. This number will always be a negative value, and is provided for both channel pairs available for each sensor.

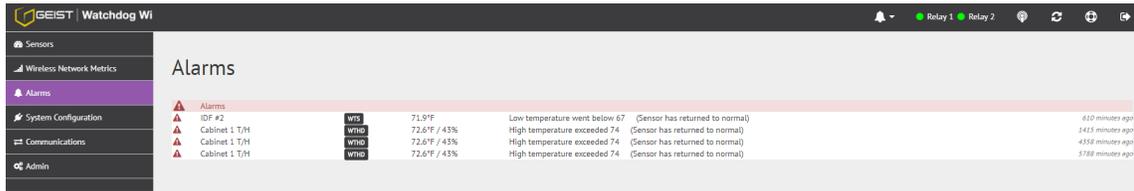
To maximize the performance of this system, get the RSSI value as close to zero as you can. If you are working to maximize this Watchdog Wi system, the RSSI value will likely plateau close to -30. The closer you can get your reading to -30, the better performance you'll see.

Alarms

The Alarms page shows all active alarms and warnings reported by sensors monitored by this Watchdog Wi. If the sensors has returned to normal since the alarm or warning was reported, this will be noted in the table as well.

Each sensor's name is a link. Click this link to visit the individual sensor's status and configuration page. Here you can view the sensor's logged data, as well as edit and configure the sensor's settings and alarm and warning thresholds.

Figure 4-20 Alarms Page



System Configuration

Configure your Watchdog Wi through this series of menus.

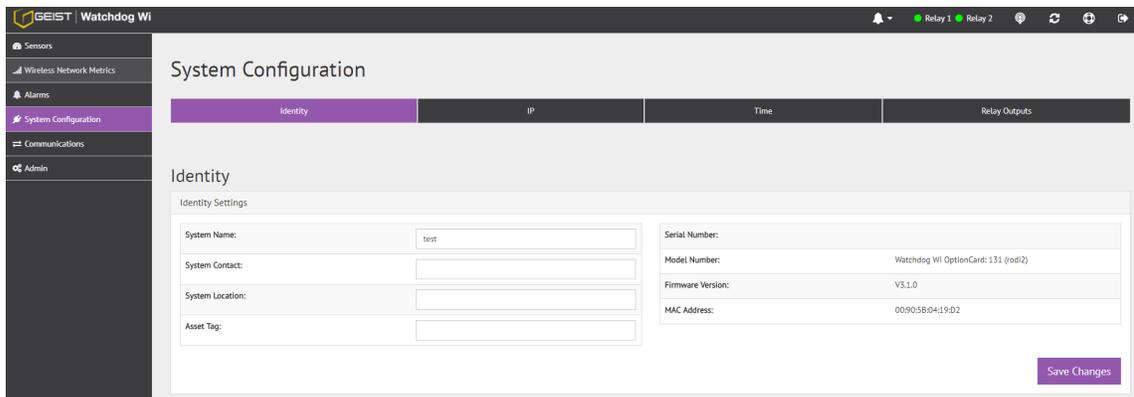
NOTE

If any of these fields are edited, be sure to click the Save Changes button to save the changes. If you edit the fields and do not click the Save Changes button, all edits will be lost.

Identity

The Identity page allows you to customize the name of the Watchdog Wi and the contact and location information for this particular Watchdog Wi. You can also look here to find the unit's serial number, model number, MAC address, and the version of firmware currently running on the unit.

Figure 4-21 Identity Page



Identity Configuration Options

Option Description

- | | |
|------------------------|---|
| <i>System Name</i> | Enter a name unique to this particular Watchdog Wi. |
| <i>System Contact</i> | Designate a technical contact for this unit. |
| <i>System Location</i> | Specify the physical location of this particular Watchdog Wi. |
| <i>Asset Tag</i> | If your facility uses asset tagging, log the code for this Watchdog Wi. |

IP

The Watchdog Wi can communicate via IPv4, IPv6, or both IPv4 and IPv6. Select the option that is most appropriate for your network, and configure the fields as necessary.

Figure 4-22 IP Page

The screenshot shows the 'System Configuration' page for a GEIST Watchdog Wi device. The 'IP' tab is selected, showing 'Internet Protocol Configuration'. Under 'IP Settings', the following information is displayed:

- MAC Address: 00:90:5B:04:19:D2
- Netbios Host Name: WWI00905B0419D2
- IPv4 Working Address: 192.168.117.186
- LLMNR: WWI00905B0419D2
- IPv6 Global Address: 0::0
- IPv6 Local Link Address: FE80::2905BFFFE0419D2
- IP Version: IPv4 and IPv6 (selected)
- TCP Max. Segment Size: 1220 (selected) / 536

Below this, there are two sections for detailed settings:

- IPv4 Settings:**
 - Static Address: 192.168.117.186 (with a note: 0.0.0.0 Enables DHCPv4)
 - Net Mask: 255.255.255.0
 - Default Route: 192.168.117.254
 - HTTP Port: 0 (with a note: Default (0) is port 80.)
 - DHCPv4 Status: Dhcpv4 Disabled
- IPv6 Settings:**
 - DHCPv6: Disabled (selected) / Enabled
 - Static Address: 0::0
 - Static Router: 0::0
 - Prefix Length: 64
 - DHCPv6 Status: (empty)

A 'Save Changes' button is located at the bottom right of the configuration area.

IP Configuration Options

Option Description

IP Settings	Network Statistics Click this link to view advanced network statistics for this device.
IP Version	Designate whether the Watchdog Wi will communicate via IPv4, IPv6, or both.
TCP Max. Segment Size	The Watchdog Wi defaults to 1220 packet size for web page data. Users may select 536 for limited bandwidth or VPN applications. Default: 1220
IPv4 Settings- Configure these fields if the Watchdog Wi is communicating via IPv4.	
<i>Static Address</i>	The Watchdog Wi is shipped with a default IP address of 192.168.123.123. Contact your IT Department for an appropriate IP address, if you wish to change this field. If you would prefer to use DHCP, set this field to 0.0.0.0 to enable DHCPv4. Default IP address: 192.168.123.123
<i>Net Mask</i>	The Watchdog Wi is shipped with a default Subnet Mask of 255.255.255.0. Contact your IT Department for an appropriate Subnet Mask, if you wish to change this field.

<i>Default Route</i>	The Watchdog Wi is shipped with a default Gateway Route of 192.168.123.1. Contact your IT Department for an appropriate Default Gateway, if you wish to change this field.
Http Port	Some ISPs use alternate http ports as an added security measure. Edit this field in accordance with your ISPs security settings. Default: 0 = Port 80
IPv6 Settings- Configure these fields if the Watchdog Wi is communicating via IPv6. You do have the option in this section to use DHCP. If you do choose to enable DHCP, DHCP will override any static options you configure.	
<i>DHCPv6</i>	Click the Enable button to enable DHCP for IPv6. Enabling IPv6 will override any static address information saved in the IPv6 fields.
Static Address	If you choose not to use DHCP, Enter a static IPv6 address in this field.
Static Router	Enter static router information here.
Prefix Length	If the static address has a prefix, enter the bit length of the prefix here.

Time

The Watchdog Wi has an onboard clock that timestamps alarms and other logged events. If you'd like, you can set the onboard clock manually. If you configure the Network Time Protocol (NTP) settings, the NTP server will automatically adjust the time of the onboard clock and keep it in synch with the time reported by the NTP server. NTP maintains a high level of accuracy and reliability in time stamped events.

Figure 4-23 Time Configuration

The screenshot displays the 'System Configuration' page for the Geist Watchdog Wi. The 'Time' tab is selected, showing two main sections: 'Onboard Clock' and 'Network Time Protocol (NTP)'. The 'Onboard Clock' section has input fields for 'Date' (format: mm/dd/yy) and 'Time' (format: hh:mm:ss). The 'Network Time Protocol (NTP)' section includes fields for 'NTP Server' (with a note 'IPv4 or IPv6 address or hostname'), 'Time Zone' (set to 'Central US (UTC - 6)'), 'Daylight Savings Time' (set to '2:00 AM Local'), 'DST Beginning Date' (set to 'Second Sunday in March'), 'DST End Date' (set to 'Last Sunday in October'), and 'Update Interval' (set to '0' hours, with a note 'Leave at 0 to disable'). A 'View Docs' link is present in the top right of the NTP section. A 'Save Changes' button is located at the bottom right. The current system time is displayed as 'Currently: 08/23/17 14:55'.

Time Configuration Options

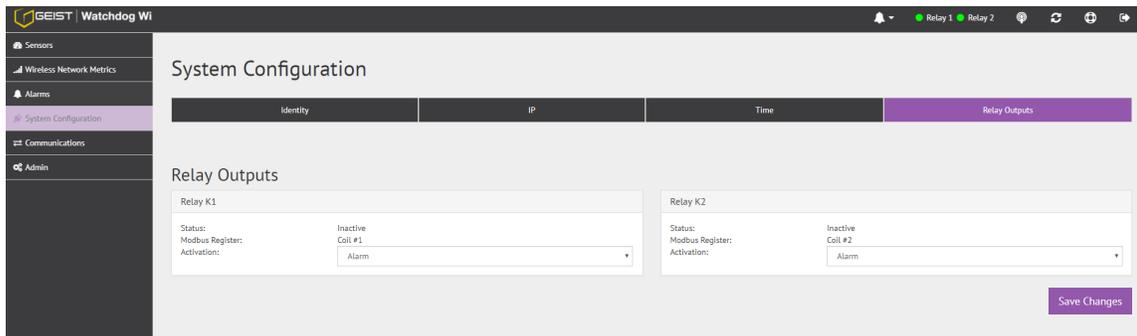
Option Description

Onboard Clock	If you wish to set the onboard clock manually, do so here. Click the Save Changes button to save all modifications.
<i>Date</i>	Enter the current date in mm/dd/yy format.
<i>Time</i>	Entered the current time in hh:mm:ss format. The clock is in 24 hour format - not 12 hour format - so ensure the hour is a two digit number between 01 and 24.
NTP	If you configure NTP settings, they will override anything you have manually configured for the Onboard Clock.
<i>NTP Server</i>	The IP address or hostname of the NTP server with which your Wi will synchronize. Commonly used public NTP servers include us.pool.ntp.org and time.nist.gov.
Time Zone	Select the time zone in which this particular Watchdog Wi resides. Default setting: Western European (UTC + 0)
Daylight Savings Time	Enable or disable Daylight Savings Time, and designate at which time DST goes into effect in your time zone. Default setting: Disabled
DST Beginning Date	Set the day DST begins at your location. Default setting: Second Sunday - March
DST End Date	Set the day DST ends at your location.
Update Interval	This interval tells the Watchdog Wi how often it should access the NTP server you designated and synchronize its time with the NTP server. If you enter a 0 in this field it disables this feature, which also disables NTP. Default setting: 0 (disabled)

Relay Outputs

The Watchdog Wi has two hard-wired relay outputs labeled K1 and K2. Use this tab to individually configure the relay outputs. Use the individual sensor pages to designate when a sensor alarm activates a relay output.

Figure 4-24 Relay Output Configuration



Relay Output Configuration Options

Option Description

Activation Each relay can be configured as an alarm relay, a latching alarm relay, or a Modbus only relay. When the relay is activated, an alarm can be triggered or the information can be conveyed via Modbus only. Default: Alarm

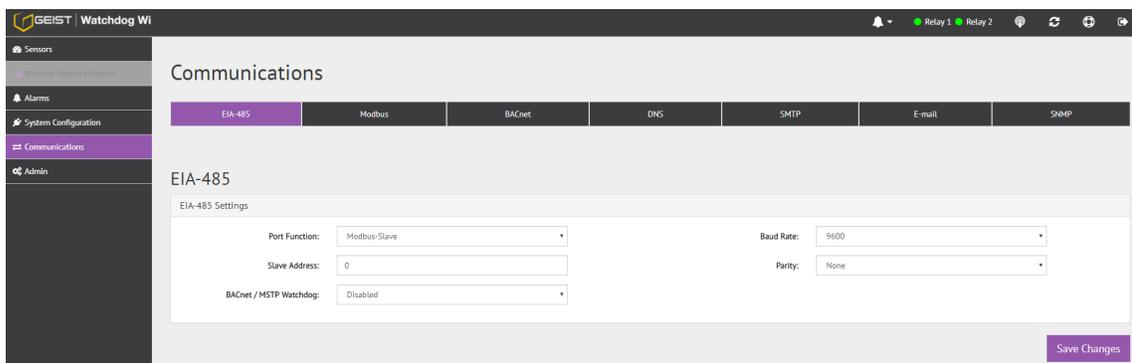
Communications

The communications options allow you to configure how the Watchdog Wi conveys its information to individuals and other devices.

EIA-485

If the Watchdog Wi will communicate via the EIA-485 port, configure the necessary options here.

Figure 4-25 EIA-485 Configuration



EIA-485 Configuration Options

Option Description

Port Function	Select an output type for the EIA-485 port - either Modbus-Slave or BACnet-MSTP. Default: Modbus-Slave
Baud Rate	The baud rate is selectable: 1200, 2400, 9600, or 19200. Choose the appropriate baud rate. Default: 9600
Slave Address	Set a slave address, from 1-254. Set the slave address to 0 disable EIA-485 port communications. Default: 0 (disabled)
Parity	Selectable: None, Even, Odd. Default: None

BACnet / MSTP Watchdog

If the Watchdog Wi loses BACnet communications, you can program the Watchdog Wi MGR to automatically attempt to restore communications. The Watchdog Wi must detect a period of inactivity on the port before it can reset or reboot anything - this help avoid executing a reboot while someone is performing maintenance on or configuring a unit.

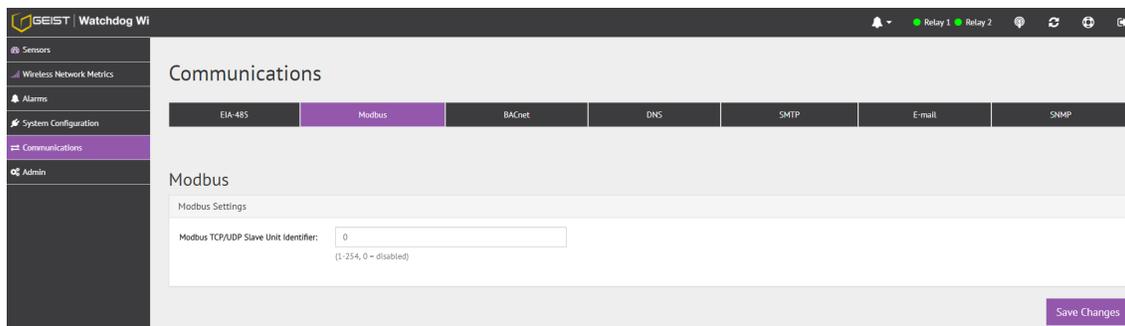
Reset MSTP Port - The Watchdog Wi will reset the MSTP port once it detects no activity on the port for two minutes.

System Reboot - The Watchdog Wi will reboot itself once it detects no activity on the MSTP port for fifteen minutes. Default: Disabled

Modbus

If you're using Modbus RTU over an ethernet connection, you'll need to designate a slave unit identifier. Configure that identifier here.

Figure 4-26 Modbus Configuration



Modbus Configuration Options

Option Description

Modbus TCP/UDP Slave Unit Identifier

This designator is used for Modbus RTU over an Ethernet connection. The default slave unit identifier is 0, which disables this feature. To enable this option, enter a TCP/UDP

slave address from 1-254 in this field. In most instances, the identifier is typically set at 1. Default: 0 (disabled).

BACnet

If the Watchdog Wi will communicate via the BACnet, configure the necessary options here.

Figure 4-27 BACnet Configuration

BACnet Configuration Options

Option Description

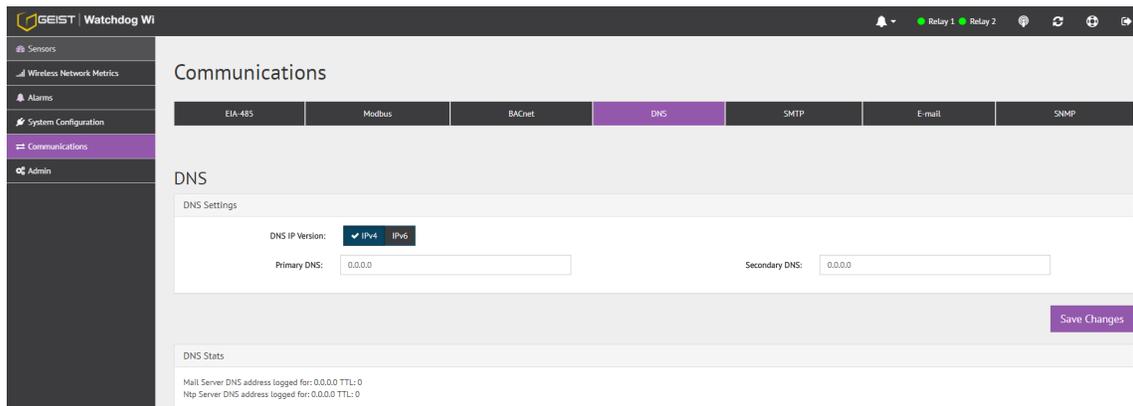
Pics	Click this link to view the Bacnet identifiers and objects supported by the Watchdog Wi .
Packet Log	Click this link to view the Bacnet packet log.
<i>Device ID</i>	To enable BACnet, assign a unique number between 1 and 4194302 to identify this BACnet device on the network. If you enter a 0 in this field BACnet will be disabled. Default: 0 (Disabled)
<i>Device Name</i>	Assign a name - up to 38 characters - to the unit for BACnet discovery and integration.
Description	Add any additional details about the device, up to 38 characters.
Location	Designate the physical location of the unit.

UDP Port	Enter a 0 to specify port 47808 (0xBAC0) as the UDP port. If another port is specified by your application, enter that value here. Default: 0 (47808)
BACnet/IP Read Multiple	Use the toggle switch to enable or disable this option. Default: Enabled
Register as Foreign Device at IPv4	IP address of the master device with which you're trying to communicate. Requires a BBMD for foreign device discovery.
Registration TTL	Time, in seconds, for foreign device discovery.
MS/TP Max Master	The Max Master is the highest master address that a device will attempt to discover. Designate this device's Max Master here.

DNS

Configure DNS settings through this page.

Figure 4-28 DNS Configuration



DNS Configuration Options

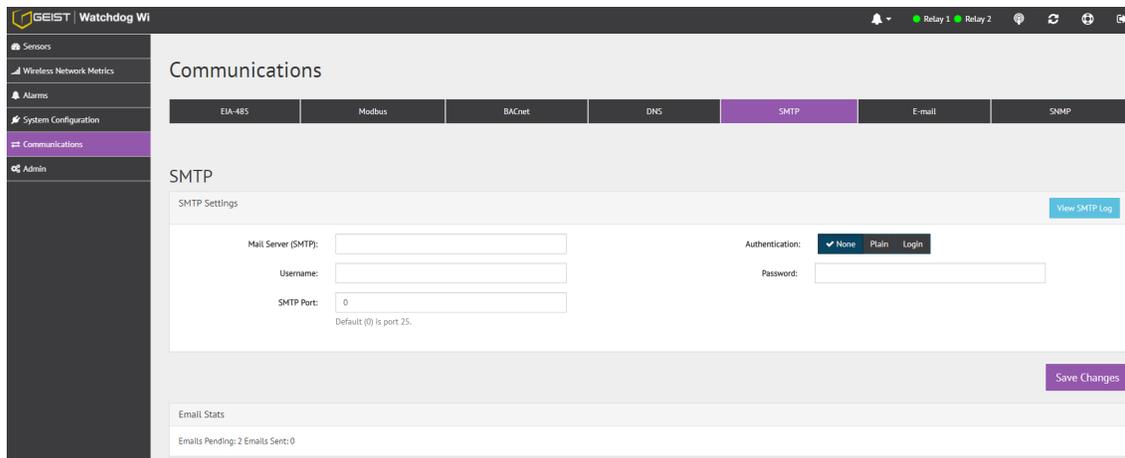
Option Description

<i>DNS IP Version</i>	Use the toggle switch to designate whether you want to use an IPv4 or IPv6 DNS server. Default setting: IPv4
Primary DNS	Enter the IP address for the primary DNS server, as provided by your internet service provider. Default setting: 0.0.0.0
Secondary DNS	Enter the IP address for the secondary DNS server, as provided by your internet service provider. Default setting: 0.0.0.0

SMTP

Configure SMTP settings through this page.

Figure 4-29 SMTP Configuration



SMTP Configuration Options

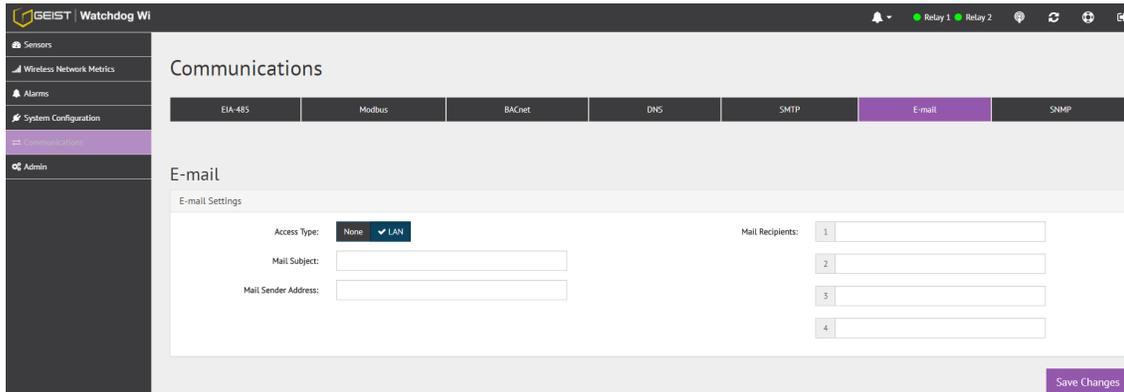
Option Description

- | | |
|--------------------|---|
| View SMTP Log | Click this link to view all logged email messages. |
| Mail Server (SMTP) | Enter the URL of your SMTP server. |
| Authentication | This is the authentication type used by the server. Leave the authentication type at its default setting - None, unless otherwise directed by your IT department.
Default setting: None |
| Username | This is the username for your email account. Leave the username at its default setting - blank, unless otherwise directed by your IT department. Default setting: Blank |
| Password | This is the password for that email account. Leave the password at its default setting - blank, unless otherwise directed by your IT department. Default setting: Blank |
| SMTP Port | Enter the appropriate SMTP port. Default setting: 0 = Port 25 |
| Email Stats | Refer to this field to see how many email messages are pending and how many have been sent by the Watchdog Wi . This is a quick way to check if email notifications are being sent by the Watchdog Wi . |

Email

Configure email settings through this page.

Figure 4-30 Email Configuration



Email Configuration Options

Option Description

<i>Access Type</i>	Select LAN to send alerts through a local network connection. Select None to disable the email feature. Default setting: LAN
Mail Recipients	Email alerts can be sent to four recipients. Enter up to four unique email addresses here. If you would like a message to be sent to a distribution group, you can use the email address of the distribution group in one of these fields.
Mail Subject	Enter the text that will appear in the subject line of any outgoing email messages.
Mail Sender Address	Any email messages sent by the Watchdog Wi will come from this valid email address.

SNMP

Use this page to configure the Watchdog Wi's SNMP communications.

Figure 4-31 SNMP Configuration

Communications

EIA-485 Modbus BACnet DNS SMTP E-mail **SNMP**

SNMP

MIB-2 System

System Name: System Contact:

System Location:

V1/V2C Community Names

Get / Read: Set / Write:

Trap:

Traps

Trap Type: IP Version:

Max. Inform Retries: (0-999) (0=unlimited) Inform Interval: (1-999) (0=Minutes)

Trap Destinations

Trap Enabled	IP Address	SNMPv3 EngineID
<input type="checkbox"/>	<input type="text" value="0.0.0.0"/>	<input type="text"/>
<input type="checkbox"/>	<input type="text" value="0.0.0.0"/>	<input type="text"/>
<input type="checkbox"/>	<input type="text" value="0.0.0.0"/>	<input type="text"/>
<input type="checkbox"/>	<input type="text" value="0.0.0.0"/>	<input type="text"/>

EngineID: 8000C700300905B041902 (hex)

SNMPv3

User Name	Access Mode	Auth. Password (8-24 chars)	Priv. Password (8-24 chars)
<input type="text"/>	<input type="text" value="No-Auth"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text" value="No-Auth"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text" value="No-Auth"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text" value="No-Auth"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text" value="No-Auth"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text" value="Trap"/>	<input type="text"/>	<input type="text"/>

Save Changes

SNMPv3 Stats

Snmpv3 Get Stats: unsupportedSecurityLevelID / notInTimeWindowID / unknownUserNameID / unknownEngineID / wrongDigestID / decryptionErrorID
 Snmpv3 Inform Stats: unsupportedSecurityLevelID / notInTimeWindowID / unknownUserNameID / unknownEngineID / wrongDigestID / decryptionErrorID

SNMP Configuration Options

Option Description

MIB-2 System

System Name configuration.

Assign a name to the Watchdog Wi for SNMP system

System Contact Watchdog Wi .

Designate a system contact who is responsible for the

System Location	Enter the address of the Watchdog Wi 's physical location.
V1/V2C Community Names	When communicating via SNMP V1/V2, identify devices that receive Traps and/or Syslog messages from the Watchdog Wi and communicate with the Watchdog Wi over the network.
Get / Read	Enter the appropriate community name.
Set / Write	Enter the appropriate community name.
Trap	Enter the appropriate community name.
Traps	
Trap Type	Select the SNMP version that best suits your needs: V1 - Trap, V2C - Trap, V2C - Inform, V3 - Trap, or V3 - Inform.
IP Version	Designate whether traps will be sent via IPv4 or IPv6.
Max. Inform Retries	If the communication of a trap fails, this is the maximum number of times the Watchdog Wi will re-send the trap.
Inform Interval	This is the amount of time that lapses between re-sends.
Trap Destinations	
Trap Enabled	Check the box to allow a trap to be sent to the device defined in this row.
IP Address	This is the IP address of the device that the trap will be sent to.
SNMPv3 EngineID	If this device uses SNMPv3, data will populate in this field.
User Name	Enter a unique name for each SNMPv3 user.
Access Mode	Choose from the following Watchdog Wi :
No-Auth Auth-MD5, No-Priv Auth-MD5, Priv-DES	A user name is needed for No Authentication, and a user name and password are required for Authentication and Privacy Authentication access.
Auth. Password (8-24 chars)	Enter the authentication password - the password must be between 8 and 24 characters long.
Priv. Password (8-24 chars)	Enter the privacy (encryption) password - the password must be between 8 and 24 characters long.

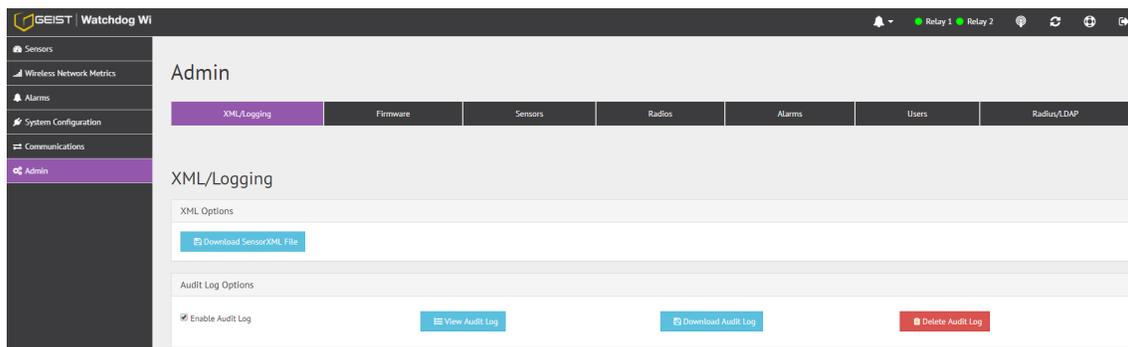
Admin

Administrator-exclusive options and capabilities are located in the Admin section.

XML/Logging

The Watchdog Wi collects quite a bit of data. Right click the Download File button on this page and select Save Link As or Save Target As to download this data as an XML file. You can then take that file and import it into a spreadsheet for view Watchdog Wi, logging, and analyzing.

Figure 4-32 XML/Logging Page



XML/Logging Configuration Options

Option Description

XML Options

Download Sensor XML File Click this link to download sensor information as an .xml file.

Audit Log Options - The audit log is a log of all user interaction with the user interface. This log will hold 1,000 entries, wrapping in a first in, first out manner.

Enable Audit Log Click this checkbox to enable the audit log.

View Audit Log Click this button to view the audit log.

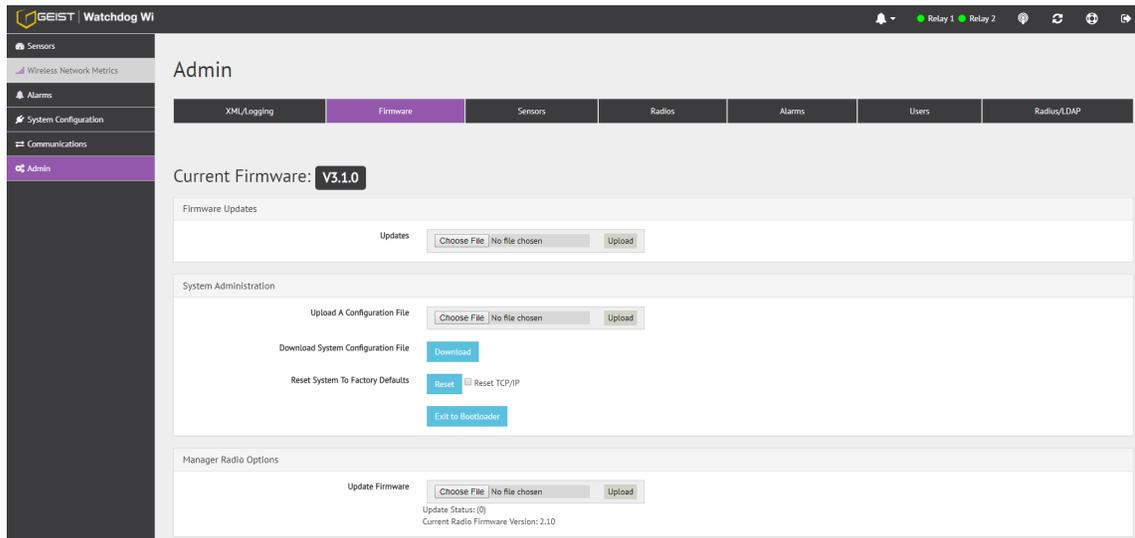
Download Audit Log Click this button to download the audit log.

Delete Audit Log Click this button to delete all information from the audit log.

Firmware

Geist releases firmware upgrades that add new features and functionality to the Watchdog Wi. Firmware updates are free of charge. Download firmware updates from the Geist website and load them onto your system here.

Figure 4-33 Firmware Page



Firmware Configuration Options

Attribute Description

Firmware Updates

Update Firmware

Firmware updates are available, free of charge, on the Geist website. When new firmware is available for the Watchdog Wi, download the file from the website and upload the Watchdog Wi main firmware file here.

System Administration

Upload A Configuration File - Use this menu option to upload a system configuration file to the Watchdog Wi. This is a particularly useful option if you're configuring more than one Watchdog Wi and would like them to have the same settings, or if you've updated the firmware on your unit and need to re-upload your current system configuration file.

Download System Configuration File - If you are going to update the firmware on a Watchdog Wi, you should always download the configuration file first. This provides you with a backup of your current configuration, just in case something happens during the update process. If you're configuring more than one Watchdog Wi and would like them to have the same settings, you can configure one unit, download the configuration file, and then upload it to another Watchdog Wi. Use this button to download this unit's configuration file.

Reset to Factory Defaults - If you should need to restore your Watchdog Wi to its factory default settings, click this button.



NOTE

Clicking the Reset Factory Default button will overwrite all system and sensor settings you have established within the Watchdog Wi, and will erase all logged data within the unit.

Exit to Bootloader - Click this link to access the Watchdog Wi's bootloader. This feature should be reserved for system updates and troubleshooting, and should only be accessed by individuals with the technical knowledge to use this feature.

Manager Radio Options

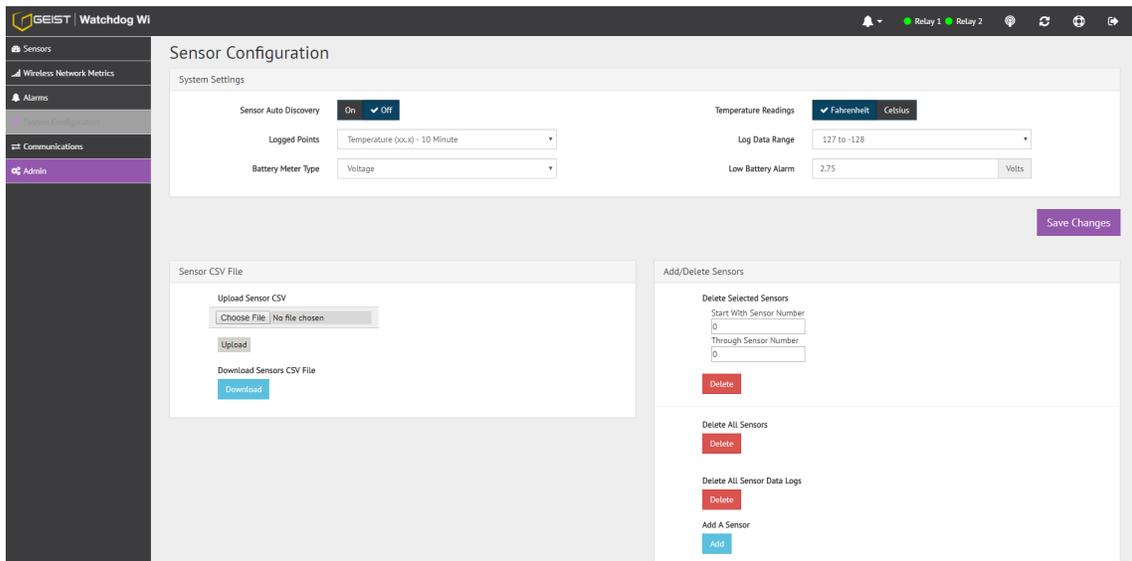
Update Firmware:

The Watchdog Wi requires multiple firmware files. When new firmware is available for the Watchdog Wi radio, download the file from the website and upload the Watchdog Wi radio file here.

Sensors

There are some global configuration options that are applicable to all sensors in the system. Those options are configurable on the Sensors page. The Sensors page also holds the link for the Sensor Auto Discovery, which is used to add new sensors to the Watchdog Wi's sensor network.

Figure 4-34 Sensors Page



Sensor Configuration Options

System Settings

Sensor Auto Discovery

Click the toggle button to turn sensor auto discovery on. Click the Save Changes button to activate sensor auto discovery.

Through sensor discovery, the Watchdog Wi discovers new sensors transmitting within its range. The Watchdog Wi loads the newly detected sensors the next available sensor position in the table on the Sensors tab of the web interface. Once you have located all your sensors, return to this page and turn sensor auto discovery off. If you do not turn off the sensor discovery feature, the Watchdog Wi will continue to try to find new sensors. This can contaminate your list of active sensors with additional sensors that do not actually exist.

Temperature Readings

Select whether temperature readings display in Fahrenheit or Celsius. Default: Fahrenheit

Logged Points

Temperature logging can be seen on each sensor's individual sensor page. Use this option to determine how frequently the sensors are sampled for graphing and logging purposes. Default: Temperature or Analog - 5 Minute

Log Data Range

The Watchdog Wi will log temperature readings that fall within a designated range. Readings that fall outside the range will be omitted. Select the range that best suits your application. Default: 127 to -128 degrees

Battery Meter Type

A battery meter can be displayed for each individual sensor. Use this drop-down menu to determine if the battery reading will be displayed, and if it will be displayed as voltage or run hours. Default: Voltage

Low Battery Alarm

If you're monitoring the battery voltage reading, you need to assign a voltage threshold for the low battery alarm. Assign that here. Default: 2.7 Volts

Sensor CSV File

Upload Sensor CSV

Upload a CSV file to configure sensors in mass on this unit. This feature is particularly helpful if you are configuring multiple identical Watchdog Wi systems simultaneously.

Download Sensor CSV File

Download a CSV file that shows all sensors configured in the Watchdog Wi.

Delete Sensors

Delete Sensor Range

If you wish to delete some sensors monitored by the Watchdog Wi without deleting all the sensors, use this option. Enter the range of sensors you wish to delete, and click the Delete button. If you wish to delete one specific sensor, enter that sensor's number as both the start and end points for the sensor range.

Delete All Sensors

This command erases all the information about the sensors the Watchdog Wi is currently monitoring. Users will have to reinstall sensor information after the button is clicked, or rediscover sensors already deployed.

Delete All Sensor Data Logs

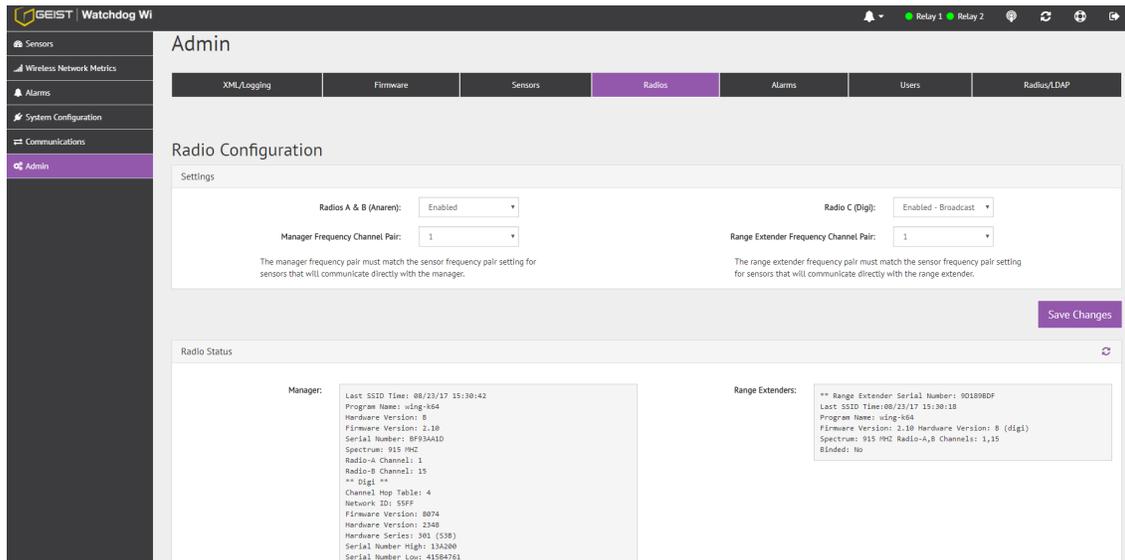
Click this button to delete all logged data for all the sensors associated with this system.

Radios

Alternate communications channel pairs and radio communications can be edited on this page.

If you need to change the channel pair settings for your Watchdog Wi system, refer to Watchdog Wi Channel Pairs . While it's not a difficult process, there are quite a few steps involved because you do need to make sure all the components of your system - the manager, sensors, and range extenders - are all operating on the correct channel pairs.

Figure 4-35 Radios Page



Radio Configuration Options

Attribute Description

Settings

Radios A & B (Anaren)

Radios A and B communicate with the Watchdog Wi sensors. Default: On

Radio C (Digi)

If your system uses a Watchdog Wi-RXT range extender, make sure radio C is on. Default: On

Manager Frequency Channel Pair

If you wish to change the channel pair on which your system is communicating, refer to Watchdog Wi Channel Pairs. Default: Channel pair 1

Range Extender Frequency Channel Pair

If you wish to change the channel pair on which your system is communicating, refer to Watchdog Wi Channel Pairs. Default: Channel pair 1

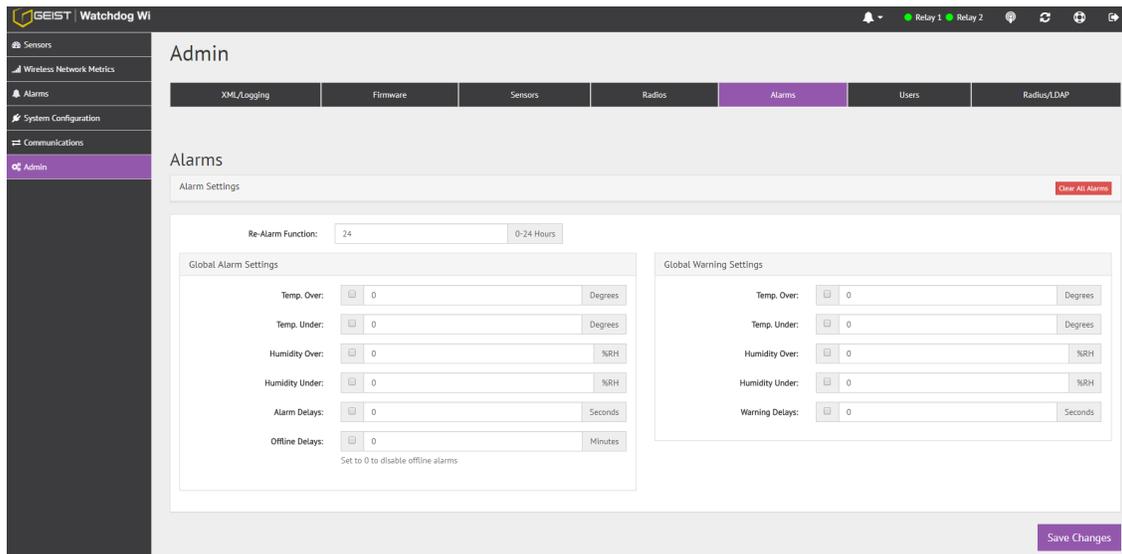
Radio Status - These fields provide detailed information about the status and operation of the Watchdog Wi's radios. If you need to make a call to Geist tech support, they may request this information.

Alarms

There are a set of global configuration settings that can be applied to all sensors associated with this Watchdog Wi. Any global settings configured on this page will apply to all the sensors associated with this Watchdog Wi. If you already have parameters set up for your sensors, they will be overwritten when you apply these global alarm settings.

Once you apply the global settings, that value will be present on each sensor's individual configuration page. The global settings will not be recorded on this page - when you click to go to another page of the user interface and then return to this global settings page, all the values in the alarm fields will have reverted back to zeros.

Figure 4-36 Alarms Page



Alarms Configuration Options

Option Description

Clear All Alarms Click this button to clear all active alarms on this Watchdog Wi. The Watchdog Wi will re-send an alarm after a point has been in alarm for a certain number of hours. Select a re-alarm time from 1-24 hours. Set the re-alarm time to 0 to disable the feature. Default: 0 (disabled)

Global Alarm Settings - There is a checkbox next to each individual alarm setting. Check this box to apply that particular setting to each sensor in the system. If you do not check the check-box next to the alarm parameter, that value will not be applied to the sensors in your system.

Temp. Over Enter a high temperature alarm threshold - if the temperature rises above this value, a high temperature alarm is generated. Check the box to activate the option, and enter a temperature value.

Temp. Under Enter a low temperature alarm threshold - if the temperature drops below this value, a low temperature alarm is generated. Check the box to activate the option, and enter a temperature value.

Humidity Over Enter a high humidity alarm threshold - if the humidity rises above this value, a high humidity alarm is generated. Check the box to activate the option, and enter a humidity value.

Humidity Under	Enter a low humidity alarm threshold - if the humidity drops below this value, a low humidity alarm is generated. Check the box to activate the option, and enter a humidity value.
Alarm Delays	The number of seconds that pass between the time the system goes into alarm and the time that alarm is announced. Check the box to activate the option, and enter a time interval.
Offline Delays	Users can designate how many minutes must pass before the Watchdog Wi considers the sensor offline. Check the box to activate the option, and enter a time interval.

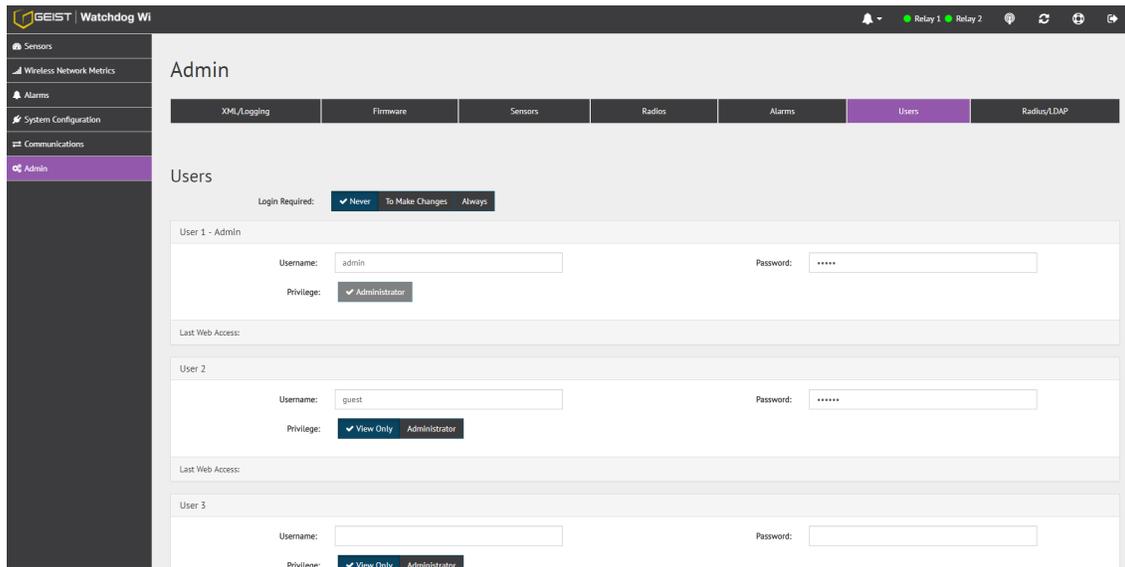
Global Warning Settings - There is a check-box next to each individual alarm setting. Check this box to apply that particular setting to each sensor in the system. If you do not check the check-box next to the alarm parameter, that value will not be applied to the sensors in your system.

Temp. Over	Enter a high temperature warning threshold - if the temperature rises above this value, a high temperature warning is generated. Check the box to activate the option, and enter a temperature value.
Temp. Under	Enter a low temperature warning threshold - if the temperature drops below this value, a low temperature warning is generated. Check the box to activate the option, and enter a temperature value.
Humidity Over	Enter a high humidity warning threshold - if the humidity rises above this value, a high humidity warning is generated. Check the box to activate the option, and enter a humidity value.
Humidity Under	Enter a low humidity warning threshold - if the humidity drops below this value, a low humidity warning is generated. Check the box to activate the option, and enter a humidity value.
Warning Delays	The number of seconds that pass between the time the system goes into a warning state and the time that warning is announced. Check the box to activate the option, and enter a time interval.

Users

The Watchdog Wi allows you to configure user privileges for up to eight unique users. User 1 is always the Administrator's slot. Use users 2 - 8 to either configure users with read only access, or to configure additional Admin accounts.

Figure 4-37 Users Page



Users Configuration Options

Option Description

Login Required Designate when login is required on this Watchdog Wi:

Never - No one is ever required to log into the Watchdog Wi. Anyone can access the device and read all the data, and anyone can make changes to all the settings within the device. **To Make Changes** - Users must be logged in to make changes within the Watchdog Wi. Anyone can access the device and read all the data, but you must be logged in to change any of the configuration and settings.

Always - All users must log in to gain access to the Watchdog Wi. You must be logged in to read or access any data within the Watchdog Wi, and you also must be logged in to make any changes within the Watchdog Wi.

User Configuration

Username Each user that will log into the Watchdog Wi needs their own unique username. Enter a username in this field.

Password Assign a password for this username.

Privilege Select which level of access this user will have:

View Only - This user can view pages within the web interface but cannot make any changes to settings or configuration.

Administrator - This user can view data and make changes to settings and configuration options.

Radius/LDAP

If you would like to configure Radius/LDAP settings for your Watchdog Wi, do so here.

Figure 4-38 Radius/LDAP Page

The screenshot displays the GEIST Watchdog Wi Admin interface. The top navigation bar includes 'Admin' and 'Radius/LDAP'. The 'Radius/LDAP Settings' section contains the following fields:

- Authentication: Disabled (dropdown)
- IP Version: IPv4 / IPv6 (radio buttons)
- Radius Secret: [text input]
- LDAP Binding: Anonymous (dropdown)
- LDAP baseObject: [text input]
- LDAP Filter: [text input]
- Server IP Address: 0.0.0.0 [text input]
- Radius UDP Port: 1812 [text input]
- Default Authorization: Read-Only (dropdown)
- LDAP Attribute: [text input]

A 'Save Changes' button is located at the bottom right of the settings section. Below the settings is a 'User Log' section with a list of user entries (1-8) and a 'Delete User Cache' button. Further down, there is a 'Server Test' section with input fields for 'Username/LDAP Filter' and 'Radius Password', and a 'Server Test' button. Below that is a 'Last Server Test Results' section with a table for results. At the bottom, there is a 'FreeRadius Dictionary Entry' section with a text area containing configuration code for Vendor RLE 3184.

Radius/LDAP Configuration Options

Option Description

Radius/LDAP Settings

Authentication

Use the drop down menu to select either RADIUS or LDAP authentication.

IP Version	Designate the IP version for communications.
Server IP Address	Enter the IP address of the RADIUS or LDAP server.
Radius Secret	Enter the RADIUS secret. The secret is used between the RADIUS client and the RADIUS server to encrypt passwords. The secret is administered by the server and must be known to the client.

Enter the correct RADIUS port.

Radius UPD Port

LDAP Binding Binding is locked as Anonymous. This field is uneditable.

Default Authorization Designate whether LDAP users will have read only or read/write access.

LDAP baseObject Enter the LDAP baseObject as defined by the LDAP server.

LDAP Filter Enter an LDAP filter for the username. Default: uid

LDAP Attribute Enter an LDAP attribute for the user password. Default: userPassword

User Log - The user log displays the last eight logins. Each user password is cached for one hour.

Server Test - Click the button to test the usernames and passwords.

Username/LDAP Filter Enter a username to test.

Radius Password Enter a password to test.

Last Server Test Results - The results from the server and the authorization level will be displayed.

Modbus Communications

Implementation Basics

The Watchdog Wi is capable of communicating via the half-duplex EIA-485 serial communication standard. The Watchdog Wi is configured to act as a slave device on a common network. The EIA- 485 medium allows for multiple devices on a multi-drop network. The Watchdog Wi is a slave only device and will never initiate a communications sequence.

Modes of Transmission

The Modbus protocol uses ASCII and RTU modes of transmission. The Watchdog Wi supports only the RTU mode of transmission, with 8 data bits, no parity and one stop bit. Every Modbus packet consists of four fields:

- Slave Address Field
- Function Field
- Data Field
- Error Check Field (Checksum)

Slave Address Field

The slave address field is one byte in length and identifies the slave device involved in the transaction. A valid address range is between 1 and 254. The slave address is set from the Com Port1/Modbus/Bacnet Configuration web page.

Function Field

The function field is one byte in length and tells the Watchdog Wi which function to perform. The supported functions are 03 (Read 4xxxx output registers), 04 (Read 3xxxx input registers), 06 (Preset single register), 16 (Preset multiple registers).

Data Field

The data field of the request is a variable length depending on the function. The data fields for the Watchdog Wi are 16-bit registers, transmitted high order byte first (big-endian)

Error Check (Checksum) Field

The checksum field lets the receiving device determine if the packet has transmission errors. The Watchdog Wi's RTU mode uses a 16-bit cyclic redundancy check (CRC-16).

Exception Responses

If a Modbus master sends an invalid command to the Watchdog Wi or attempts to read an invalid register, an exception response is generated. The response packet will have the high order bit of the function code set to one. The data field of the exception response contains the exception error code.

Exception Codes

Code	Name	Description
01	Illegal Function	The function code is not supported
02	Illegal Data Address	Attempt to access an invalid address
03	Illegal Data Value	Attempt to set a variable to an invalid value

Packet Communications for the Watchdog Wi

This section outlines the registers with the name and a brief description of each.

Function 03: Read Output Registers

To read the Watchdog Wi 's parameter values, the master must send a Read Output Registers request packet.

The Read Output Registers request packet specifies a start register and the number of registers to read. The start register is numbered from zero (40001 = zero, 40002 = one, etc.).

Read Output Registers Packet Structure

Read Registers Request Packet

Slave Address (1 byte)
 03 (Function code) (1 byte)
 Start Register (2 bytes)
 # of registers to read (2 bytes)
 Crc Checksum (2 bytes)

Read Registers Response Packet

Slave Address (1 byte)
 03 (Function code) (1 byte)
 Byte count (1 byte)
 First register (2 bytes)
 Second register (2 bytes)
 ...
 Crc Checksum (2 bytes)

The register settings illustrated here are representative of only ONE sensor. Each sensor has a unique register ID that can be found on that sensor's Sensor Objects page.

Read Output Registers

Register	Name	Description	Units	Range
40001	Id	Sensor Identification number	uint16	0-65535
40002	Out Of Service	Shows when the sensor is in maintenance mode or offline	uint16	0-65535
40003	Serial #	WireFree sensor serial number	uint16x4	0-65535
40007	Raw Data #1	First data value displayed by sensor	Unsigned 32 bit integer	0-4294967295
40009	Raw Data #2	Second data value displayed by sensor	Unsigned 32 bit integer	0-4294967295

40011	Raw Data #3	Third data value displayed by sensor	Unsigned 32 bit integer	0-4294967295
40013	Converted Data #1	First data value converted by the Watchdog Wi	Unsigned 32 bit integer	0-4294967295
40015	Converted Data #2	Second data value converted by the Watchdog Wi	Unsigned 32 bit integer	0-4294967295
40017	Converted Data #3	Third data value converted by the Watchdog Wi	Unsigned 32 bit integer	0-4294967295
40019	Age	Time since last transmission received	Unsigned 32 bit integer	0-4294967295
48001	Offline Delay	Time till the sensor reads offline	uint16	0-65535

Function 04: Read Input Registers

To read the Watchdog Wi's input values, the master must send a Read Input Registers request packet. The Read Input Registers request packet specifies a start register and the number of registers to read. The start register is numbered from zero (30001 = zero, 30002 = one, etc.).

Read Input Registers Packet Structure

Read Registers Request Packet

Slave Address (1 byte)
 04 (Function code) (1 byte)
 Start Register (2 bytes)
 # of registers to read (2 bytes)
 Crc Checksum (2 bytes)

Read Registers Response Packet

Slave Address (1 byte)
 04 (Function code) (1 byte)
 Byte count (1 byte)
 First register (2 bytes)
 Second register (2 bytes)
 ...
 Crc Checksum (2 bytes)

Read Input Registers

Register	Name	Description	Units	Range
30001	Digital Input 1	Digital Input 1: 1=0, 0=off	uint16	0-1
30002	Digital Input 2	Digital Input 2: 1=0, 0=off	uint16	0-1
30003	Digital Input 3	Digital Input 3: 1=0, 0=off	uint16	0-1
30004	Digital Input 4	Digital Input 4: 1=0, 0=off	uint16	0-1

Function 06: Preset Single Register & Function 16: Preset Multiple Registers

To set the relay outputs over Modbus, first set the relay activation mode must be set to Modbus only. Do this in the web interface, at the bottom of the Digital IO Configuration page. The master must then send a Preset Single or Preset Multiple Register request packet.

Preset Single and Multiple Registers

Register	Name	Description	Units	Range
49001	Relay K1	Relay 1 Activation: 1=active, 0=inactive	uint16	0-1
49002	Relay K2	Relay 2 Activation: 1=active, 0=inactive	uint16	0-1

RTU Framing

The example below shows a typical Query/Response from a Watchdog Wi.

Response Sample

Slave Address	Function Code	Count Bytes of Data	Register Data Msb Lsb	Register Data Msb Lsb	Register Data Msb Lsb	CRC 16 "Lsb"	CRC 16 "Msb"
02	04	06	00 00	00 00	00 01	B5	A3

Slave address 2 responds to Function Code 4 with six bytes of hexadecimal data and ends with CRC16 checksum.

Register Values:

40001 = 0000 (hex)

40002 = 0000 (hex)

40003 = 0001 (hex)

Watchdog Wi Channel Pairs

Alternate Channel Pair Communications

Most Watchdog Wi system deployments operate well with the out-of-the-box default settings. There are, however, instances where excess RF energy in a facility crowds the default channels. For this reason, the Watchdog Wi system was designed with a set of

alternative communications channels. While it is not difficult to switch the channels on which your system is communicating, it is outside the basic Watchdog Wi configuration scope. For this reason, we are providing a specialized set of instructions and encourage you to contact our technical support staff if you have any problems configuring alternate channel communications.

Watchdog Wi Sensor Communications

By default, Watchdog Wi sensors communicate via channel pair 1. You can determine on which channel pair your sensor(s) are communicating by looking at the status LED on the front of the sensor enclosure. This LED blinks randomly once every 10 - 20 seconds. If the LED blinks blue, the sensor is communicating on channel pair 1. If the LED blinks green, the sensor is communicating on channel pair 2.

Change the Sensor's Channel Pair

Hold the sensor in your hand and locate the LED on the top of the enclosure. Make sure the LED on the board is blinking blue to indicate it's currently communicating via channel pair 1. Now look down the side of the enclosure past the LED (the left side of the enclosure) and find the small hole in the middle of the bottom left side of the enclosure - right where the lid meets the base. If you look inside this hole you will see a small black button. You will use this button to change the channel pair of this sensor.

Figure 4-39 Sensor Channel Pair Button



Insert a small non-conductive tool - like a toothpick - inside the hole and push the black button three times consecutively. The LED on the sensor board blinks blue with the first push, blue with the second push, and green with the third push. It will then blink green three times in a row to indicate the sensor has switched to channel pair 2 for its communications. Pause a minute and watch the sensor LED. Once the transition pattern of blinks are complete, it blinks randomly, once every 10 - 20 seconds. Wait until it blinks green once to ensure channel pair 2 communications are active. You can change the sensor back to channel 1 communications in the same way. If the sensor is operating on channel pair 2 (LED is blinking green), push the black button three times consecutively. The LED blinks green with the first push, green with the second push, and blue with the third push. Then it blinks blue three times in a row to indicate it's communicating on channel pair 1. Pause a minute to watch the LED and ensure it's blinking blue in its random blink cycle. If you remove or change the sensor's battery, it will revert to the default channel pair 1 (blue blinking light).

Manager Communications

By default, the Watchdog Wi communicates via channel pair 1. If you change the channel pair on which your sensors are communicating, you also need to change the channel pair

on which your manager is communicating. The System LED on the front of the Watchdog Wi serves as an indicator in the same manners as LED on the front of the sensors. You can determine on which channel pair your Watchdog Wi is communicating by looking at the System LED on the front of the enclosure. This LED blinks randomly once every 10 - 20 seconds. If the LED blinks blue, the Watchdog Wi is communicating on channel pair 1. If the LED blinks green, the Watchdog Wi is communicating on channel pair 2. You can also access the Watchdog Wi's web interface to determine on which channel pair the unit is communicating. Click the Admin link in the left navigation bar and then click the Radios link to access the Radio Configuration page. The channel pair number indicated by a check mark and darker shading in the Manager Frequency Channel Pair field is the active communication channel pair.

Change the Manager's Channel Pair

Access the Watchdog Wi's web interface. Click the Admin link in the left navigation bar and then click the Radios link to go to the Radio Configuration tab. Click the toggle button to select Manager Channel Frequency Pair 2. Click the Save Changes button to execute the channel pair change. Once the changes have been saved, look at the LED on the front of the Watchdog Wi. It blinks green to indicate it is operating on channel pair 2. If you should need to change the Watchdog Wi back to channel pair 1, return to this web page, click the toggle button to select channel pair 1, and click the Save Changes button. Then verify the Watchdog Wi is communicating on channel pair 1 by checking the System LED and ensuring it blinks blue.

Watchdog Wi Range Extender

Add A Watchdog Wi Range Extender To Your System

Watchdog Wi sensor and manager systems have an unprecedented transmission range: up to 100 feet through multiple walls, up to 270 feet through one wall, and up to 600 feet indoor, direct line of sight. While this range is more than ample for most situations, sometimes applications require signals to be pushed through more complex physical or noisy RF environments. The Watchdog Wi range extender is designed to provide the extra signal strength the Watchdog Wi system needs to thrive in these environments.

To add a Watchdog Wi Range Extender to your application, connect the antennas (magnetic base antennas into ports A and B, and swivel antenna into port C) and apply power to the device. Ensure the most effective antenna placement - antennas A and B can be close together, but to avoid signal interference they need to be as far away from antenna C as your installation will allow. Extend the leader cables on the antennas to their fullest lengths and secure the antennas as far away from the Watchdog Wi - and as high off the ground - as possible. Access the Watchdog Wi's web interface and navigate to the Admin > Radio Configuration page. Radio C needs to be on in order for the Watchdog Wi to communicate with the Watchdog Wi Range Extender. The Watchdog Wi Range Extender can communicate on alternate channel pairs in order to maximize the efficiency of the system. If you'd like to use an alternate channel configuration, refer to Watchdog Wi Channel Pairs .

Safety Precautions

The Watchdog Wi Range extender is not a grounded device. External circuits (USB port and power supply) are required to be double or reinforced insulated (Class II circuits). The power to the Watchdog Wi Range extender must be supplied from a limited energy circuit: 5VDC with a maximum available current of 10A or a Class 2 circuit.

Communications Objects

The Watchdog Wi can communicate via Modbus, BACnet, and SNMP. Each sensor has its own Modbus Registers, BACnet Instances, and SNMP Object Identifiers (OIDs). This table is provided for reference. Please note that the values presented in Reading #2 and Reading #3 will vary depending on the type of sensor with which you are working. The table presents specific communications objects for sensors 1 - 20. Looking at the table, we have bolded the numerical changes to help you see there is a pattern to the Register, Instance, and OID assignments and a direct connection between the sensor number and the communications objects. A formula at the end of the table will help you calculate Modbus Registers, BACnet Instances, and SNMP OIDs for sensors past the number of sensors that are detailed in this table. Communications objects for sensors 1 through 20 have been diagrammed in the following table:

Table 4-1 Modbus Registers, BACnet Instances, and SNMP OIDs

Sensor	Value	Modbus Register	BACnet Instance	SNMP OID
1	ID	40001 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.1
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.1
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.1
	Reading #1 Temp (deg x 10)	40002 (int16)	ai: 101	1.3.6.1.4.1.3184. 1.15.2.2.1.6.1
	Reading #2 Humidity (%RH) or Digital Input	40003 (uint16)	ai: 102	1.3.6.1.4.1.3184. 1.15.2.2.1.7.1
	Reading #3 Counter	40004 (uint32)	ai: 103	1.3.6.1.4.1.3184. 1.15.2.2.1.8.1
	Battery Percentage	40006 (uint16)	av: 101	1.3.6.1.4.1.3184. 1.15.2.2.1.9.1

	Out of Service	40007 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.1
	Age of Sensor Data (seconds)	40008 (uint32)	av: 102	1.3.6.1.4.1.3184. 1.15.2.2.1.11.1
	Offline Delay	40010 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.1
2	ID	40011 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.2
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.2
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.2
	Reading #1 Temp (deg x 10)	40012 (int16)	ai: 201	1.3.6.1.4.1.3184. 1.15.2.2.1.6.2
	Reading #2 Humidity (%RH) or Digital Input	40013 (uint16)	ai: 202	1.3.6.1.4.1.3184. 1.15.2.2.1.7.2
	Reading #3 Counter	40014 (uint32)	ai: 203	1.3.6.1.4.1.3184. 1.15.2.2.1.8.2
	Battery Percentage	40016 (uint16)	av: 201	1.3.6.1.4.1.3184. 1.15.2.2.1.9.2
	Out of Service	40017 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.2
	Age of Sensor Data (seconds)	40018 (uint32)	av: 202	1.3.6.1.4.1.3184. 1.15.2.2.1.11.2
	Offline Delay	40020 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.2
3	ID	40021 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.3
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.3
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.3

	Reading #1 Temp (deg x 10)	40022 (int16)	ai: 301	1.3.6.1.4.1.3184. 1.15.2.2.1.6.3
	Reading #2 Humidity (%RH) or Digital Input	40023 (uint16)	ai: 302	1.3.6.1.4.1.3184. 1.15.2.2.1.7.3
	Reading #3 Counter	40024 (uint32)	ai: 303	1.3.6.1.4.1.3184. 1.15.2.2.1.8.3
	Battery Percentage	40026 (uint16)	av: 301	1.3.6.1.4.1.3184. 1.15.2.2.1.9.3
	Out of Service	40027 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.3
	Age of Sensor Data (seconds)	40028 (uint32)	av: 302	1.3.6.1.4.1.3184. 1.15.2.2.1.11.3
	Offline Delay	40030 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.3
4	ID	40031 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.4
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.4
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.4
	Reading #1 Temp (deg x 10)	40032 (int16)	ai: 401	1.3.6.1.4.1.3184. 1.15.2.2.1.6.4
	Reading #2 Humidity (%RH) or Digital Input	40033 (uint16)	ai: 402	1.3.6.1.4.1.3184. 1.15.2.2.1.7.4
	Reading #3 Counter	40034 (uint32)	ai: 403	1.3.6.1.4.1.3184. 1.15.2.2.1.8.4
	Battery Percentage	40036 (uint16)	av: 401	1.3.6.1.4.1.3184. 1.15.2.2.1.9.4

	Out of Service	40037 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.4
	Age of Sensor Data (seconds)	40038 (uint32)	av: 402	1.3.6.1.4.1.3184. 1.15.2.2.1.11.4
	Offline Delay	40040 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.4
5	ID	40041 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.5
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.5
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.5
	Reading #1 Temp (deg x 10)	40042 (int16)	ai: 501	1.3.6.1.4.1.3184. 1.15.2.2.1.6.5
	Reading #2 Humidity (%RH) or Digital Input	40043 (uint16)	ai: 502	1.3.6.1.4.1.3184. 1.15.2.2.1.7.5
	Reading #3 Counter	40044 (uint32)	ai: 503	1.3.6.1.4.1.3184. 1.15.2.2.1.8.5
	Battery Percentage	40046 (uint16)	av: 501	1.3.6.1.4.1.3184. 1.15.2.2.1.9.5
	Out of Service	40047 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.5
	Age of Sensor Data (seconds)	40048 (uint32)	av: 502	1.3.6.1.4.1.3184. 1.15.2.2.1.11.5
	Offline Delay	40050 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.5
6	ID	40051 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.6
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.6

	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.6
	Reading #1 Temp (deg x 10)	40052 (int16)	ai: 601	1.3.6.1.4.1.3184. 1.15.2.2.1.6.6
	Reading #2 Humidity (%RH) or Digital Input	40053 (uint16)	ai: 602	1.3.6.1.4.1.3184. 1.15.2.2.1.7.6
	Reading #3 Counter	40054 (uint32)	ai: 603	1.3.6.1.4.1.3184. 1.15.2.2.1.8.6
	Battery Percentage	40056 (uint16)	av: 601	1.3.6.1.4.1.3184. 1.15.2.2.1.9.6
	Out of Service	40057 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.6
	Age of Sensor Data (seconds)	40058 (uint32)	av: 602	1.3.6.1.4.1.3184. 1.15.2.2.1.11.6
	Offline Delay	40060 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.6
7	ID	40061 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.7
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.7
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.7
	Reading #1 Temp (deg x 10)	40062 (int16)	ai: 701	1.3.6.1.4.1.3184. 1.15.2.2.1.6.7
	Reading #2 Humidity (%RH) or Digital Input	40063 (uint16)	ai: 702	1.3.6.1.4.1.3184. 1.15.2.2.1.7.7
	Reading #3 Counter	40064 (uint32)	ai: 703	1.3.6.1.4.1.3184. 1.15.2.2.1.8.7
	Battery Percentage	40066 (uint16)	av: 701	1.3.6.1.4.1.3184. 1.15.2.2.1.9.7
	Out of Service	40067 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.7

	Age of Sensor Data (seconds)	40068 (uint32)	av: 702	1.3.6.1.4.1.3184. 1.15.2.2.1.11.7
	Offline Delay	40070 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.7
8	ID	40071 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.8
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.8
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.8
	Reading #1 Temp (deg x 10)	40072 (int16)	ai: 801	1.3.6.1.4.1.3184. 1.15.2.2.1.6.8
	Reading #2 Humidity (%RH) or Digital Input	40073 (uint16)	ai: 802	1.3.6.1.4.1.3184. 1.15.2.2.1.7.8
	Reading #3 Counter	40074 (uint32)	ai: 803	1.3.6.1.4.1.3184. 1.15.2.2.1.8.8
	Battery Percentage	40076 (uint16)	av: 801	1.3.6.1.4.1.3184. 1.15.2.2.1.9.8
	Out of Service	40077 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.8
	Age of Sensor Data (seconds)	40078 (uint32)	av: 802	1.3.6.1.4.1.3184. 1.15.2.2.1.11.8
	Offline Delay	40080 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.8
9	ID	40081 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.9
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.9
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.9
	Reading #1 Temp (deg x 10)	40082 (int16)	ai: 901	1.3.6.1.4.1.3184. 1.15.2.2.1.6.9

	Reading #2 Humidity (%RH) or Digital Input	40083 (uint16)	ai: 902	1.3.6.1.4.1.3184. 1.15.2.2.1.7.9
	Reading #3 Counter	40084 (uint32)	ai: 903	1.3.6.1.4.1.3184. 1.15.2.2.1.8.9
	Battery Percentage	40086 (uint16)	av: 901	1.3.6.1.4.1.3184. 1.15.2.2.1.9.9
	Out of Service	40087 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.9
	Age of Sensor Data (seconds)	40088 (uint32)	av: 902	1.3.6.1.4.1.3184. 1.15.2.2.1.11.9
	Offline Delay	40090 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.9
10	ID	40091 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.10
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.10
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.10
	Reading #1 Temp (deg x 10)	40092 (int16)	ai: 1001	1.3.6.1.4.1.3184. 1.15.2.2.1.6.10
	Reading #2 Humidity (%RH) or Digital Input	40093 (uint16)	ai: 1002	1.3.6.1.4.1.3184. 1.15.2.2.1.7.10
	Reading #3 Counter	40094 (uint32)	ai: 1003	1.3.6.1.4.1.3184. 1.15.2.2.1.8.10
	Battery Percentage	40096 (uint16)	av: 1001	1.3.6.1.4.1.3184. 1.15.2.2.1.9.10
	Out of Service	40097 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.10
	Age of Sensor Data (seconds)	40098 (uint32)	av: 1002	1.3.6.1.4.1.3184. 1.15.2.2.1.11.10

	Offline Delay	40100 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.10
11	ID	40101 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.11
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.11
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.11
	Reading #1 Temp (deg x 10)	40102 (int16)	ai: 1101	1.3.6.1.4.1.3184. 1.15.2.2.1.6.11
	Reading #2 Humidity (%RH) or Digital Input	40103 (uint16)	ai: 1102	1.3.6.1.4.1.3184. 1.15.2.2.1.7.11
	Reading #3 Counter	40104 (uint32)	ai: 1103	1.3.6.1.4.1.3184. 1.15.2.2.1.8.11
	Battery Percentage	40106 (uint16)	av: 1101	1.3.6.1.4.1.3184. 1.15.2.2.1.9.11
	Out of Service	40107 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.11
	Age of Sensor Data (seconds)	40108 (uint32)	av: 1102	1.3.6.1.4.1.3184. 1.15.2.2.1.11.11
	Offline Delay	40110 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.11
12	ID	40111 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.12
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.12
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.12
	Reading #1 Temp (deg x 10)	40112 (int16)	ai: 1201	1.3.6.1.4.1.3184. 1.15.2.2.1.6.12

	Reading #2 Humidity (%RH) or Digital Input	40113 (uint16)	ai: 1202	1.3.6.1.4.1.3184. 1.15.2.2.1.7.12
	Reading #3 Counter	40114 (uint32)	ai: 1203	1.3.6.1.4.1.3184. 1.15.2.2.1.8.12
	Battery Percentage	40116 (uint16)	av: 1201	1.3.6.1.4.1.3184. 1.15.2.2.1.9.12
	Out of Service	40117 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.12
	Age of Sensor Data (seconds)	40118 (uint32)	av: 1202	1.3.6.1.4.1.3184. 1.15.2.2.1.11.12
	Offline Delay	40120 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.12
13	ID	40121 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.13
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.13
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.13
	Reading #1 Temp (deg x 10)	40122 (int16)	ai: 1301	1.3.6.1.4.1.3184. 1.15.2.2.1.6.13
	Reading #2 Humidity (%RH) or Digital Input	40123 (uint16)	ai: 1302	1.3.6.1.4.1.3184. 1.15.2.2.1.7.13
	Reading #3 Counter	40124 (uint32)	ai: 1303	1.3.6.1.4.1.3184. 1.15.2.2.1.8.13
	Battery Percentage	40126 (uint16)	av: 1301	1.3.6.1.4.1.3184. 1.15.2.2.1.9.13
	Out of Service	40127 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.13
	Age of Sensor Data (seconds)	40128 (uint32)	av: 1302	1.3.6.1.4.1.3184. 1.15.2.2.1.11.13

	Offline Delay	40130 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.13
14	ID	40131 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.14
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.14
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.14
	Reading #1 Temp (deg x 10)	40132 (int16)	ai: 1401	1.3.6.1.4.1.3184. 1.15.2.2.1.6.14
	Reading #2 Humidity (%RH) or Digital Input	40133 (uint16)	ai: 1402	1.3.6.1.4.1.3184. 1.15.2.2.1.7.14
	Reading #3 Counter	40134 (uint32)	ai: 1403	1.3.6.1.4.1.3184. 1.15.2.2.1.8.14
	Battery Percentage	40136 (uint16)	av: 1401	1.3.6.1.4.1.3184. 1.15.2.2.1.9.14
	Out of Service	40137 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.14
	Age of Sensor Data (seconds)	40138 (uint32)	av: 1402	1.3.6.1.4.1.3184. 1.15.2.2.1.11.14
	Offline Delay	40140 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.14
	15	ID	40141 (int16)	n/a
Serial Number		n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.15
Name		n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.15
Reading #1 Temp (deg x 10)		40142 (int16)	ai: 1501	1.3.6.1.4.1.3184. 1.15.2.2.1.6.15
Reading #2 Humidity (%RH) or Digital Input		40143 (uint16)	ai: 1502	1.3.6.1.4.1.3184. 1.15.2.2.1.7.15

	Reading #3 Counter	40144 (uint32)	ai: 1503	1.3.6.1.4.1.3184. 1.15.2.2.1.8.15
	Battery Percentage	40146 (uint16)	av: 1501	1.3.6.1.4.1.3184. 1.15.2.2.1.9.15
	Out of Service	40147 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.15
	Age of Sensor Data (seconds)	40148 (uint32)	av: 1502	1.3.6.1.4.1.3184. 1.15.2.2.1.11.15
	Offline Delay	40150 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.15
16	ID	40151 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.16
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.16
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.16
	Reading #1 Temp (deg x 10)	40152 (int16)	ai: 1601	1.3.6.1.4.1.3184. 1.15.2.2.1.6.16
	Reading #2 Humidity (%RH) or Digital Input	40153 (uint16)	ai: 1602	1.3.6.1.4.1.3184. 1.15.2.2.1.7.16
	Reading #3 Counter	40154 (uint32)	ai: 1603	1.3.6.1.4.1.3184. 1.15.2.2.1.8.16
	Battery Percentage	40156 (uint16)	av: 1601	1.3.6.1.4.1.3184. 1.15.2.2.1.9.16
	Out of Service	40157 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.16
	Age of Sensor Data (seconds)	40158 (uint32)	av: 1602	1.3.6.1.4.1.3184. 1.15.2.2.1.11.16
	Offline Delay	40160 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.16
17	ID	40161 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.17

	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.17
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.17
	Reading #1 Temp (deg x 10)	40162 (int16)	ai: 1701	1.3.6.1.4.1.3184. 1.15.2.2.1.6.17
	Reading #2 Humidity (%RH) or Digital Input	40163 (uint16)	ai: 1702	1.3.6.1.4.1.3184. 1.15.2.2.1.7.17
	Reading #3 Counter	40164 (uint32)	ai: 1703	1.3.6.1.4.1.3184. 1.15.2.2.1.8.17
	Battery Percentage	40166 (uint16)	av: 1701	1.3.6.1.4.1.3184. 1.15.2.2.1.9.17
	Out of Service	40167 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.17
	Age of Sensor Data (seconds)	40168 (uint32)	av: 1702	1.3.6.1.4.1.3184. 1.15.2.2.1.11.17
	Offline Delay	40170 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.17
18	ID	40171 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.18
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.18
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.18
	Reading #1 Temp (deg x 10)	40172 (int16)	ai: 1801	1.3.6.1.4.1.3184. 1.15.2.2.1.6.18
	Reading #2 Humidity (%RH) or Digital Input	40173 (uint16)	ai: 1802	1.3.6.1.4.1.3184. 1.15.2.2.1.7.18
	Reading #3 Counter	40174 (uint32)	ai: 1803	1.3.6.1.4.1.3184. 1.15.2.2.1.8.18
	Battery Percentage	40176 (uint16)	av: 1801	1.3.6.1.4.1.3184. 1.15.2.2.1.9.18

	Out of Service	40177 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.18
	Age of Sensor Data (seconds)	40178 (uint32)	av: 1802	1.3.6.1.4.1.3184. 1.15.2.2.1.11.18
	Offline Delay	40180 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.18
19	ID	40181 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.19
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.19
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.19
	Reading #1 Temp (deg x 10)	40182 (int16)	ai: 1901	1.3.6.1.4.1.3184. 1.15.2.2.1.6.19
	Reading #2 Humidity (%RH) or Digital Input	40183 (uint16)	ai: 1902	1.3.6.1.4.1.3184. 1.15.2.2.1.7.19
	Reading #3 Counter	40184 (uint32)	ai: 1903	1.3.6.1.4.1.3184. 1.15.2.2.1.8.19
	Battery Percentage	40186 (uint16)	av: 1901	1.3.6.1.4.1.3184. 1.15.2.2.1.9.19
	Out of Service	40187 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.19
	Age of Sensor Data (seconds)	40188 (uint32)	av: 1902	1.3.6.1.4.1.3184. 1.15.2.2.1.11.19
	Offline Delay	40190 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.19

20	ID	40191 (int16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.2.20
	Serial Number	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.3.20
	Name	n/a	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.4.20
	Reading #1 Temp (deg x 10)	40192 (int16)	ai: 2001	1.3.6.1.4.1.3184. 1.15.2.2.1.6.20
	Reading #2 Humidity (%RH) or Digital Input	40193 (uint16)	ai: 2002	1.3.6.1.4.1.3184. 1.15.2.2.1.7.20
	Reading #3 Counter	40194 (uint32)	ai: 2003	1.3.6.1.4.1.3184. 1.15.2.2.1.8.20
	Battery Percentage	40196 (uint16)	av: 2001	1.3.6.1.4.1.3184. 1.15.2.2.1.9.20
	Out of Service	40197 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.10.20
	Age of Sensor Data (seconds)	40198 (uint32)	av: 2002	1.3.6.1.4.1.3184. 1.15.2.2.1.11.20
	Offline Delay	40200 (uint16)	n/a	1.3.6.1.4.1.3184. 1.15.2.2.1.12.20

To determine communications objects for sensors past sensor number 20, either refer to the table and follow the numbering pattern for your sensor number, or use the following formulas.

For example, if you were determining communications objects for sensor number 28:

Modbus Registers are as follows, where the n is replaced with the sensor's two digit (put a 0 before a single digit number) sensor number and y is replaced with the sensor's two digit (put a 0 before a single digit number) sensor number minus one, so if you were working with sensor 28 you'd replace n with 28 and y with 27.

40y1 = 40271

40y2 = 40272

40y3 = 40273

40y4 = 40274

40y6 = 40276

40y7 = 40277

40y8 = 40278

40n0 = 40280

BACnet Instances are as follows, where the n is replaced with the sensor's sensor number

ai: n01 = ai: 2801

ai: n02 = ai: 2802

ai: n03 = ai: 2803

av: n01 = av: 2801

av: n02 = av: 2802

SNMP Object Identifiers are as follows, where the last digit, n, is replaced with the sensor's sensor number

1.3.6.1.4.1.3184.1.15.2.2.1.2.n = 1.3.6.1.4.1.3184.1.15.2.2.1.2.28

1.3.6.1.4.1.3184.1.15.2.2.1.3.n = 1.3.6.1.4.1.3184.1.15.2.2.1.3.28

1.3.6.1.4.1.3184.1.15.2.2.1.4.n = 1.3.6.1.4.1.3184.1.15.2.2.1.4.28

1.3.6.1.4.1.3184.1.15.2.2.1.6.n = 1.3.6.1.4.1.3184.1.15.2.2.1.6.28

1.3.6.1.4.1.3184.1.15.2.2.1.7.n = 1.3.6.1.4.1.3184.1.15.2.2.1.7.28

1.3.6.1.4.1.3184.1.15.2.2.1.8.n = 1.3.6.1.4.1.3184.1.15.2.2.1.8.28

1.3.6.1.4.1.3184.1.15.2.2.1.9.n = 1.3.6.1.4.1.3184.1.15.2.2.1.9.28

1.3.6.1.4.1.3184.1.15.2.2.1.10.n = 1.3.6.1.4.1.3184.1.15.2.2.1.10.28

1.3.6.1.4.1.3184.1.15.2.2.1.11.n = 1.3.6.1.4.1.3184.1.15.2.2.1.11.28

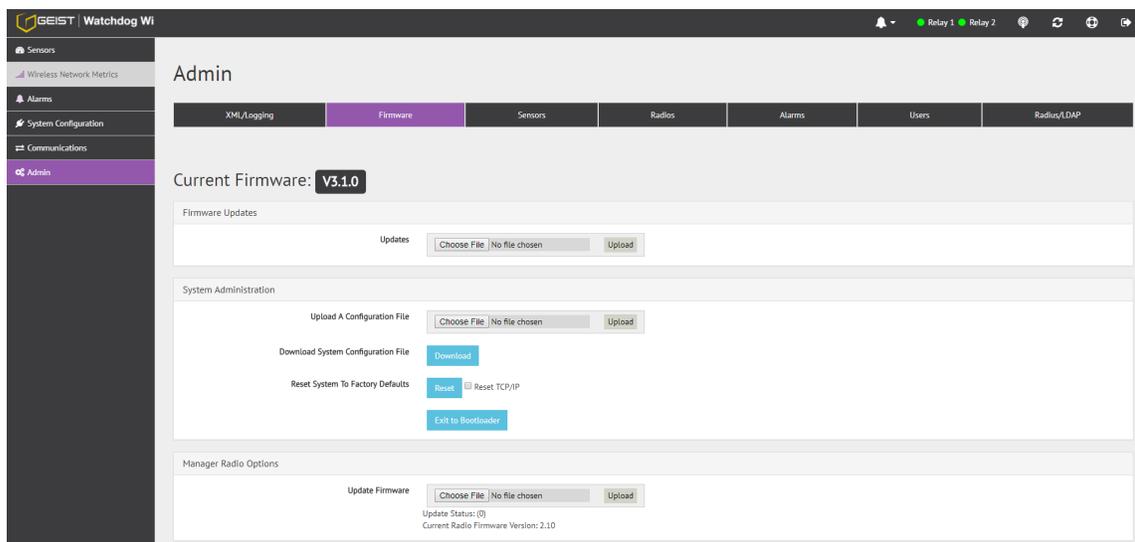
1.3.6.1.4.1.3184.1.15.2.2.1.12.n = 1.3.6.1.4.1.3184.1.15.2.2.1.12.28

Troubleshooting

Updating Firmware

Keep your unit updated with the latest firmware releases or sign up for notifications. <http://www.geistglobal.com/GeistUS/Docs/downloads.htm>. Firmware updates are available on the Geist website at [Geistglobal.com](http://www.geistglobal.com). Locate the correct firmware and download it to an accessible location. Before updating any firmware, go to the web interface and access the Admin menu, and then the Firmware tab. Download the Watchdog Wi's system configuration file and save it in a safe location.

Figure 4-40 Admin Menu, Firmware Tab - Configuration File Download

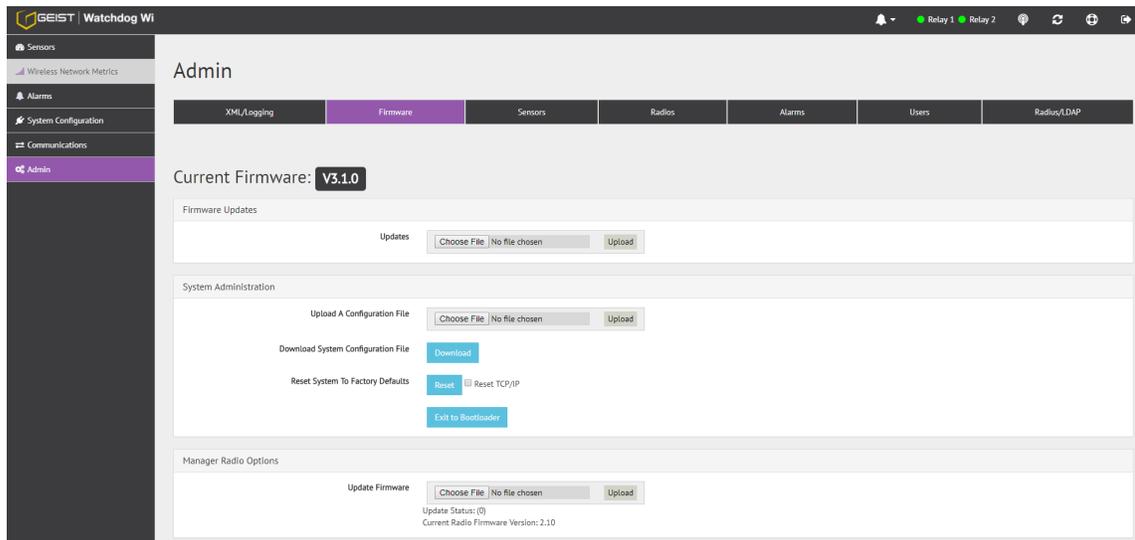


Once firmware is updated, the Watchdog Wi should return to its normal functionality. In very rare instances, the Watchdog Wi's configuration data - all the system configuration and sensor information loaded onto the unit - may become corrupted during the firmware update. If the configuration files do become corrupted, the downloaded configuration files serves as a backup, and can be uploaded to the system to restore the lost data. Use the MIME feature to upload the configuration file.

Load the Application Firmware

Once the Watchdog Wi's configuration file and the latest version of firmware files have been downloaded to a local drive, navigate to the Firmware tab within the Admin menu in the web interface.

Figure 4-41 Admin Menu, Firmware Page - Firmware File Upload



Navigate to the first file using the browse button, and then click on upload for the unit to take the file. This process takes about 60 seconds to complete.

Load the Firmware Using TFTP

You can also use TFTP to update the firmware file. Before updating the firmware through TFTP, the firmware flash application must be exited and then erased. To do this, navigate to the Watchdog Wi's configuration menu. Once here, click on the "Exit to Bootloader" button. Once exited, you will get a bootloader web page at the IP address of the unit. Next, click on the "Erase Flash" button. The Flash application will be erased.



NOTE

To erase the flash, a special username and password are required. The username is fds (all lowercase), and the password is Geist2tech (all lowercase).

Uploading firmware via TFTP requires a TFTP Client. It may be possible to download a free license TFTP Client from the internet. Consult your IT department to determine a compatible client program.

Verify that your PC and the Watchdog Wi are on the same subnet (LAN).

Open your TFTP client. Configure the client as follows.

Host = Watchdog Wi's IP Address

Port = 69

Block Size = 64, 128, 256, 512, or 1024

**NOTE**

The file must be sent in BINARY (not ASCII).

Send or PUT the first firmware file to the Watchdog Wi. It may take ~10 seconds for the firmware upload to begin. Do the same with the second firmware file. After one minute, refresh the Watchdog Wi's web page. Notice that the Flash field now contains the latest firmware. Click the "Start Application" button to reboot the unit.

Technical Support

<http://www.geistglobal.com>

Email: support@geistglobal.com

Americas

- 1 888 630 4445

Europe and Middle East

- From within the UK 0845 026 3853
- From abroad +44 845 026 3853

Asia

- English +1 888 630 4445 (US number)
- Chinese +[86 755 8663 9505](tel:+8675586639505)

Or contact your distributor.

Troubleshooting

Watchdog Wi Troubleshooting

The Watchdog Wi will not power up.

Use a digital volt meter (DVM) to check for AC or DC input power on the lower left hand terminal block on the Watchdog Wi. If no voltage is present at terminal block, check the circuit breaker or power supply that powers the Watchdog Wi. If voltage is present at the power supply, continue to step 2.

You cannot view the Watchdog Wi's home page.

1. Verify that the Watchdog Wi is powered up and running. You will see lights on the RJ45 (Ethernet) port illuminated and flashing. If no lights are illuminated on the unit, the unit may not be powered. If lights are illuminated and flashing, continue to step 2.

2. Connect a computer to the Watchdog Wi via a serial cable and the console port. Once connected with a terminal emulation program running on the PC:

Type ip and press enter. This displays the current IP address set to the Watchdog Wi. Verify it is the correct IP address.

Type nm and press enter. This displays the Net Mask. Verify it is the correct Net Mask.

Type dg and press enter. This displays the Default Gateway. Verify it is the correct Default Gateway.

Correct any information that is wrong. If the information is correct, go to step 3.

3. With the serial cable connected and your terminal emulation program running, you can enter an address to have the Watchdog Wi ping to. Obtain a known good IP address.

In the terminal emulation program, type ping <one space> ip address and then press enter. *Example: ping 192.168.1.1*

If a ping response is not established, contact your IT department and make sure the patch cord your using is not faulty. Have the network switch port checked to make sure it is activated.

If a ping response is established, contact your local sales representative or Geist.

Sensors do not automatically display on the Watchdog Wi's home page.

By default, the Watchdog Wi is shipped with the sensor discovery feature turned OFF. In order for the discovery to work, click the Sensor Discovery icon in the web page header. Follow the directions as outlined in Web Interface/Sensor Discovery Wizard. If the Sensor Discovery Wizard has run sensors still do not appear, work your way through the folloWatchdog Wi steps:

1. If the sensor is not visible on the Watchdog Wi's home page, look at the top of the sensor and see if the LED is blinking. If you do not see a blink, check the sensor's batteries. If you do see it blink, continue to step 2.
2. Verify the sensor's serial number. Make sure you're looking for the correct sensor at that location.

The transmission range of a Watchdog Wi sensor depends on the distance between the sensor and the Watchdog Wi, and the number of obstacles between the two. The more obstructions between the devices, the weaker the signal becomes. Do not install a sensor inside a solid metal cabinet. This can interfere with its transmission. Bring the sensor closer to the Watchdog Wi. Run the sensor discovery wizard again. If the sensor does not show in the wizard when it is close to the Watchdog Wi, contact your local sales representative or Geist. If the sensor does show in the wizard, move the sensor back to its original location.

Sensor Troubleshooting

The Watchdog Wi is designed to work with Geist' Watchdog Wi sensors. Sometimes, problems may occur with the sensors that affect the way they interact with the Watchdog Wi. Use the following guidelines to troubleshoot Watchdog Wi sensors.

The sensor does not seem to be working. It may have a battery problem. Check the battery's voltage if the sensor begins to show inconsistent or unreliable results. As battery power degrades, the sensor may report data outside the bounds of reasonable readings. If this occurs, replace the battery. When you replace the battery, replace it with a 3.6V lithium battery, NOT a standard alkaline AA cell. Also make sure you replace it with the terminals facing the correct direction. The sensor will not function with an alkaline cell or if the battery is inserted backwards.

IP Address Reset

This guide explains how to find the current or change the current IP address of the Watchdog Wi (WD-Wi) when it is unknown.



NOTE

A serial connection is required.

Step 1: Accessing the WD-Wi

Connect the Serial cable and open a terminal connection. Type 'RESET' and press enter twice.

This will enter you into bootloader mode

Figure 4-42 Bootloader mode

```
MGR Boot>|
```

Step 2: Reset IP address

Type 'IP' then the IP address you are wanting to set to the WD-Wi then press enter.

Type 'NM' then the Subnet you are wanting to set to the WD-Wi then press enter.

Type 'DG' then the Gateway you are wanting to set to the WD-Wi then press enter.

Figure 4-43 IP Address entry

```
ip xxx.xxx.xxx.xxx - enter an IP address
nm xxx.xxx.xxx.xxx - enter a net mask
dg xxx.xxx.xxx.xxx - enter a default gateway
```

Step 3: Restarting the WD-Wi

Type 'RUN' and press enter once.

This will reboot the system. There will be a 120 second reboot time.

Figure 4-44 Restarting WD-Wi

```
MGR>1 00:24:A8:C7:1B:40 192.168.118.254 2  
Cold Start IPv4 Completed  
MGR>NewSensorsDiscovered=1
```

Notes:

Typing '?' and pressing enter will bring up a list of available commands

Figure 4-45 Commands List

```
MGR Boot Help Menu  
netcfg - display network configuration  
mac XX:XX:XX:XX:XX:XX - enter a MAC address  
ip XXX.XXX.XXX.XXX - enter an IP address  
nm XXX.XXX.XXX.XXX - enter a net mask  
dg XXX.XXX.XXX.XXX - enter a default gateway  
mss - tcp max seg size (1436/536)  
sn - serial number  
nd - network debug  
ns - display network statistics  
arp - display the arp table  
ping XXX.XXX.XXX.XXX - icmp ping to an address  
time hh:mm:ss - enter a new time  
date mm/dd/yy - enter a new date  
reset - reboot the unit back to the bootloader  
id - display program info  
blank - blank check of flash  
erase prgm - erase user flash application  
load prgm xmodem - load flash appl via xmodem rs232  
erase sa0X - erase sector(1-7)  
erase saXX - erase sector(23-38)  
485test - 485 option card loopback test  
run - run the flash application
```

Product-Specific Safety Notices

The specific procedural safety precautions relating to this product are stated below.

General Safety

Safety is a serious matter and all precautions should to taken to guarantee a safe work and operational environment. General safety precautions must be observed during all aspects of operation, service, and repair of equipment described in this document. Failure to comply with the safety warnings, procedures and guidelines as presented in this document is in violation of the safety standards of design, manufacture, and intended use of this equipment.

You are responsible for folloWatchdog Wi the safety guidelines and warnings presented in this document for this equipment. Individuals using or maintaining Geist product(s) are expected to follow all the noted warnings and safety precautions necessary for safe operation of the equipment in your environment. Geist Global, Inc. assumes no liability for failure to comply with these requirements.

Live Circuits Safety

	<p>DANGER</p> <p>HAZARDOUS VOLTAGE, CURRENT, AND ENERGY LEVELS ARE PRESENT IN THIS PRODUCT. POWER SWITCHED CIRCUITS CAN HAVE HAZARDOUS VOLTAGES PRESENT EVEN WHEN THE SWITCH IS IN THE OFF POSITION. DO NOT OPERATE THE PRODUCT WITH ANY COVER PLATE REMOVED. ALWAYS MAKE SURE THAT PRODUCT IS FULLY ENCLOSED PRIOR TO USE.</p>
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Operating personnel must:

- Not remove equipment covers. Only Geist Authorized Service Personnel or other qualified maintenance personnel may remove equipment covers for internal sub-assembly, or component replacement, or any internal adjustment.
- Not replace any equipment component with power applied to the line cord. Under certain conditions, dangerous voltages may exist even with the input power cable disconnected. Any exceptions for 'Hot-Swap' modules will be specifically noted in this product document.
- Always disconnect input power and discharge circuits before touching any sub-assembly of circuit component.

Equipment Grounding

To minimize shock hazard, the equipment chassis and enclosure must be connected to an electrical earth ground. The input power cable must be either plugged into an industry electrical code compatible receptacle or wired directly into an electrical code compatible interface. The equipment earth ground wire (typically green) must be firmly connected to the facility electrical safety ground. The mating electrical interface to this equipment must comply with International Electromechanical Commission (IEC) standards.

Electrostatic Discharge

Geist strongly recommends that anti-static precautions be taken when installing, removing, or working on and around static sensitivity equipment. Industry approved anti-static devices such as wrist and heel straps, in conjunction with conductive foam pads, should be available and implemented only after verifying that they are in good working condition.

Electronic components such as memory modules, circuit boards, and LED displays, are sensitivity to Electro-Static Discharge (ESD). Handling of such components should be done only after proper anti-static workspace conditions have been established. Any static producing packing materials such as plastic, Styrofoam, and some cardboards, should be removed and discarded in a timely manner.

Explosive Environment

Do not operate this equipment in the presence of flammable gases or fumes. Operation of any electrical equipment in such an environment constitutes a definite safety hazard.

Servicing and Adjustments

Do not attempt to service this equipment, there are no field serviceable parts or sub-assemblies. Any adjustments should be made by authorized service personnel only.

Repairs and Modifications

Because of the danger of electrocution and/or severe health hazard, do not install substitute parts or preform any unauthorized modifications of this equipment. It is best to contact Geist for Warranty and Repair Service to ensure that safety features are maintained.



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