



**Watchdog Scout  
Rectifier Monitoring System with Interruption**

**Installation and Product Specification Manual**

Cellular and Inmarsat Satellite  
Cathodic Protection Monitor Systems

Part Numbers:      SCT-N7-XX (Verizon CAT-M Cellular Versions)  
                         SCT-N3-XX (GSM Cellular Versions)  
                         SCT-N8-XX (AT&T LTE-M Versions)  
                         SCT-S3-XX (Satellite Versions)

# Watchdog Scout Product Manual and Installation Guide

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# **Product Manual and Installation Guide**

## **1. Applications and General Information**

### **1.1 Rectifier Monitoring and Interruption Applications:**

Simple 2-channel (Voltage, Current) rectifier monitoring (up to 4 channels total)  
Rectifier monitoring with pipe to soil “On” and “Off” potential readings  
Rectifier monitoring with up to 2 additional current readings  
Detection and alarm notification of rectifier AC input power availability  
Remote current interrupter setup and control for on/off surveys  
Remote “current off” feature for interference testing  
Digital “dry-contact switch” monitor channel (door alarm, valve state, etc.)  
Pulse accumulator digital input for metering applications  
Gel-cell back-up battery (provides communication transmission power for notification of power failure events)

### **1.2 Thermo Electric Generator (TEG) and Solar Impressed Current System Monitoring**

Up to 4 Channels of system monitoring (voltage, current, potential)  
Automatic alarm notification of “power fail” conditions  
Generate alarm notifications from out of normal range readings (user defined)  
Remote current interrupter setup and control for on/off surveys  
Remote “current off” feature for interference testing  
Digital “dry-contact switch” monitor channel (door alarm, valve state, etc.)  
Pulse accumulator digital input for metering applications  
Gel-cell back-up battery (provides communication transmission power for notification of power failure events)

### **1.3 General Information**

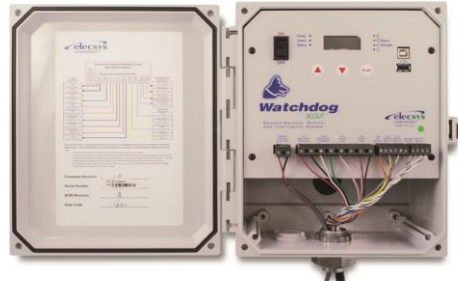





The Watchdog Scout Monitor is designed to measure, monitor, and report the values typically measured at cathodic protection rectifier and impressed current generation systems. Monitored data is compared to programmable alarm limits for exception alarm reporting, then transmitted to the Pipeline Watchdog Web Monitor database for viewing and reporting. The Scout includes a full featured GPS synchronized rectifier interruption system enabling the operator to initiate current interruption at the unit or over the web using the Pipeline Watchdog web interface.


The Pipeline Watchdog Web Monitor allows the user to: 1) set-up e-mail and text message alarms, 2) set up regular emailed CP rectifier and test station data reports, 3) obtain on-demand data reports, 4) change alarm limit parameters, reporting frequency and monitoring frequency over the air, 5) setup and initiate rectifier interruption, including setting on/off cycle times, daily start/stop times, and project duration (day to start and day to stop).

The Watchdog Scout is designed for simple installation and operation using the quick-connect wire harness and mounting brackets included with the unit. The device easily mounts at any typical rectifier site and the wire harness accommodates connections to all common rectifier measurement connection points.

## 2. Watchdog Scout Standard Parts Reference Guide

Prior to installation, familiarize yourself with the system parts and components. The Watchdog Scout includes the monitor unit, AC Probe, 2 mounting brackets, attachment hardware for the mounting brackets, a power cable, input connection cable harness to connect with the measurement points. If the unit is equipped for satellite operation, it is supplied with satellite terminal, connection cable, terminal bracket, and attachment hardware.

<p><b>Watchdog Scout</b>  Monitor Unit – Self-contained 9" x 10.5" x 6" NEMA 4 enclosure. Operates on low-voltage AC (12VAC to 25VAC), or low-voltage DC (10VDC to 35VDC). A step-down isolation transformer is included and recommended for supplying low-voltage operating power.  Cellular or Inmarsat Satellite communication options</p>	
<p><b>Mounting Brackets and Hardware</b>  2 durable mounting brackets and attachment hardware necessary to secure the brackets to the Scout device.</p>	
<p><b>Power and Signal Cable Assemblies</b>  Power cable for low-voltage AC or DC power to the Watchdog Scout</p>	
<p><b>AC Probe</b>  Detects AC power present/not present at the main AC power input leads to the rectifier.</p>	
<p><b>100 Amp Interrupter Relay</b>  Scout is available with (-20 model) or without (-90 model) a 100A mercury relay. Addition optional solid-state and mercury free relay options are available. <b>The relay is not part of the Scout base unit and must be installed inside the rectifier or in a separate enclosure.</b></p>	
<p><b>Satellite Terminal (supplied with satellite units only)</b>  Terminal, Cable, Mounting Bracket, and Fasteners</p>	

3.  **WARNING: DO NOT CONNECT OR DISCONNECT CABLES WHEN ENERGIZED, UNLESS POWER HAS BEEN REMOVED FROM THE EQUIPMENT OR THE AREA IS KNOWN TO BE FREE OF IGNITABLE CONCENTRATIONS OF FLAMMABLE SUBSTANCES.**

### 3. Pipeline Watchdog Site Verification

#### Verify “Site” and “Unit” on the Pipeline Watchdog website

(<https://secure.pipelinewatchdog.com>)

1. **Prior to field installation** log into the Pipeline Watchdog website. A “default” site for the Watchdog Scout unit is created at the factory prior to shipment. Locate the default site by doing a “Search” in the “My Network” section of the website. Select “Unit Serial Number” in the “Search By” drop-down box, and input the serial number of the unit (located on the label on the back of the unit), and click the “Search” button on the screen to go to the unit.

2. If unable to locate the Site and Unit using the search tool on the website, contact our **Technical Support Department: (913) 825-6366** or by e-mail:

([support@watchdogcp.com](mailto:support@watchdogcp.com)) and they will assist you in setting up the unit on the website. Technical support can also assist with logon problems, password reset, and any other website issues. **In order for the Watchdog Scout to properly communicate from the field, an associated site must be set up in the Pipeline Watchdog Web Monitor System!**

### 4. Field Installation Instructions

#### 4.1 Mounting the Device:

The Watchdog Scout enclosure is IP66/NEMA 4x rated, designed for installation outdoors, and suitable for mounting inside or outside of a rectifier enclosure.

Recommended Installation Tools and Supplies:

Battery powered drill / screwdriver

Wire cutters

Wire stripper

Utility knife

Crimping tool

Multi-meter

#18-22AWG spade or ring terminals to connect to the rectifier measurement points

#18-22AWG in-line splices or wire nuts to connect the AC Probe to the wire harness

¼" x2 ½" Lag Screws (if mounting to a 4x4 post, or for satellite terminal mounting)

Included with the Watchdog Scout are 2 - mounting brackets (upper and lower), and connection hardware necessary to secure the mounting brackets to the enclosure. Mounting to a utility pole or 4x4 post is accomplished using ¼" wood screws (McMaster-Carr #94048A224) with the supplied mounting brackets. The Watchdog Scout may also be mounted inside a rectifier, or a junction box, using the brackets or the 4 mounting holes molded into the upper and lower enclosure flanges. The connection cable supplied with the unit is 7' (2.4 meters) in length. Select a mounting location that allows for this cable length to be sufficient for connecting to the desired measurement points. If the metal mounting brackets are used in securing the device, attach them to the Watchdog Scout enclosure with the bracket cleats oriented outward.

## 4.2 Mounting the Satellite Terminal (satellite communication units only)

If the Watchdog Scout uses satellite communication, the satellite terminal, mounting bracket, and the necessary hardware to mount the terminal on the bracket are also included. The satellite terminal should be mounted with a clear view of the sky with the front of the terminal (see photo below) oriented toward the south.



Front of terminal

Geographic Area	Compass Direction	Elevation Angle (from horizon)
Northeastern US	175-185° (S)	30-40°
Southeastern US	175-185° (S)	35-45°
Midwest, Central US	175-185° (S)	30-40°
Southwest US	175-185° (S)	35-45°
Northwest US	175-185° (S)	30-40°

Geographic Area	Compass Direction	Elevation Angle (from horizon)
Colombia, South Am.	355 - 5° (N)	65-70°
Saudi Arabia, UAE	145-155° (SE)	50-60°
South Africa	55-60° (NE)	30-35°
Peru	355 - 5° (N)	60-65°
Chile, Argentina	355 - 5° (N)	45-55°
Brazil, Argentina	355 - 5° (N)	55-75°
Europe	140-160° (SE)	15-30°
India	205-220° (SW)	55-65°
Australia	45-65° (E)	20-30°

## 4.3 Connecting the Satellite Terminal to the Watchdog Scout (satellite units only)

The power cable harness supplied with satellite units includes a satellite terminal cable. When the Watchdog Scout and the satellite terminal are both properly mounted, connect the terminal to the Watchdog Scout by inserting the connector on the end of the cable to the input connector at the base of the satellite terminal. Turn the collar on the connector  $\frac{1}{4}$  turn to secure the connection. Attaching the input connection wire harness to the measurement points and connecting to the Watchdog Scout are covered in the next sections.

#### **4.4 Connecting Input Measurement Signals to the unit in the field**

The Watchdog Scout Monitor is designed to monitor and report voltage, current, and pipe to soil potential values from impressed current CP systems. The device will measure up to 4 analog channels, and to detect AC input power to the rectifier. It also has 2 digital channels for dry-contact closure monitoring (tamper alarm, etc.), or pulse accumulation.

#### **4.5 Installation/field service notes**

The USB terminals are for service and diagnostic use only. Connection to these terminals should be made by factory technicians only. Prior to any field service disconnect the 10-25VAC (power) and  $\pm 200$ VDC (channel 1) input terminals.

**Basic Rectifier Monitoring + Interruption** (rectifier output voltage, rectifier current, AC detection, and GPS synchronized interruption)

## **Step 1 – Connect input power**

### **1. Connecting to rectifier AC power**

Assure the front panel power switch is in the “Off” position. The Watchdog Scout is designed to operate on low-voltage AC or DC power. For AC power, source a stable voltage from the rectifier in the 12VAC to 25VAC (50/60 Hz) range using a **UL Certified step-down transformer** (recommended), or by connecting to the rectifier taps (provides less power isolation and increases risk of damage from voltage surges). Connect the red and black wires from the power input cable to the transformer output terminals or to the selected taps using terminal connectors appropriate to the site.

**NOTE: DO NOT CONNECT THE WATCHDOG SCOUT DIRECTLY TO HIGH VOLTAGE AC POWER AS THAT WILL DAMAGE OR DESTROY THE UNIT!**

### **2. TEG or Solar Generator DC Power (if only DC is available)**

At TEG and Solar sites, the input power to the Watchdog Scout will be DC supplied by the generator or storage batteries. Input power in the range of 10VDC to 35VDC is required for operation. To connect the Watchdog Scout system to a DC external power source, connect the red power cable lead to the positive terminal at the power supply and the black lead to the negative terminal. For these applications a DC to DC converter is recommended in order to supply stable, isolated power. Elecsys offers 2 DC to DC power options (listed in the “Parts and Accessories” section on page 16).

## **Step 2 – Terminate the measurement input cable harness leads to the proper points**

The factory configuration of the Scout is set to monitor rectifier voltage, rectifier current, and rectifier input power (AC present/not present). If this is the application desired, connect the input cable harness wires as shown below:

<b>Wire Color</b>	<b>Channel</b>	<b>Connects to</b>
Red	Channel 1+	Rectifier voltage output + terminal
Black	Channel 1 -	Rectifier voltage output – terminal
White	Channel 2 +	Positive terminal on the shunt
Green	Channel 2 -	Negative terminal on the shunt
Orange	AC Probe +	“Red” lead from the AC Probe
Blue	AC Probe -	“Black” lead from the AC Probe

If additional channels are needed, the following leads are used:

<b>Wire Color</b>	<b>Channel</b>
Pink	Channel 3 +
Tan	Channel 3 –
Purple	Channel 4 +
Brown	Channel 4 –

**Note: If channels 3 and/or 4, or the digital input channels, are to be used, or if the channel configuration required is different than the factory default settings, the channels will require activation and/or configuration. Configuration using the front panel is addressed in Section 5 of this manual (beginning on page 10).**

### **Common applications for the additional analog channels:**

Pipe to Soil potential readings (Channel 3 provides On/Off potential readings using the interruption relay).

Additional “negatives” where multiple pipelines are connected to the rectifier



### Digital, dry-contact monitor channels:

Wire Color	Channel
------------	---------

Yellow	Digital Input 1 (Ch 6) +
Grey (common)	Digital Input 1 (Ch 6) –
Wht/Yellow	Digital Input 2 (Ch 7) +
Grey (common)	Digital Input 2 (Ch 7) –

The digital input channels (channel 6 and channel 7) can be used for status monitoring (dry contact closure), or for pulse accumulation (metering). The digital channels are activated using the “Digital Channel” option on the “User Menu”, or remotely using the Pipeline Watchdog web interface. If programming the unit locally using the LCD interface, select the “Digital Channel” option from the menu, select “Enable” or “Disable” (factory default is “Disable”), and if enabled select “Normal” as “Open” or “Closed”. Exit menu to send the new configuration to the website. If using the Pipeline Watchdog web interface to program the unit remotely,

**AC Detection Probe:** The monitor unit is supplied with a current sensing probe to detect the presence of high voltage AC at the rectifier primary power input. The probe is installed by attaching the probe “head” along the incoming power lead using the adhesive strip on the probe and nylon wire ties to secure the probe to the outside of the power lead. The probe must be used near jacketed or double insulated wire only, and power to the rectifier must be turned off prior to installing the probe.

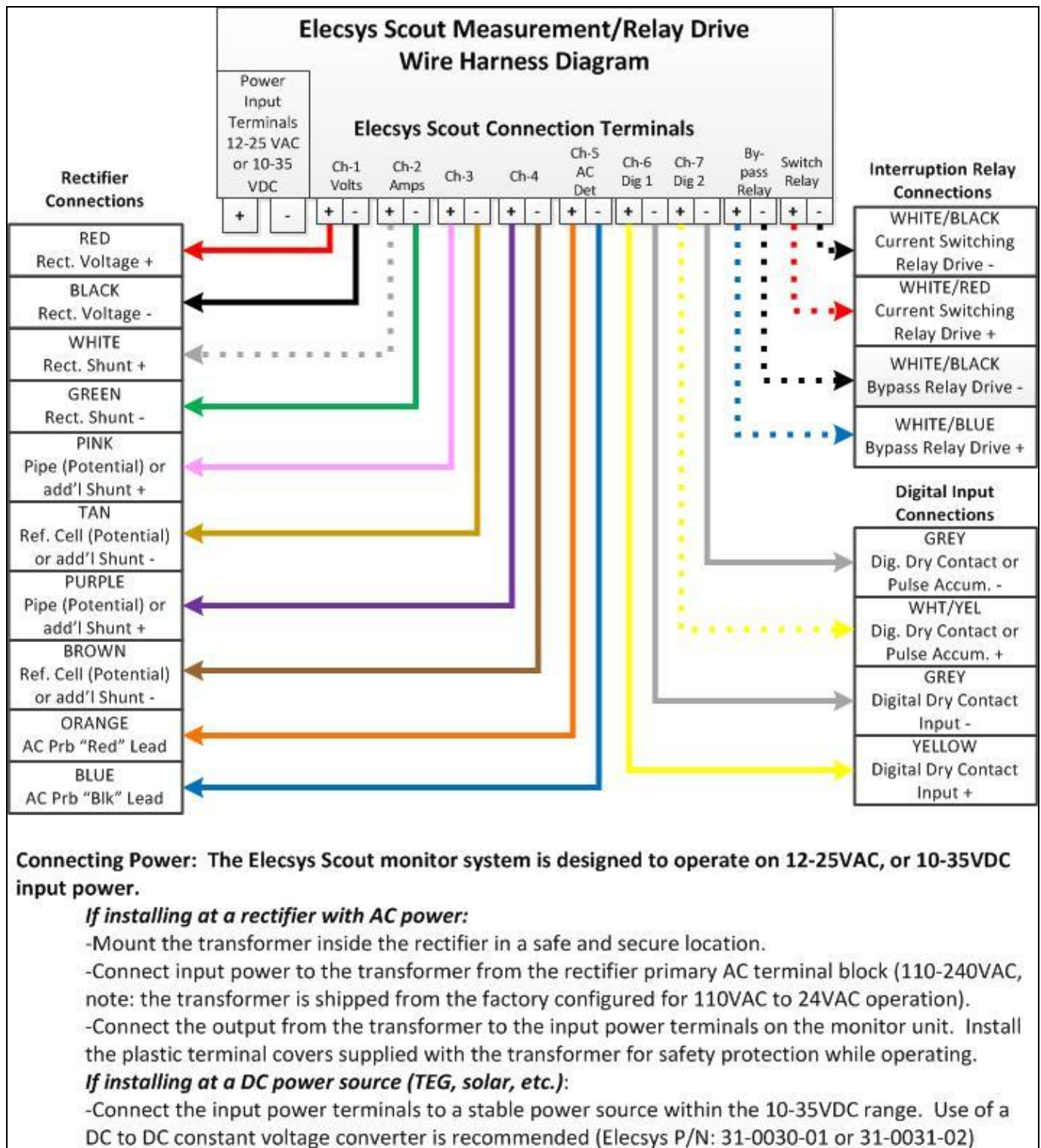
If your application requires configuration or connections not covered in the typical setup, please contact our **Technical Support Department at (913) 825-6366** and we will be happy to assist you in setup for custom applications.

**NOTE: TRIM AND ISOLATE ANY UNUSED WIRES ON THE WIRE HARNESS TO PREVENT ELECTRICAL SHORTING!**

**UNDER NO CIRCUMSTANCES SHOULD ANY OF THE SIGNAL MEASUREMENT LEADS EVER BE CONNECTED TO AC MAINS POWER!**

**THE RATINGS AND PERFORMANCE OF THIS PRODUCT ARE ONLY VALID IF THE UNIT IS PROPERLY INSTALLED AND USED IN THE MANNER DESIGNED**

## 4.6 Scout Wiring Diagram



**Figure 2. Watchdog Scout wiring diagram**

## 5. Unit Configuration Settings

### 5.1 Analog Measurement Channel Ranges

The Watchdog Scout has four analog measurement channels. Channel 1 is set to measure rectifier voltage output “DC Volts” (+/-200VDC), channel 2 is set to measure rectifier current output “DC Amps” (+/-100mVDC), channels 3 and 4 can be used for “Potential” (+/-10VDC), or to measure additional current shunts. Channel 3 will also measure an “Instant Off” reading using the interrupter.

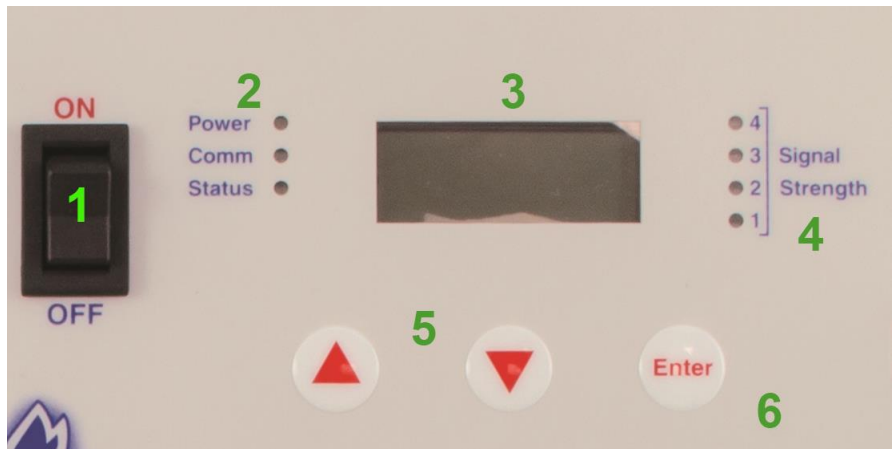
Watchdog Scout units ship from the factory configured for 2-channel rectifier monitoring (Channel 1 – DC Volts, Channel 2 – DC Amps), plus interruption. Channels 3 and 4 are inactive in the factory default setting. The instructions for reconfiguring the Scout device are in the next section of this guide (section 5.2 “Configuration and Activation Menus”) and on the “Quick-Start Setup Guide” supplied with the unit.

### 5.2 Unit Activation

1. When the Watchdog Scout unit is powered on the device will initialize. The Green LED power light will come on solid and “Watchdog Scout Ver. X.XX” will display in the LCD for 3 seconds, followed by a 10 second communication test.
2. Following the communication test, the device will commence normal operation. The interval to the next query time and report time will display in the LCD. The signal strength will display in the 4 LEDs on the right side of the LCD display. Signal strength is shown by the number of LEDs that are lit.
3. The Scout comes configured from the factory for basic, 2-Channel, rectifier monitoring with interruption: (Channel 1=DC Volts, Channel 2=DC Amps, Channel 3 and 4 inactive). If a different configuration is needed, the unit can be reconfigured using the front panel buttons (Up, Down, and Enter) and the LCD display, or over the web through the Pipeline Watchdog Web Monitor interface.
4. There are 5 User Menus: “Channel Setup”, “Unit Settings”, “Interruption”, “Diagnostics”, and “Adv. Config”. There is an “Exit” option from the main menus, and “Return” option on each sub-menu to exit the menus and save changes. **(See chart on following page for menu information).**

#### Control Panel Elements:

1. Power Switch  
(cycles unit on or off)
2. Status LEDs  
(power will be lit when unit is active)
3. LCD Display
4. Comm Signal LEDs  
(1 to 4, lowest to highest signal strength)
5. Scroll Buttons (up/down)  
(use to scroll menus in LCD display)
6. Enter Button  
(use to activate menu options)



**Figure 3. Watchdog Scout front panel controls/display**

### 5.3 Configuration and Diagnostic Menus

Action	Options	Notes
1 - Enter menus	Press & hold both arrow buttons to enter menu section screens	LCD will display main menu options (Channel Setup, User Settings, Interruption, Diagnostics, and Adv. Config.
2 – Select menu or function	Scroll to the desired menu using the “Up/Down” buttons. Press enter to access the menu options. Scroll to the desired function and press enter to view or change setting. The “Return” or “Exit” option returns you to the previous menu level	The display will show the current setting for any parameter accessed. If the parameter can be changed the scroll buttons will display the available options. Scroll to the desired option and press “Enter” to change the parameter
3 – Channel Settings	The “Channel Setup” menu enables the user to activate/deactivate channels, select channel measurement range (channels 3 and 4 only), select upper and lower alarm limits, and enable/disable alarms.	Use the scroll buttons to access the setting to be changed and press enter to change setting.
4 – User Settings	The “User Settings” menu enables the user to change the measurement interval (every 1 hour to every 24 hours, in 1 hour increments). Additionally, the schedule of reporting to the website can be set and changed.	The “Reporting Schedule” can be set using periodic intervals (every 5 days to every 30 days), or scheduled intervals (on the “nth” day of the month, up to 4 scheduled days per month). Periodic reporting intervals can be set for “re-reporting” alarms and lost power conditions.
5 - Interruption	All interruption parameters (cycle time, start with current on /current off, daily start/stop time, and day to start/stop program) can be set or changed at the unit. Additionally, “Turn Current Off” may be selected. Any interrupter action can be initiated immediately or scheduled.	Interruption commands initiated at the site are independent of any “Group Interruption” actions initiated from the web. If local control is used, the system may not be in sync with other units.
6 - Diagnostics	The “Diagnostics” menu is used in conjunction with Elecsys Product Support when doing field troubleshooting. Information on system settings, temperature, CPU usage, GPS lock, measurement/reporting settings, etc. are displayed from this menu.	Used when troubleshooting and diagnosing system problems.
7 Advanced Configuration	This menu is used when resetting unit to factory defaults, changing communication topology, and reloading or updating firmware.	Use these menu options only when requested by Elecsys Product Support personnel.

**Figure 4. Menus and Functions Chart**

Assistance with the configuration and troubleshooting of the Scout monitor system is available by contacting **Elecsys Product Support at 913-825-6366**. Phone support with a trained technician is available from 8:00am Central Time to 6:00pm Central Time.

## 6. Pipeline Watchdog Web Monitor

### 6.1 “Site Page” Use and Configuration

Each device registered on the Pipeline Watchdog Web Monitor has a site page where specific information associated with the site may be saved and displayed. This page also allows the user to poll the device, reconfigure the device, and the information stored facilitates the setup of automatic reporting features.

### 6.2 Configuring the Site Page:

To enter and save specific site information on the site page, click on “Configure Site” on the right side of the page. On the “Site Settings” page the following fields can be edited:

Name: The name you use for the site. The sites will be displayed in alphanumeric order based on what is entered here. To see units displayed in geographic order, make sure to assign names that, when sorted, will display in order (for example: “TP01 – Ridgeview Rd”, “TP02 – Walnut Rd”, “TP03 – Oak St”. These will be sorted by the initial TPXX designation, and will display in TP order, regardless of the location name.)

Description: This is a text box for entering comments, details, directions, etc. that are of use to the user. It is not used for any other purpose by the system.

Latitude and Longitude: Enter the coordinates in *decimal degrees* format per the sample format (do not use degrees:minutes:seconds). Make sure that latitude has an N or S at the end (N for Northern Hemisphere). Longitude must be entered with three digits ahead of the decimal point (90.1234 would be entered 090.1234) and an E or W at the end (W for North America).

NOTE: Latitude and Longitude must be properly entered before the satellite photo map of the site can be displayed on the Site Page.

Time Zone: Select the Time Zone of the Site.

CP Group: Select the CP Group (which presumably has already been set up for your company) to which this monitoring site is assigned.

CPDM Linkage, Hierarchy, Rectifier ID, Mile Post: Additional fields may be added for inclusion on compliance reports. These are fields for linking data reports from the WatchdogCP system to any pipeline integrity compliance software package. This is typically set up with a conference call between Elecsys Technical Support and your IT Department.

Click on Save to save the settings for this site.

### 6.3 Sending a Configuration to the Watchdog Scout:

Operating parameters including alarm ranges, reporting schedule and digital channel settings can be changed in the field unit from the website. Follow these steps to send a new configuration to the device:

1. On the "Site Page" click "Configure Unit" on the right side of the screen.
2. Click "Reprogram Unit" to open the configure options screen.
3. Input the desired "Wakeup/Sampling" time. The options are every 1 to 24 hours, in hours. The default interval is every 4 hours.
4. Set the "Reporting Schedule" for the transmission of data to the website. There are 2 options: "Schedule: Reporting Days" sets the interval in days between reports (every 15 days, etc.). The default is 15 days. "Reporting Schedule: Day X" sets the day of the month (i.e. "15" = 15<sup>th</sup> of the month) for the unit to report. Up to 4 days of the month may be selected.
5. Input "High Alarm" and "Low Alarm" limits for each active channel (only active channels shown). Select "Send Alarms" or "Ignore Alarms" for each active channel.
6. If the Digital Channel is to be enabled (dry contact closure monitoring), select "Enable" in the digital channel drop-down box.
7. Click "Send Reconfiguration" to send the configuration to the unit.
8. If the field unit is externally powered for always-on, 2-way communication, the configuration will transmit immediately to the device and an acknowledgement will be returned to the website from the unit indicating the reconfiguration was successful. If the device is set to operate in battery powered "report-only" mode, the new configuration will be queued for transmission to the field unit at the next report from the unit. When the transmission is completed, the device will return an acknowledgement to the website verifying the successful reconfiguration.

Note: If transmission of the new configuration fails or is not acknowledged by the field unit, the website will re-send the configuration 2 more times. If the acknowledgement is not received after these attempts, contact **Technical Support Department: (913) 825-6366** or by e-mail: ([support@watchdogcp.com](mailto:support@watchdogcp.com)) for assistance.

### 6.4 Polling the Unit for Immediate Readings:

In addition to receiving scheduled readings from the field device, an externally powered unit may be polled for "on-demand" readings. To poll the unit from the site page, click on the "Poll" button on the left side of the page. A request for values will be transmitted to the site and the site will respond with updated data within approximately 3 minutes (approximately 10 minutes for satellite units). "Scheduled Polls" and "Group Polls" may be implemented using the "Poll Sites" button from the "Group Page". In the group polling page you have the option of selecting multiple sites to poll, as well as selecting multiple sites to schedule for automatic polling at weekly or monthly intervals.

## 6.5 Report Generation Features:

The Pipeline Watchdog Web Monitor has a powerful, simple to use report generation tool. The “Reports” menu located on the main menu bar of the website has options for “Run and Schedule Data Reports”, “Site Information Reports”, and “Set Up Reporting Templates”. To set up and run a simple data report:

1. Select the “Run or Schedule Data Reports” option from the “Reports” drop-down menu.
2. On the “Create a New Report” page, accept the default template “Standard Rectifier Report”, and the default “Most Recent Readings” in the readings to include selection. Provide a description of your choice in the “Description” field (this will be the report name). Select the date range desired for the report (when using the “Most Recent Readings” option, only the most current reading from each site will display on the report). Click on the “Run Now” button to run the report.
3. When the system has completed compiling the report, the data will display on the screen with the option to “Export” to Excel or to a file. You can select from several standard formats (Delimited, Excel, Excel XML) as well as selecting the delimiter that divides the fields (the default delimiter is “comma”). When the “Export” button is clicked, you will be given the option of displaying or saving the exported report.
4. To schedule a simple data report to run automatically, select the “Schedule this report to run later” option and select the interval (weekly, monthly) and day (day of week, day of month) at which you would like the report to run. The report file will automatically be sent to your email address (as used for your logon name) every time the report runs. You also have the option of adding additional email addresses for delivery of the report to other users.

**Note:** For more complex tasks such as creating new templates and adding fields for CPDM compliance reports, please contact **Technical Support Department: (913) 825-6366** or by e-mail: ([support@watchdogcp.com](mailto:support@watchdogcp.com)) for assistance.



## 7. Watchdog Scout Product Specifications:

<b>Part Number</b>	CDMA cellular telemetry: SCT-N1-20 (with 100A relay) SCT-N1-90 (without relay) GSM cellular telemetry: SCT-N3-20 (with 100A relay) SCT-N3-90 (without relay) Satellite telemetry: SCT-S3-20 (with 100A relay) SCT-S3-90 (without relay)
<b>Operating Environment</b>	Temp.: -40°C to +70°C (-30°C to +50°C in Class 1, Div 2 hazardous locations) Humidity: 0 - 95% non-condensing Enclosure rating: NEMA-4X polycarbonate
<b>Power</b>	External power for "always on" full 2-way operation: 12-25VAC , 50/60 Hz, 25 watts max or 10-35VDC. Internal rechargeable gel-cell lead acid battery, for power-fail backup operation.
<b>Dimensions</b>	10.5" (267 mm) X 9.25" (235 mm) X 5.25" (133 mm)
<b>Installation</b>	Mounting: Universal brackets included for pole, or post mounting. Measurement Input Harness Cable: 7' (2.4m) weatherproof, 18-conductor color-coded cable harness. Power Harness Cable: 7' (2.4m) weatherproof, 2-conductor cable harness. Satellite unit: Includes satellite terminal, bracket for mounting terminal, and connection cable for satellite terminal.
<b>Input Connections</b>	Channel 1 +/- Channel 3 +/- AC Detect +/- Digital Ch 2 +/- Switching Relay Drive +/- Channel 2 +/- Channel 4 +/- Digital Channel 1 +/- Bypass Relay Drive +/-
<b>Measurement Channel Input Ranges</b>	Analog Input Channels (#1 - #4): Ch1 - Voltage Range= +/- 200 Volts DC (+/-1%) 1Mohm input impedance Ch 2 –Voltage Range = +/- 100 mVolts DC (+/-1%) 1Mohm input impedance Ch 3 & 4 – Voltage range selectable: +/- 100 mV DC (for current meas.), or +/- 10 VDC (for potential meas.) (+/- 1%) 1 Mohm input impedance Relay outputs – 12VDC control voltage 2 Digital Input Channels: Dry contact or Pulse count
<b>Telemetry</b>	CDMA cellular: !xRTT GSM cellular: HSPA+ Satellite telemetry: Inmarsat IDP
<b>Certifications</b>	UL/CSA 61010-1, UL STD 121201/CSA STD C22.2#213

### Figure 5. Product Specifications

## 8. Replacement Parts and Accessories:

Description	Part Number
External Cellular High-Gain Antenna Kit (Includes: antenna, bracket, and adapter)	48-0003-21 (<2014) WD-ANT-KIT (2014+)
DC to DC Power Converter (9-18VDC Input/15VDC Output)	31-0030-01
DC to DC Power Converter (18-75VDC Input/15VDC Output)	31-0030-02



## **9. Technical Support**

In the event of a problem, Elecsys always stands ready to provide prompt service and technical support.

**Elecsys Technical Support Hours: 8AM to 5PM Central time, Monday through Friday**

**Elecsys Technical Support Direct Phone: 913-825-6366.**

Most support issues are quickly resolved over the phone. If the problem cannot be resolved by phone, Elecsys will arrange for repair or replacement equipment as soon as possible to get the site operational once again.

During the Warranty Period, Elecsys will repair or replace problems systems or components at its expense. After the Warranty Period expires, Elecsys will repair or replace failed components for a fair and reasonable charge.

### **9.1 Products Under Warranty**

Call Elecsys Technical Support at 913-825-6366.

Upon determination by Elecsys that the problem is related to a cause that is covered under this warranty, instructions for returning the Product will be provided, as well as an RMA number.

A repaired or replacement Product is warranted in accordance with the terms of the standard limited warranty, for the balance of the term applicable to the inoperative Product.

Upon its examination, if the inoperative Product is found to have problems not covered under the warranty, Elecsys reserves the right to charge for repair services.

Replacement parts or Products will be shipped to domestic customers at Elecsys' expense, subject to availability, via ground delivery service and at international customers' expense. Elecsys shall not be responsible for failure of the delivery service to make on-time delivery.

### **9.2 Products Not Under Warranty**

Call Elecsys Technical Support at 913-825-6366.

Upon determination by Elecsys that the problem is related to a cause that must be remedied by Elecsys, instructions for returning the Product will be provided, as well as an RMA number.

A purchase order or other such authorization will be required to cover the cost of repair or a replacement Product.

A repaired or replacement Product is warranted in accordance with the terms of the standard limited warranty, for a period of 90 days following installation and activation.

## 10. Product Warranty Policy

For a period of fifteen (15) months from the date of shipment Elecsys warrants that its products will be free from defects in workmanship and materials.

For the same period, Elecsys warrants that its products will perform to their specifications and, to the extent Elecsys is informed of the use(s) for which the original purchase is made, are fit for such use(s). NO OTHER WARRANTY, EXPRESS OR IMPLIED IS MADE OR MAY BE IMPLIED.

Any claim that an Elecsys product is defective shall be made in writing and supported by such detail and/or documentation as Elecsys shall reasonably require.

## 11. Sales Contact Information

Please contact Elecsys Remote Monitor Sales at (913) 888-5222 or by email: [sales@watchdogcp.com](mailto:sales@watchdogcp.com) for order and pricing information.

### Our Commitment –

The goal of the Remote Monitor division of Elecsys Corporation is to provide you with the best products and service available in the industry. If you encounter any difficulties, or have any questions or concerns, before, during or following installation, please contact our **Technical Support Team: (913) 825-6366 or [support@watchdogcp.com](mailto:support@watchdogcp.com)**. We are fully staffed Monday through Friday, from 7:00am Central Time to 5:00pm Central Time and **WE ARE HERE TO HELP!**

Elecsys Corporation

846 N. Mart-Way Ct.

Olathe, KS 66061

(913) 888-5222 Main Phone

(913) 825-6366 Technical and Field Support Line

[www.watchdogcp.com](http://www.watchdogcp.com)

Viewing Readings • Changing Shunt Factor • Interruption • Alternate Boot





This is the default screen on the LCD interface. It will change from this screen to showing GPS Locked.

## Viewing Channel Readings

1






Hold down the  button and release when it says 'Release to view channel readings'.

If you continue holding , it will say 'Release to send readings to the web' then 'Release to cancel'.

2






Once  is released, the unit will take the Analog Channel 1 reading (typically voltage) and display it. You can then use the  and  buttons to navigate to the other channels.

Verify that these readings match the manual readings on the rectifier.

## Viewing/Changing the Shunt Factor


1



From the default screen, choose either the  or  to access the menu. Scroll down to 'Channel Setup' and press .


2



Scroll down to 'Analog Ch 2' (typically Amps) and press .


3



Scroll down to 'Shunt' and in parenthesis ( ) next to it you can see the current setting (the default is 50:50). To change the shunt factor, press .

4






At this screen, you can scroll to both the mV and Amps and choose  to change the value. Once changed, choose 'Return' at the bottom of each page until you get to the main menu screen and choose 'Exit'.

## Interrupting the rectifier with the Scout

1



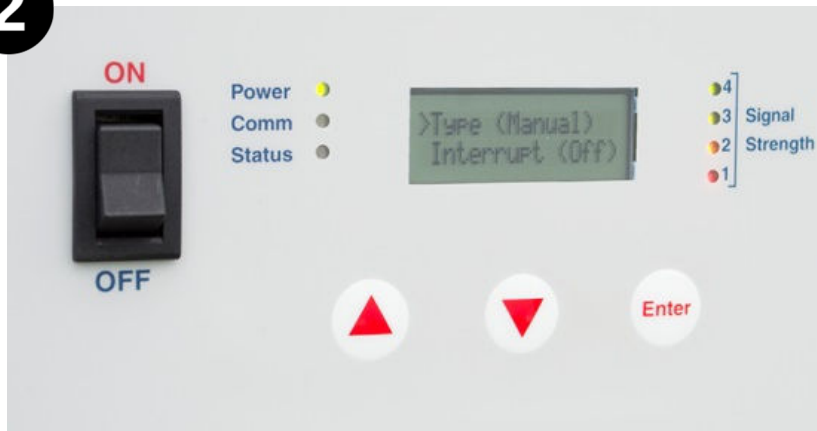
From the default screen, choose either the  or  to access the menu. Scroll down to 'Interruption' and press .


3



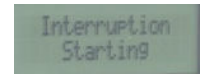
From the Interruption main screen, you can scroll down and change the cycle time for the interruption, if needed. The default is typically 3 seconds on, 1 second off.

2



With 'Type' chosen as (Manual), scroll down to 'Interrupt' and the current setting is listed in parenthesis. From a setting of (Off), press  to start interruption.


You will then see



Verify that the rectifier is interrupting by watching the gauge or taking a measurement across the shunt.

4



To stop interruption, scroll to 'Interrupt (On)' and press . The screen will display the Interruption Complete message.

# Alternate Boot Modes:

- **Reset ALL unit parameters with update FROM web**
  - Press and hold = UP & Down
  - Sets the unit to factory condition which initiates the config sync process.
  - "First Power-Up!|Setting Defaults" displayed on LCD.
- **Reset ALL unit parameters with update TO web**
  - Press and hold = UP, Down & ENTER
  - Sets the unit back to defaults, then send those defaults to the website.
  - "First Power-Up!|Forcing Defaults" displayed on LCD

**Note that doing a '3-button' reset (Up, Down & ENTER) will clear the configuration of the unit BOTH at the unit and the website. The unit will have to be fully configured again and may lose data.**



## Appendix B - Installation Tools and Supplies

Tools required: Battery powered drill / screwdriver

Wire cutters

Heavy duty cable cutters

Wire stripper

Utility knife

Crimping tool

Heavy duty compression crimper

Fluke voltmeter

Greenlee punch

Additional Installation Material needed:

4 ea. ¼" X 2½" lag screws to mount RMU and antenna bracket (McMaster Carr #94048A224 wood screws for utility pole mount, or #90064A633 self-tapping metal screws for mounting to metallic structures)

1/4"ID x 3/4" OD fender washer (McMaster-Carr 98026A029)

Approximately 3 meters 1" non-metallic flexible conduit (if using conduit in the installation) (McMaster-Carr 7581K44)

2 ea. 1" non-metallic conduit fitting (if using conduit in the installation) (McMaster-Carr 7119K74)

6 ea. #22-18 insulated spade terminals for #10 stud (McMaster-Carr 69145K914)

6 ea. #18-22AWG 3/8" Ring Terminals (McMaster-Carr 7113K834)

2 ea. #18-22 AWG In-Line Splice (McMaster-Carr 7227K12)

Approximately 12 ea. 8" to 11" Wire ties

For Interrupter Installation:

5 to 6 feet #6 Flexible Welding Cable or similar cable for connection from relay to rectifier output

#2-#6 AWG Copper Bolt Splice (for use if interrupting at the DC output)

**The accessories listed above are available in the optional "Watchdog Installation Accessories Kit" part number WD-48-0002-00**