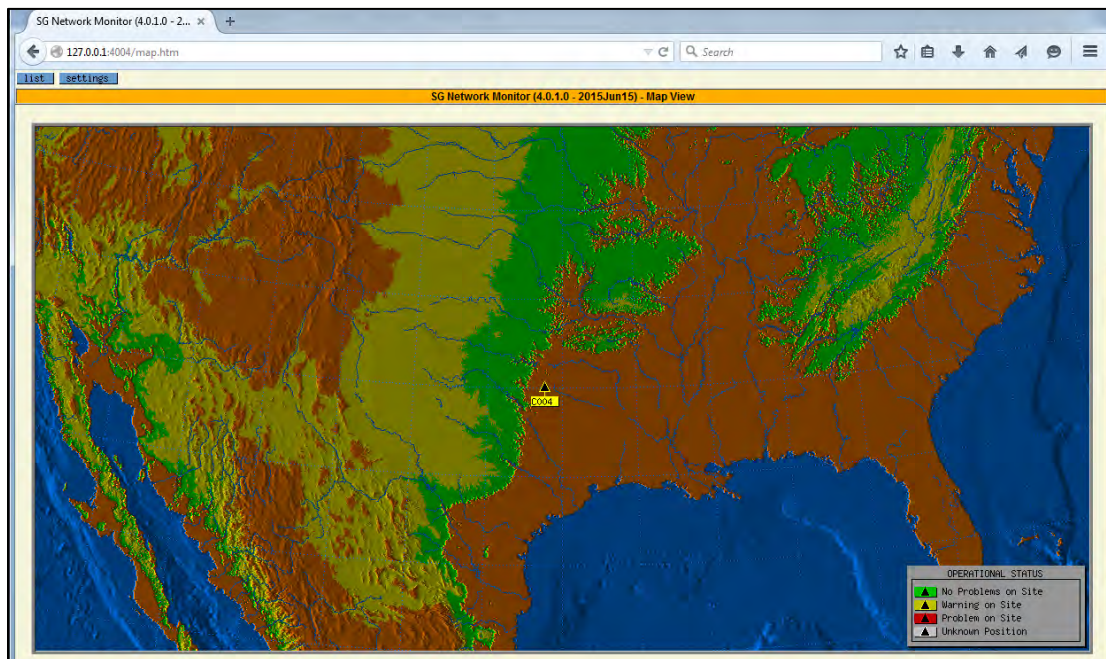


Trimble Kestrel SeismoGeodetic System (Model SG160-09) SGMonitor Users Guide

Version 4.0.1.0

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P/N:97333-00-UG Rev B



This manual provides installation and basic operating procedures for the SGMonitor program.

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Release Notice

This is the 2015.06.15 Revision B of the ***SGMonitor (97333-00-UG)***. It applies to version 4.0.1.0 of the Trimble Kestrel System SG160-09.

Product warranty information

For applicable product warranty information, please refer to the Warranty Card included with this Trimble product, or consult your Trimble dealer.

Notation Conventions

The following notation conventions are used throughout Trimble documentation:

Notation	Description
ASCII	Indicates the entry conforms to the American Standard Code for Information Interchange definition of character (text) information.
Binary	Indicates the entry is a raw, numeric value.
Hex	Indicates hexadecimal notation. This is used with both ASCII characters (0 – 9, A – F) and numeric values.
BCD	Indicates the entry is a numeric value where each four bits represents a decimal digit.
FPn	Indicates the entry is the ASCII representation of a floating-point number with n places following the decimal point.
<n>	Indicates a single 8-bit byte. When the contents are numeric, it indicates a hexadecimal numeric value; i.e. <84> represents hexadecimal 84 (132 decimal). When the contents are capital letters, it represents a named ASCII control character; i.e. <SP> represents a space character, <CR> represents a carriage return character and <LF> represents a line feed character.
MSB	Most Significant Byte of a multi-byte value.
MSbit	Most Significant Bit of a binary number.
LSB	Least Significant Byte of a multi-byte value.
LSbit	Least Significant Bit (bit 0) of a binary number.
YYYY	Year as a 4-digit number
DDD	Day of year
HH	Hour of day in 24-hour format
MM	Minutes of hour
SS	Seconds of minute
TTT	Thousandths of a second (milliseconds)
IIII	Unit ID number

n, nS	nano, nanoSecond; $10^{-9} = 0.000000001$
u, uS	micro, microSecond; $10^{-6} = 0.000001$
m, mS	milli, milliSecond; $10^{-3} = 0.001$
K, KHz	Kilo, KiloHertz; $10^3 = 1,000$
M, MHz	Mega, MegaHertz; $10^6 = 1,000,000$
G, GHz	Giga, GigaHertz; $10^9 = 1,000,000,000$
Kb, KB	Kilobit, KiloByte; $2^{10} = 1,024$
Mb, MB	Megabit, MegaByte; $2^{20} = 1,048,576$
Gb, GB	Gigabit, GigaByte; $2^{30} = 1,073,741,824$

Software Version:

Current software and documentation is available on our web site. Some early units may require hardware modifications to use the latest software. Contact Trimble if you have any queries on the compatibility of your unit(s) and the current software release.

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About this manual:

This **SGMonitor** software manual provides a detailed overview of the operations and setup of the **SGMonitor** program. It covers the following broad operational topics:

- **SGMonitor** (SeismoGeodetic Network Monitor) provides an up-to-date status report of a network of 160 units to the user.
- **SGMonitor** - Console program that connects to RTPD and requests status from all connected 160's.
- **SGMonitor** - Listens for incoming Client connections on a user settable port and acts as an html server on this port.
- **SGMonitor** - Serves up html pages that can be displayed in any standard web browser.

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1 General Description

1.1 SSMonitor Network Monitor

SGMonitor (SeismoGeodetic Network Monitor) provides an up-to-date status report of a network of Trimble Kestrel Systems to the user. **SGMonitor** is a console program that connects to RTPD and requests status from all connected Trimble Kestrel Systems. **SGMonitor** also listens for incoming Client connections on a user settable port and acts as an html server on this port. **SGMonitor** serves up html pages that can be displayed in any standard web browser.

SGMonitor provides both a map and list view as well as details for each particular Trimble Kestrel System. Most fields in the **SGMonitor List View** provide easy to read, Green, Yellow, and Red indicators for quick station status checks. The Green, Yellow, and Red thresholds are editable allowing each user to customize the warning levels to meet their needs.

SGMonitor also maintains a ring buffer on disk for the status of each Trimble Kestrel System. The ring buffer holds at least 3 days worth of status for each DAS. **SGMonitor** can display this 3 days worth of status as a histogram plot.

1.2 Trimble Kestrel System Requirements

SGMonitor supports the following software platforms:

- Microsoft™ Windows
- Red Hat™ Linux 9.0 or higher
- SUN™ Solaris 8 (SPARC) or higher
- MacOS X

Note: RTPD should be installed prior to installation of SGMonitor.

Note: The machine that is running SGMonitor must be setup as a "CmndClientIPAddr" in the rtpd.ini file so that SGMonitor has permission to send it's status requests through RTPD. See the RTPD manual "Configuration options - rtpd.ini file" for more information.



2 SGMonitor Configuration for Windows

2.1 Edit the sgmonitor.ini file

Before execution of the **SGMonitor** program, the **sgmonitor.ini** file **MUST** be modified with an editor.

Most of the settings in the **sgmonitor.ini** file are already set to acceptable default settings except for Step 2 (RTPD IP address).

For complete instructions, see Section 6.

2.2 Running SGMonitor from a command prompt

To run **SGMonitor** from a command prompt:

1. Open a command window in the **c:/reftek/bin** directory.
2. At the command line type **sgmonitor sgmonitor.ini** and <CR>.
3. Minimize the command prompt.
4. Open a web browser and enter the IP address of the computer where you are running **SGMonitor**.



NOTE: SGMonitor can be called from outside the **\REFTEK\bin** directory if the path to the ini file is called out. For example:

```
\REFTEK\bin\sgmonitor \REFTEK\bin\sgmonitor.ini
```

NOTE: The machine that is running SGMonitor must be setup as a "CmndClientIPAddr" in the **rtpd.ini** file so that SGMonitor has permission to send it's status requests through RTPD. See the RTPD manual "Configuration options - rtpd.ini file" for more information.



3 SGMonitor for Linux

3.1 Edit the sgmonitor.ini file

Before execution of the **SGMonitor** program, the **sgmonitor.ini** file **MUST** be modified with an editor.

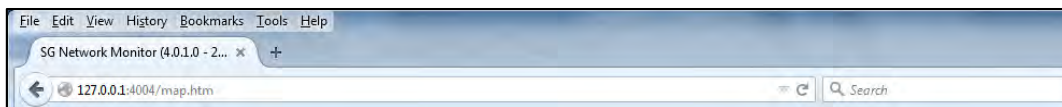
Most of the settings in the **sgmonitor.ini** file are already set to acceptable default settings except for Step 2 (RTPD IP address).

For complete instructions, see Section 6.

3.2 Running SGMonitor from a command prompt

To run **SGMonitor** from a command prompt:

1. Open a terminal window in the **/home/reftek/bin** directory.
2. At the command line type **./sgmonitor sgmonitor.ini** and <CR>.
3. Minimize the command prompt.
4. Open a web browser and enter the IP address of the computer where your running **SGMonitor**.



NOTE: SGMonitor can be called from outside the **/home/reftek/bin** directory if the path to the ini file is called out.

IE **/home/reftek/bin/sgmonitor /home/reftek/bin/sgmonitor.ini**

NOTE: The machine that is running SGMonitor must be setup as a "CmndClientIPAddr" in the **rtpd.ini** file so that SGMonitor has permission to send it's status requests through RTPD. See the RTPD manual "Configuration options - rtpd.ini file" for more information.



4 SGMonitor for Solaris

4.1 Edit the sgmonitor.ini file

Before execution of the **SGMonitor** program, the **sgmonitor.ini** file **MUST** be modified with an editor.

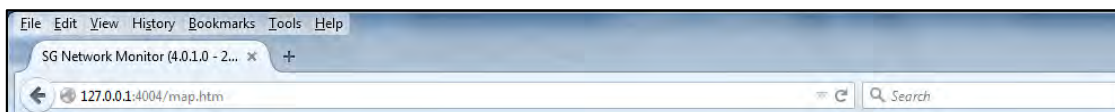
Most of the settings in the **sgmonitor.ini** file are already set to acceptable default settings except for Step 2 (RTPD IP address).

For complete instructions, see Section 6.

4.2 Running SGMonitor from a command prompt

To run **SGMonitor** from a command prompt:

1. Open a terminal window in the **/export/home/reftek/bin** directory.
2. At the command line type **./sgmonitor sgmonitor.ini** and <CR>.
3. Minimize the command prompt.
4. Open a web browser and enter the IP address of the computer where your running **SGMonitor**.



NOTE: SGMonitor can be called from outside the **/export/home/reftek/bin** directory if the path to the ini file is called out.

IE **/export/home/reftek/bin /export/home/reftek/bin/sgmonitor.ini**

NOTE: The machine that is running SGMonitor must be setup as a "CmndClientIPAddr" in the **rtpd.ini** file so that SGMonitor has permission to send it's status requests through RTPD. See the RTPD manual "Configuration options - rtpd.ini file" for more information.



5 SGMonitor for MacOS

5.1 Edit the sgmonitor.ini file

Before execution of the **SGMonitor** program, the **sgmonitor.ini** file **MUST** be modified with an editor.

Most of the settings in the **sgmonitor.ini** file are already set to acceptable default settings except for Step 2 (RTPD IP address).

For complete instructions, see Section 6.

5.2 Running SGMonitor from a command prompt

To run **SGMonitor** from a command prompt:

1. Open a terminal window in the **/Users/reftek/bin** directory.
2. At the command line type **./sgmonitor sgmonitor.ini** and <CR>.
3. Minimize the command prompt.
4. Open a web browser and enter the IP address of the computer where your running **SGMonitor**.



NOTE: SGMonitor can be called from outside the **/Users/reftek/bin** directory if the path to the ini file is called out.

IE **/Users/reftek/bin/sgmonitor /Users/reftek/bin/sgmonitor.ini**

NOTE: The machine that is running SGMonitor must be setup as a "CmndClientIPAddr" in the **rtpd.ini** file so that SGMonitor has permission to send it's status requests through RTPD. See the RTPD manual "Configuration options - rtpd.ini file" for more information.



6 Editing the sgmonitor.ini file

The user *MUST* edit the **sgmonitor.ini** file before running **SGMonitor**. A few values in the file are different depending on platform, but most values are the same for all platforms.

For an example **sgmonitor.ini** file, see section 6.2.

6.1 Modifying the sgmonitor.ini file

To configure the **sgmonitor.ini** file:

1. Open the **sgmonitor.ini** file in a text editor (such as notepad or vi).
WARNING: The command text is case sensitive within the .ini file.
2. Find the following line and change the IP address to that of the machine running **RTPD**.

```
SGmonitor.RtpdIP=          69.15.146.174
```

3. Check the port number on which **RTPD** is listening for Client connections. This is almost always left as the default 2543.

```
SGmonitor.RtpdPort=       2543
```

4. If necessary, change the **SGMonitor** port for html pages. This is the port on which **SGMonitor** will listen for client connections, and serve up html pages. This port should be a free port on the machine running **SGMonitor**. Usually port 4000 is a good choice.

```
SGmonitor.HttpPort=      4000
```

5. Set the maximum number of allowed web client connections to **SGMonitor** at one time.

```
SGmonitor.MaxHttpClient= 30
```

6. Certain **SGMonitor** settings can be changed through the browser. These include all the Green, Yellow, Red alarm settings and the station locations, as well as all the Map View settings.

In order for a Web Client to be able to change any of these settings, add the clients IP address to the following list. As many clients as necessary can be listed.

Note: Any web client is allowed to connect to **SGMonitor** and view the settings screen, but if they are not in the following list then the screen will be in READ ONLY mode.

```
SGmonitor.IPSettings=    127.0.0.1
```

```
SGmonitor.IPSettings=      64.152.229.234
```

```
SGmonitor.IPSettings=      194.84.170.115
```

7. Change the following line to set the **SGMonitor** request interval (in seconds) for checking the current status of all dases.

```
SGmonitor.RqInterval=      180
```

8. Change the following line to control how often **SGMonitor** will request the parameters. The value indicates the number of request intervals between parameter retrieval. For example, if you want to request parameters once each day, then divide the number of seconds in a day by the RqInterval. i.e.; $86400 / 1800 = 48$.

```
SGmonitor.PrDecimation=1
```

9. Set the delay (in seconds) between each command sent by SGMonitor. For small networks, leave this value at 1. For large networks, increase this number to spread out the commands.

```
SGmonitor.RqDelay=0
```

10. Set the number of days to display on histograms plots from a 1 to 14 day period. This example parameter graphs data over an 8 day period of time.

```
SGmonitor.NumberDays=7
```

11. Set the location where **SGMonitor** will store the ring buffers it maintains. The ring buffers are used to create the histogram plots.

Note: This setting is platform dependent. Set appropriately for your platform.

Note: This folder must exist before you run SGMonitor.

Example for Windows:

```
SGmonitor.RingFolder=      D:\SGmonitor
```

Example for Linux:

```
SGMonitor.RingFolder= /home/reftek/ringfolder
```

12. Change the following value to the maximum number of records that will be stored in the ring buffer files. The minimum recommended value is: (Number of possible DAS units * 14 days * 24 * 3600) / RqInterval (from above)

Example=(20 possible DASEs * 14 days * 24 * 3600) / 300 = 80640

SGmonitor.RecordsInRing= 10000

Note: Remember to always delete all ring buffer files (DK.log, XC.log, AQ.log, US.log files from the Ringfolder) if you change this value.

13. The Station file will contain the station coordinates for all the stations. This file is created and maintained by the **SGMonitor** program.

Example for Windows:

SGmonitor.StationFile= D:\SGmonitor\stations.dat

Example for Linux:

SGMonitor.StationFile=/home/reftek/ringfolder

14. Include the following to allow the size of the RTPD archive size to be displayed.

SGMonitor.rtpdsize_col

Note: The size will be displayed using the unit as defined by the RTPDUID parameter in the RTPD.ini file. The size can be reported by any RTPD configured to send the information assuming a given DAS id.

15. Include a folder name where **SGMonitor** will place SMS message logfiles when an error/warning occurs. The error/warning conditions are user settable through the **SGMonitor** error/warning settings page. This directory stores SMS messages for delivery by an email program. An external script should be used to monitor this directory for new SMS messages to be sent.

Example: **SGMonitor.SmsFolder= C:\reftek\sms**

Example: **SGMonitor.SmsFolder= /home/reftek/sms**

SGMonitor.SmsFolder= C:\SgMonitor\SMS

Note: This folder must exist before running **SGMonitor**.

16. Define the scale factor for the size of the dots that appear on the map (that represent earthquakes) in the following parameter:

SGmonitor.EqSize=1.0

All fields below this area are editable through the html settings page. It is recommended to edit these parameters through the Settings html page when connected to **SGMonitor**.

6.2 Complete listing of sgmonitor.ini file

```
#
#Ini file is case sensitive & parameter name should start from
#first character in the line, '=' character should present!!!!
#
#_____
#
#IP number of running RTPD
#
#SGmonitor.RtpdIP=      127.0.0.1
SGmonitor.RtpdIP=      69.15.146.174
#SGmonitor.RtpdIP=      72.54.154.54
#_____
#Antenne.ini lookup file
SGmonitor.AntennaIni=C:\SHARE\R2014\SGMONITOR-0.0.0.3\antenna.ini
#_____
#
#Port number of running RTPD
#
SGmonitor.RtpdPort=      2543
SGmonitor.Pmask=      20000 #HEX packet Mask
SGmonitor.Smask=      0000 #HEX stream Mask ex. stream=3 Mask=0004!!
#_____
#
#Port for web clients connections to SGmonitor
#
SGmonitor.HttpPort=      4000
#_____
#Maximum number of web clients connections to SGmonitor
#
SGmonitor.MaxHttpClient=      30
#_____
#
#IPs of clients who can change settings on the fly
#all other clients will have the same screen but in read only mode!!!
#
SGmonitor.IPSettings=      127.0.0.1
```

```
SGmonitor.IPSettings=      64.152.229.234
SGmonitor.IPSettings=      194.84.170.115
#
#
#Request interval in seconds for checking current status of all dases
#
SGmonitor.RqInterval=      180
#
#
#Folder with ring buffers for plots
#!!!! This Folder Must exists before you run SGmonitor!!!!
#
SGmonitor.RingFolder=      D:\SGmonitor
#
#
#Number of days for Plots
#
SGmonitor.NumberDays=7
#
#
#Number of records in ring Buffers,
#recommended value = (Number of possible dases * NumberDays*24*3600)/RqInterval
#!!!! always delete all ring buffers (DK.log,XC.log,AQ.log,US.log)
#if you change this value
#
SGmonitor.RecordsInRing=    10000
#
#
#file which contains station coordinates
#(!!!!at least the folder must exists!!!!)
#
SGmonitor.StationFile=      D:\SGmonitor\stations.dat
#
#
#Map image parameters delimited by comma without spaces:
#HorizontalImageSize(pixels),VerticalImageSize(pixels),
#Central Latitude of Image(degrees),Central Longitude of Image(degrees),
#Map Scale(Number of kilometers in one pixel),
```

```
#Map View rotation angle(degrees),Map Mode(0-fine,1-good,2-draft)
```

```
SGmonitor.MapParameters= 800,600,33,-96,3,0,0
```

```
#
```

```
#
```

```
#Input Power Red Yellow values valid interval 0-20 V !!!!Y>R
```

```
#
```

```
SGmonitor.InputPowerYellowRed= 1.3,0.1
```

```
#
```

```
#
```

```
#Backup Power interval 0-3.3 V !!!!Y>R
```

```
#
```

```
SGmonitor.BackupPowerYellowRed=2.8,2.3
```

```
#
```

```
#
```

```
#Ram Used interval 0-100!!!!Y<R
```

```
#
```

```
SGmonitor.RamUsedYellowRed= 75,90
```

```
#
```

```
#
```

```
#USB Used interval 0-100!!!!Y<R
```

```
#
```

```
SGmonitor.Disk1UsedYellowRed= 60,80
```

```
#
```

```
#
```

```
#NTRIP AGE seconds 0-1000!!!!Y<R
```

```
#
```

```
sgmonitor.ntripageyellowred=10,30
```

```
#
```

```
#Das not responding interval in Requestq Interval steps !!!!Y<R
```

```
#
```

```
SGmonitor.DelayYellowRed= 2,4
```

```
#
```

```
#
```

```
#Gps not respondingunlocked interval in seconds values !!!!Y<R
```

```
#
```

```
SGmonitor.ClockLastMsgYellowRed=10,30
```

```
#
```

```
#
#Clock error - difference between das location in station file
#& average location from gps in meters !!!!Y<R
SGmonitor.LocationYellowRed= 100,200
#
#-----
#Starting html page 0-MapView 1-ListView
SGmonitor.DefaultPage=1
#
#-----
#The name of script to generate earthquake.dat file for earthquake plot
SGmonitor.EqScript=generate_eqdat.bat
#Event circle scaling
SGmonitor.EqSize= 1.0
#
#-----
#seconds delay between sending each request to RTPD
SGmonitor.RqDelay= 0
#interval of sending Parameter Requests will be =PrDecimation*RqInterval
SGmonitor.PrDecimation= 1
#
#-----
#Folder for Sms Log files
#!!!! This Folder Must exists before Yor run rtpmonitor!!!!
SGMonitor.SmsFolder= C:\SgMonitor\SMS
#
#-----
#Sms Activity Flags ; eight bits 0 or 1
#InputPower,BackupPower,Delay,Ram,Disk1,NtripAge,LastClockMsg,Location
SGMonitor.SmsAction=00000000
#
#-----
```

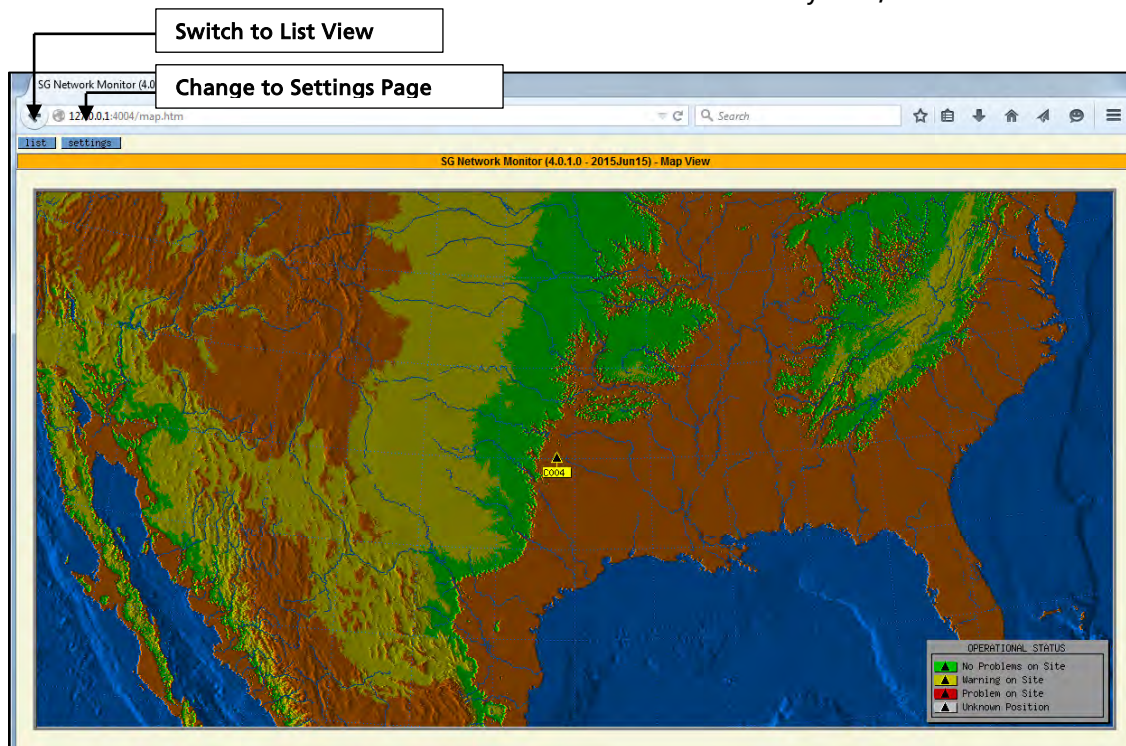


7 SGMonitor operation

7.1 Map View screen

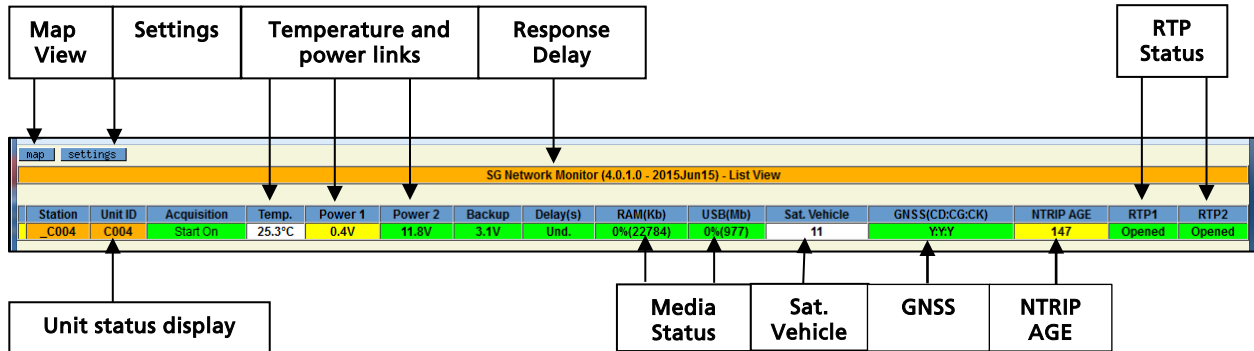
The **SGMonitor** map screen displays a map of unit locations on a map and their current status (Red, Green, and Yellow).

1. To check the status of an individual Trimble Kestrel System, select the **List** button..



7.2 SGMonitor List screen

The **SGMonitor** List screen shows the status summary of each Trimble Kestrel System. By selecting the bold letters in each status column it is possible to select and view a histogram for each particular status. The histogram includes the user-specified number of worth of status for a particular Trimble Kestrel System.



Station	Unit ID	Acquisition	Temp.	Power 1	Power 2	Backup
_D012	D012	Start On	27.3°C	15.1V	1.5V	3.7V
_D021	D021	Start On	27.1°C	15.6V	1.6V	3.7V
_D022	D022	Start On	27.2°C	12.3V	1.4V	3.7V

Delay(s)	RAM(Kb)	USB(Mb)	Sat. Vehicle
1	0%(23040)	1%(15680)	18
2	0%(23040)	0%(15680)	17
2	0%(23040)	0%(15680)	18

Sat. Vehicle	GNSS(CD:CG:CK)	NTRIP AGE	RTP1	RTP2
18	Y:Y:Y	Disabled	Opened	Opened
17	Y:Y:Y	Disabled	Opened	Opened
18	Y:Y:Y	270829	Opened	Opened

7.2.1 List View Status screen

The Unit Status screen shows an updated status report of settings for individual Trimble Kestrel System units. Tap within the **Unit ID** area to select a Trimble Kestrel System.

map
settings

Station	Unit ID	Acquisition	Temp.	Power 1	Power 2	Backup
_D012	D012	Start On	27.3°C	15.1V	1.5V	3.7V
_D021	D021	Start On	27.1°C	15.6V	1.6V	3.7V
_D022	D022	Start On	27.2°C	12.3V	1.4V	3.7V

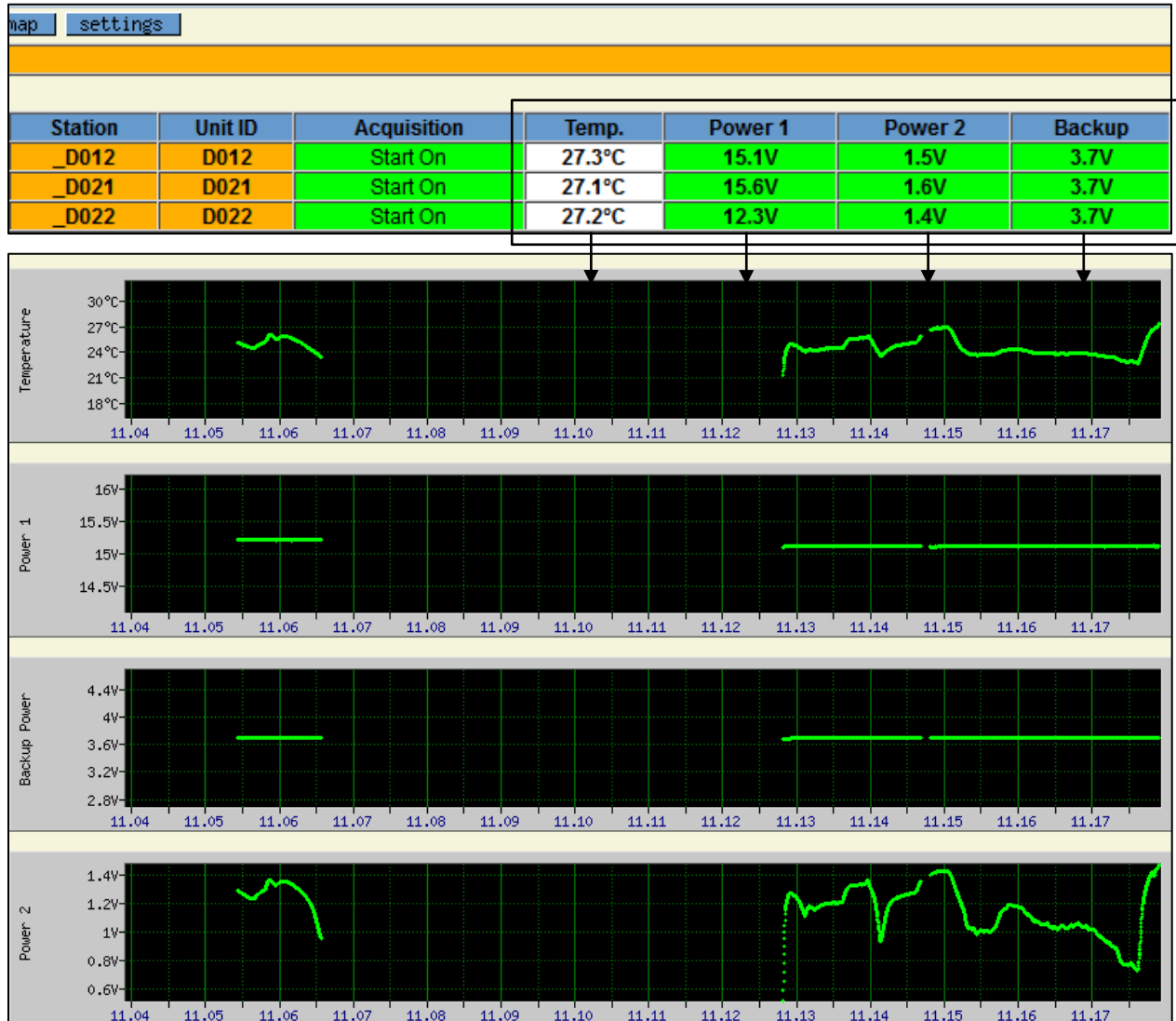
Open a window showing the updated status:

Status	Unit ID	Acquisition	Temp.	Power 1	Power 2	Backup	Delay(s)	RAM(DK)	US(MEM)	Sat. Vehicle	GNSS(MC/DG/CK)	R1(RPT) A/B	R1P1	R1P2																																																																																
D012	D012	Start On	27.3°C	15.1V	1.5V	3.7V	1	9522000	15115000	19	EWI	Disabled	Open	Open																																																																																
<div style="font-size: 6px;"> <p>CPU Version: wfy-EZX Ver 4.41 Build r1057 Jan 17 2014 10:23:56 on RVN-171 160-09 Version (release) 2014-11-12 11:18:03</p> <p>WiFi Version: Joined=0</p> <p>GNSS Receiver: Serial#12012908 Type#C920 Long Serial#120012908 NavVersion#04050340504 SigVersion#25004 BootTime#1</p> <p>GNSS Antenna: Serial Ch.L1R00 Local Long Serial Ch.Physical#220 BaseID#Descriptor#TRM57271 00 HCAE BA version#00764</p> <p>GNSS Channel: Ch.L1R00 Ch.Licable#52 Ch.Simultaneous#3</p> </div>																																																																																														
<div style="font-size: 6px;"> <p>States Type IP Port Count Open Data Valid Latitude Longitude Altitude</p> <p>Displacement Conn. Response 10.8.122.135 5019 Y Y 33.0122 -95.6903 177.887</p> <p>Reference Cloud Response 10.8.122.135 28001 Y Y 33.0121 -95.6903 177</p> <p>GNSS Conn.response 10.8.122.135 28002 Y</p> </div>																																																																																														
<div style="font-size: 6px;"> <p>Network Parameters (PH)</p> <p>Parameters IP Address IP Mask Gateway</p> <p>CPU Module Network 10.8.122.134 255.255.252.0 10.8.120.1</p> <p>GNSS Module Network 10.8.122.135 255.255.252.0 10.8.120.1</p> <p>Parameters IP Address IP Port</p> <p>RTP1 Module Network 172.15.0.7 2543 OR</p> <p>RTP2 Module Network 10.8.122.33 2543 OR</p> </div>																																																																																														
<div style="font-size: 6px;"> <p>Data Stream Parameters (PD)</p> <p>Recording Destination RTP1, RTP2, USB</p> <p>GNSS Rate 10 Hz</p> <p>Displacement Reference Configuration Latitude Longitude Altitude</p> <p>Antenna Height Antenna Type Antenna Group Measurement Method Antenna Serial Reference Serial</p> <p>0 Auto (0)Unknown External 0 (255) 0 0</p> </div>																																																																																														
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7.2.2 Temperature, Power and Backup power Histograms

This Trimble Kestrel System status screen displays views showing Backup power level (Volts), Temperature (C°) and Input power (Volts) to the Trimble Kestrel System over a time period (in hours).

Select within the **power** area to open the views.

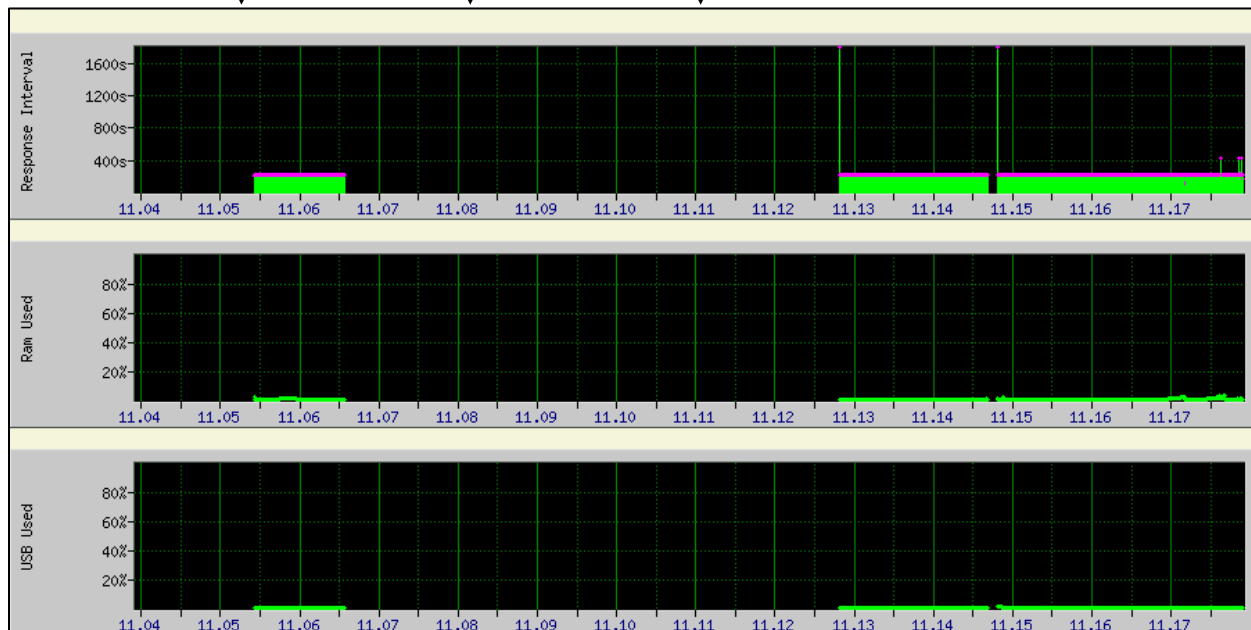


7.2.3 Media Status and Response Intervals Histograms

The media status displays shows the response interval (in seconds), amount of RAM used (as a % of total), and amount of USB space used over a 72 hour time period.

Select within the **RAM** area to open the media status displays.

Delay(s)	RAM(Kb)	USB(Mb)	Sat. Vehicle
1	0%(23040)	1%(15680)	18
2	0%(23040)	0%(15680)	17
2	0%(23040)	0%(15680)	18

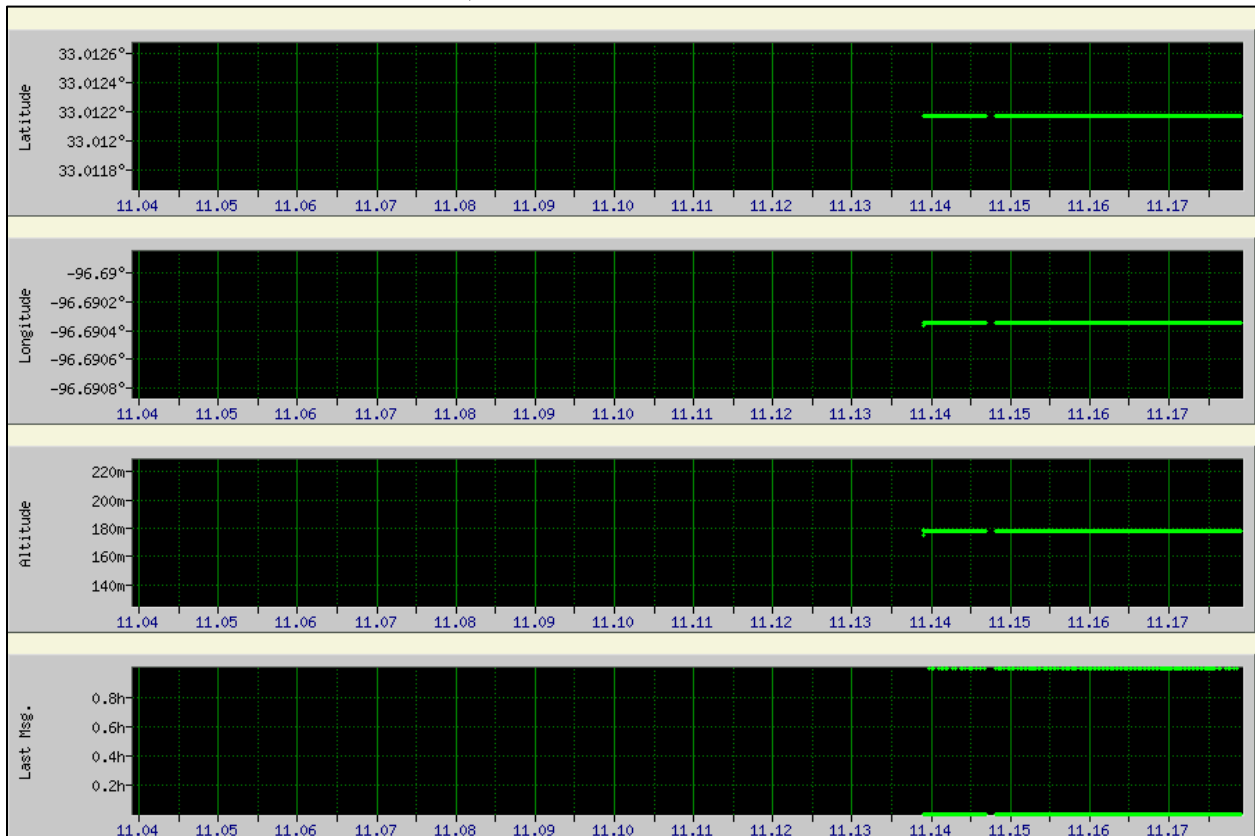


7.2.4 GNSS Status

The GNSS status displays GNSS clock status over a time period. The first figure shows the Altitude, Longitude and Latitude of the GNSS Unit for the individual Trimble Kestrel System over a number of hours.

Select the **GNSS** status area to display GPS parameters.

Sat. Vehicle	GNSS(CD:CG:CK)	NTRIP AGE	RTP1	RTP2
18	Y:Y:Y	Disabled	Opened	Opened
17	Y:Y:Y	Disabled	Opened	Opened
18	Y:Y:Y	270829	Opened	Opened



7.3 Settings Screen of SGMonitor

The Settings Screen allows the user to set the Green, Yellow, and Red limits to use. Also provided are map image parameters settings to adjust the **SGMonitor** Map View display.

To Set the Alarms from the Map View, List View, or Unit displays

1. Click on the **Settings** button in the upper-left hand corner of the web browser window.

The top section of the settings screen is known as the Alarm settings section. These settings control when the **SGMonitor** program will change each Trimble Kestrel System status indicator between Green, Yellow, and Red.

Parameters		Sms Log	Yellow Value	Red Value	Units
4	Input Voltage	<input type="checkbox"/>	1.3	0.1	Volts (0.0-20.0)
6	Backup Voltage	<input type="checkbox"/>	2.8	2.3	Volts (0.0-3.3)
	Delay (N)	<input type="checkbox"/>	2	4	N*RO_interval(0.0-10.0)
	RAM used	<input type="checkbox"/>	75	90	% (0-100)
8	USB used	<input type="checkbox"/>	60	80	% (0-100)
	NTRIP AGE	<input type="checkbox"/>	10	1000	Seconds (0.0-1000)
10	Reference Clock Last Msg.	<input type="checkbox"/>	10	30	Seconds (0.0-1000)
	Location Error	<input type="checkbox"/>	10	20	Meters (0-1000)

Submit Alarm Settings

Key	Field	Alarm Settings Description
1	SMS Log	If checked SMS messages are generated for the checked parameter and placed in a directory for delivery when the specified level occurs.
2	Yellow	The point at which SGMonitor will change its color indicator from Green to Yellow. Note the column on the far right is the unit column which also provides the acceptable value ranges for each parameter.
3	Red	The point at which SGMonitor will change its color indicator from Yellow to Red.
4	Input Voltage	When the Trimble Kestrel System value falls below these values the status indicator color is changed.
5	Backup Voltage	When the Trimble Kestrel System value falls below these values the status indicator color is changed.
6	Delay (N)	When the Trimble Kestrel System does not respond for N times the request interval (seconds) the status indicator color is changed.
7	RAM Used	When the Trimble Kestrel System value rises above these values (0-100% integer) the status indicator color is changed.
8	USB Used	When the Trimble Kestrel System value rises above these values (0-100% integer) the status indicator color is changed.
9	NTRIP Age	When the Trimble Kestrel System value rises above these values (0-100% integer) the status indicator color is changed.
10	Reference Clock Last Message	When the Trimble Kestrel System time since last GPS lock rises above these values the status indicator color is changed (Specified in hours, with 1 decimal place of resolution).
11	Location Error	When the Trimble Kestrel System units reported GPS position error rises above these values the status indicator color is changed (0-1000 Meters). As compared to the value stored in the Station Locations list below.

Note: These values will only be saved to the .ini file if the computer you are using is listed in the .ini as having permission to change these values. See the example ini file in each installation section.

7.3.1 Entering limits

1. Set a **Yellow** limit value for each Trimble Kestrel System parameter field, as shown below. When this value is exceeded that field will change to Yellow on the Map View display.
2. Set the **Red** limit value for each Trimble Kestrel System parameter field, as shown below. When this value is exceeded that field will change to Red on the main monitor display.
3. Select the **SMS Log** setting box to send a message to the designated folder.
4. Select the **Submit Alarm Settings** to saved the limits.

SG Network Monitor (4.0.1.0 - 2015Jun15) - Settings				
Parameters	Sms Log	Yellow Value	Red Value	Units
Input Voltage	<input type="checkbox"/>	1.3	0.1	Volts (0.0-20.0)
Backup Voltage	<input type="checkbox"/>	2.8	2.3	Volts (0.0-3.3)
Delay (N)	<input type="checkbox"/>	2	4	N*RO_interval(0.0-10.0)
RAM used	<input type="checkbox"/>	75	90	% (0-100)
USB used	<input type="checkbox"/>	60	80	% (0-100)
NTRIP AGE	<input type="checkbox"/>	10	1000	Seconds (0.0-1000)
Reference Clock Last Msg.	<input type="checkbox"/>	10	30	Seconds (0.0-1000)
Location Error	<input type="checkbox"/>	10	20	Meters (0-1000)

Submit Alarm Settings

7.3.2 Setting Station Location

SGMonitor uses the station location values submitted by the user to calculate the location error. The location error is the difference in location that the GPS is reporting to the Trimble Kestrel System. The user stored Station Location is used by **SGMonitor** for plotting the Trimble Kestrel System location in the **Map View**.

Note: If the user does not submit locations for a particular Trimble Kestrel System, that Trimble Kestrel System will report a location error and be in the "Red" warning condition.

Note: Station locations are stored in the station location file that is specified in the `rtppmonitor.ini` file in the following line:

```
SGMonitor.StationFile= C:\reftek\ringfolder
```

1. Enter a value for each field of a Trimble Kestrel System location.
2. Select the Submit arrow after each complete line is entered.

Station	Unit ID	Error (m)	GPS Latitude	GPS Longitude	GPS Altitude	Submit	STA Location
_D012	D012	9.7	33.012150	-96.690283	177.000000	->	33.012173 -96.690192 173.250000
_D021	D021	14.5	33.012167	-96.690350	177.000000	->	33.012167 -96.690200 173.000000
_D022	D022	2.7	33.012117	-96.690350	177.007067	->	33.012100 -96.690350 175.000000

Key	Field	Station Field Description
1	DAS UNIT	DAS ID
2	Error (m)	Currently calculated error
3	GPS Latitude	Per GPS status - User editable
4	GPS Longitude	Per GPS status - User editable
5	GPS Altitude	Per GPS status - User editable
6	Submit	Stores values from Lat, Long, and Alt fields for each DAS to the Station Location file.
7	STA Location	Currently stored location values.

Note: If not sighted, use the GPS position from the station submit, and monitor over time.

7.3.3 Entering Map Image parameters

The parameters from this section of the Settings display control the Map image size, level of zoom, and the default startup page display.

1. Enter map value to set the screen display for the **SGMonitor** Map View screen.
2. Select the **Submit Map Region** Parameters button to confirm the set

Stations Location	
GPS Longitude	GPS Altitude
-96.690283	177.000000
-96.690350	177.000000
-96.690350	177.007067

Map Image Parameters	
1	Map Image Horizontal size in pixels: 1200
2	Map Image Vertical size in pixels: 600
3	Central Latitude of Image in degrees: 33
4	Central Longitude of Image in degrees: -96
5	Map Scale (kilometers in one pixel): 3
6	Map view rotation angle in degrees: 0
7	Draw map mode: Fine
8	StartUp Page: List View

9 → Submit Map Region

Key	Map Image Parameter	Map Image Description
1	Map image horizontal size in pixels	Horizontal size for the map.png image file
2	Map image vertical size in pixels	Vertical size for the map.png image file
3	Central latitude of image in degrees	Controls the center point of the map region
4	Central longitude of image in degrees	Controls the center point of the map region
5	Map scale - kilometers in one pixel	Controls the size of the region that the map displays.
6	Map view rotation angle in degrees	Rotation angle of the map image
7	Draw map mode	Options are Fine , Good , and Draft . These affect quality and size of the map.png file.
8	Startup page	Options are List View or Map View . This controls the default page that the user will see when first connecting their Web browser to the SGMonitor server.
9	Submit Map Region	Button stores the parameters for the Map Image to the rtppmonitor.ini file.



8 Using High Resolution Maps

A low resolution map (globe.alt) is distributed with **SGMonitor**. High resolution maps are also available. Because of the size of the map files, these are not distributed with **SGMonitor**, but can be downloaded from the Internet for the user's region of interest.

8.1 Getting a High Resolution Map

There are two basic sets of high resolution map data that can be used with **SGMonitor**, one with 900 meter resolution and one with 90 meter resolution. Please view the README file contained in the links below for a list of coordinates.

8.1.1 900 Meter Resolution Maps

The 900 meter resolution map data is available from the following site:

ftp://topex.ucsd.edu/pub/srtm30_plus/

There are several other places on the Internet that provide this information. If this page is not available, you can do a search for **srtm30 data**.

The files from this site have names similar to the following:

e020n40.Bathmetry.srtm. Download the file containing the region of interest and place it in the **SGmonitor** directory. Then rename the file using the same primary name but with the "dem" extension. For example, rename e020n40.Bathmetry.srtm to E020N40.dem.

NOTE: Since names are case sensitive for Unix, use upper case in the file name and lower case in the extension.

8.1.2 90 Meter Resolution Maps

The 90 meter resolution map data is available from the following site:

http://dds.cr.usgs.gov/srtm/version2_1/SRTM3/

There are several places on the Internet that provide this information. If this page is not available, you can do a search for **srtm3 version2 data**.

The map files from this site have names similar to the following: N39E023.hgt.

However, the map file will most likely be in a zip file with a similar name.

Download the file containing the region of interest into the **rtpmonitor** directory.

Unzip the file if necessary.

8.2 Displaying a High Resolution Map

SGMonitor looks at the "Map Scale (kilometers in one pixel)" field under the MAP settings to determine which map it will use. **SGMonitor** will always use the default low resolution map file **globe.alt** if it cannot find any of the high resolution map files.

Map Scale Value	Map file used	Resolution
$X < 0.4$	*.dem	90 meters (3 secs)
$0.4 \leq X < 3.6$	*.hgt	900 meters (30 secs)
$3.6 \leq X$	globe.alt	3600 meters (2 minutes)

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10 Release Notes: Version 4.0.1.0 (June 15, 2015)

This section of this manual lists and describes the functional modifications made to the SGMonitor software version 0.0.0.4 to create version 4.0.1.0 follows:

1. SGMONITOR: Modification to Build 32 and 64 bit Platforms
2. SGMONITOR: Modification to Allow Spaces in Directory\Path

Please review all release notes between the firmware version you are running and the version you wish to install.

SGMONITOR: Modification to Build 32 and 64 bit Platforms

Modification to build programs for both 32 and 64 bit platforms.

SGMONITOR: Modification to Allow Spaces in Directory\Path

Modification to allow spaces to be used when specifying the directory\path names in the .ini file. Double Quotes are required when spaces are used.



11 Release Notes Version 0.0.0.4 (April 28, 2015)

This section of this manual lists the initial release of SGMonitor software version 0.0.0.4:

1. Initial Release



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