CYPRESS
ENVIROSYSTEMS

Blue Box Server

User Manual

For BETA Software 4.0

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1.0 Introduction

Thank you for purchasing the Cypress Envirosystems Blue Box Server (BBS), a core component of the Cypress Envirosystems Monitoring System. Please read this manual thoroughly before using the BBS.

2.0 Safety Precautions

- Do not expose the BBS to water.
- Do not try to repair yourself as it contains no user-serviceable parts. Contact a qualified service technician for repairs. See Section 10.0, Support, for details.

3.0 Description of BBS

The Cypress Envirosystems Blue Box Server, BBS, is a flexible industrial server that collects wireless data from various Cypress Envirosystems field devices and enables access to the readings from a variety of user interfaces. The BBS can be used as part of an overall existing infrastructure or as a stand alone station.

Figure 1. Blue Box Server

Through industry standard protocols, the data collected on the BBS can be connected to existing plant systems. The data can also be viewed from any computer on the intranet using a standard web browser.

3.1 Cypress Envirosystems Monitoring System

The Cypress Envirosystems Blue Box Server is part of the Cypress Envirosystems Monitoring System. This system can be setup one of two ways:

Figure 2. Cypress Envirosystems Monitoring System Setup Options

For users with existing plant databases and operator stations, the BBS can forward data seamlessly integrating with existing plant SCADA or IT infrastructure. This can be accomplished using a variety of open communication protocols (e.g. OPC, BACnet, web services). This configuration is depicted in Figure 2 as Option A.

For users who do not need to connect to an existing infrastructure, the BBS can also serve as a standalone Web Server and Text Message Server, shown in Figure 2 as Option B. Standard PC workstations can become operator stations simply by using any standard web browser. Alarm notifications can be sent via email or SMS to cell phones.

3.2 Related Products

Blue Box Servers can be used to communicate to and collect data from the following Cypress Envirosystems field devices:

- Wireless Gauge Readers (WGRs)
- Wireless Transducer Readers (WTRs)
- Wireless Steam Trap Monitors (WSTMs)
- Wireless Freezer Monitors (WFMs)
- Wireless Battery Monitors (WBMs)
- Wireless Range Extenders (WREs)

4.0 Setup Instructions

4.1 Components

The BBS comes with the following components:

BBS

Antennas

Power Cord

Connect the antennas to the back of the BBS as shown in Figure 3. Then connect the power cord. To turn on the BBS press the rocker switch highlighted in Figure 3.

Figure 3. BBS Power Switch Location

To change the receiver channel frequency, set the DIP switches accordingly.

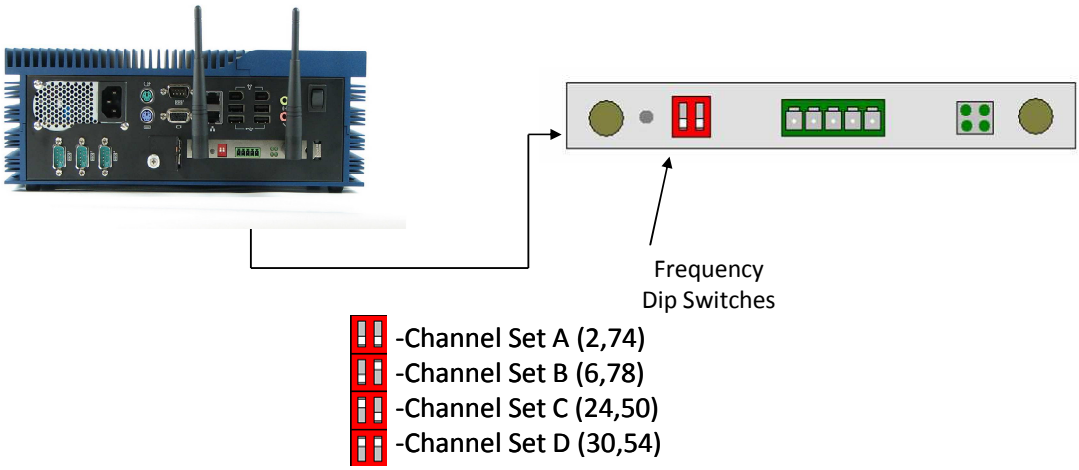


Figure 4. BBS Channel Frequency Configuration

5.0 Web Console

The Cypress Envirosystems Web Console is a browser-based program that enables a user to remotely monitor, configure, and review data from Cypress Envirosystems wireless field devices. This section explains how to read and edit data points, set up alerts and notifications, and graph and export data.

5.1 Starting the Program and General Navigation

To start the Cypress Envirosystems Web Console, open a Web browser, type in the IP address or name of the Blue Box Server, and click **Enter.**

The application opens by default to the **READINGS** page, which provides a summary of every data point, or *node*, in the system.

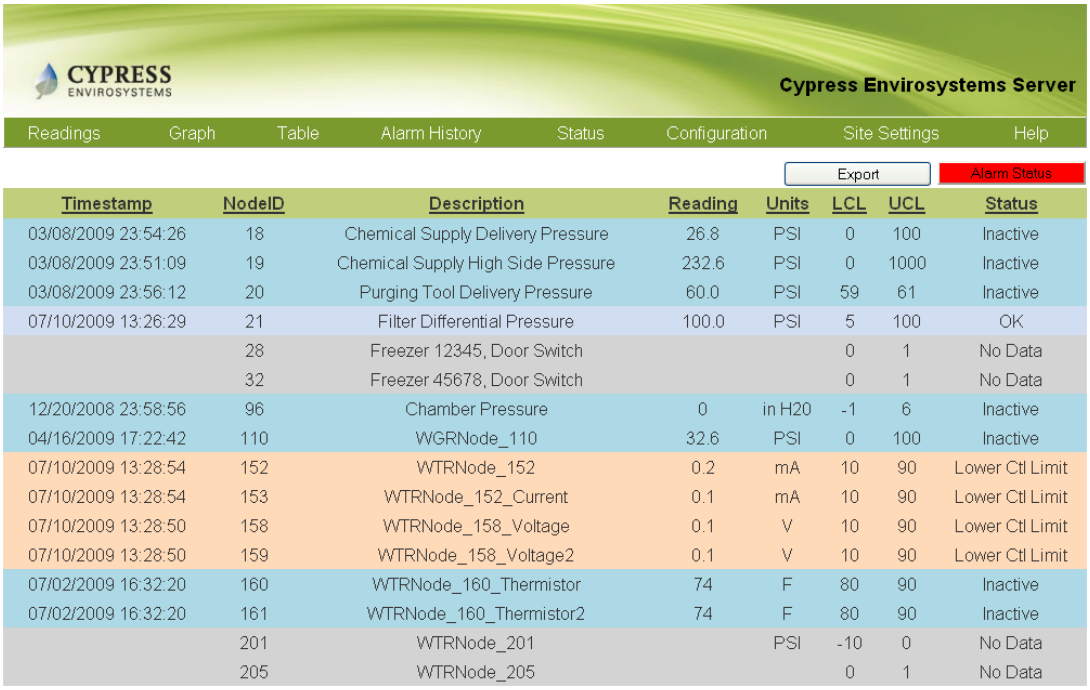
A Main Menu bar is located at the top of every page in the application with tabs that enable users to navigate through the different pages in the program. The BBS may be set up to receive data from multiple types of Cypress Envirosystems field devices. If multiple device types are configured, the various field devices will have separate **READINGS** pages. See Figure 5 below.

Figure 5. Cypress Envirosystems Web Console Main Menu Bar

Also on the top of every page is the **Alarm Status** button, as shown in Figure 6. The button is green if all node readings are within alarm limits. It turns red when a node reading has slipped above or below the preset alarm thresholds. (Read Section 5.6, Setting Up the Alarm, for more information on how to set up notifications and reset the alarm status.) By clicking on the Alarm Status button, users can view the alarm history and reset the alarms.

5.2 Readings Page

The **READINGS** page displays a summary of all node readings. The page also provides other detailed information, such as the time of the reading, as well as the upper and lower control limits and the status of a particular node. Figure 6 shows a sample **READINGS** page.



Timestamp	NodeID	Description	Reading	Units	LCL	UCL	Status
03/08/2009 23:54:26	18	Chemical Supply Delivery Pressure	26.8	PSI	0	100	Inactive
03/08/2009 23:51:09	19	Chemical Supply High Side Pressure	232.6	PSI	0	1000	Inactive
03/08/2009 23:56:12	20	Purging Tool Delivery Pressure	60.0	PSI	59	61	Inactive
07/10/2009 13:26:29	21	Filter Differential Pressure	100.0	PSI	5	100	OK
	28	Freezer 12345, Door Switch			0	1	No Data
	32	Freezer 45678, Door Switch			0	1	No Data
12/20/2008 23:58:56	96	Chamber Pressure	0	in H20	-1	6	Inactive
04/16/2009 17:22:42	110	WGRNode_110	32.6	PSI	0	100	Inactive
07/10/2009 13:28:54	152	WTRNode_152	0.2	mA	10	90	Lower Ctl Limit
07/10/2009 13:28:54	153	WTRNode_152_Current	0.1	mA	10	90	Lower Ctl Limit
07/10/2009 13:28:50	158	WTRNode_158_Voltage	0.1	V	10	90	Lower Ctl Limit
07/10/2009 13:28:50	159	WTRNode_158_Voltage2	0.1	V	10	90	Lower Ctl Limit
07/02/2009 16:32:20	160	WTRNode_160_Thermistor	74	F	80	90	Inactive
07/02/2009 16:32:20	161	WTRNode_160_Thermistor2	74	F	80	90	Inactive
	201	WTRNode_201		PSI	-10	0	No Data
	205	WTRNode_205			0	1	No Data

Figure 6. WGR and WTR READINGS page

5.2.1 Get Node Readings

To check node readings, click on **READINGS** in the Main Menu. The **READINGS** page appears with the following information:

- **Timestamp:** Time when the last reading was taken. This time is based on the BBS system clock.
- **NodeID:** Identification number that your service representative originally assigned to a node.
- **Description:** A brief description of the node, for example, “Emergency Generator” or “Water Inlet Pressure.”
- **Reading:** The most recent reading taken from the node. Your service representative configures the update rate when the system is installed.
- **Units:** Unit of measurement that applies to the reading.
- **LCL**: Lower control limit. When a node reading falls below this value, the system signals an alert. (See Section 5.6, Setting Up the Alarm)
- **UCL**: Upper control limit. When a node reading rises above this value, the system signals an alert. (See Section 5.6, Setting Up the Alarm)
- **Status:** Indicates the status of the node, for example, whether it is okay, inactive, or below or above acceptable limits. Values are: OK, Inactive, Error, Lower Ctl Limit, Upper Ctl Limit.

Based on the status, individual rows are also highlighted to provide an extra visual cue. Table 1 provides a detailed description of each status and the highlighted color.

Row Color	Indication	Description
None	OK	The node is functioning normally. This is the default status of the node.
Red	Error	An error message is reported by field device, indicating that the field device could not obtain a reading.
Blue	Inactive	The field device has stopped sending data to the BBS.
Gray	No Data	The field device has been configured on the BBS, but no data has ever been sent from that field device.
Yellow	Verify	Node readings have not changed in past 2 days. By default this feature is disabled. To enable this feature contact Cypress Envirosystems field service group by sending an email to cys_support@cypress.com
	Low Battery	Battery level is below 70%. Please contact cys_support@cypress.com to schedule battery replacements.
Orange	Upper Ctl Limit	The reading exceeded the UCL for the node set by the user.
	Lower Ctl Limit	The reading dropped below the LCL for the node set by the user.

Table 1. Status Column Details

Tip: Similar to standard web pages, the Cypress Envirosystems Web Console pages are static. To get a new value on a reading, reload the page by clicking **F5** on the keyboard or the **Reload** button on the browser.

5.2.2 Sort Readings

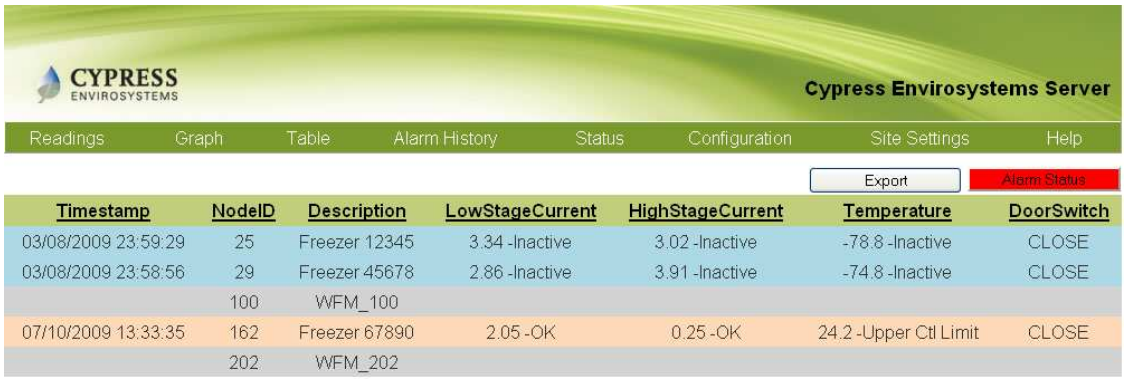
A column of readings can be sorted in ascending or descending order by clicking on any column heading that is underlined. The system does not save sorts, however, and reverts back to the default view when the page reloads.

5.3 Other Readings Pages

Depending on the type of field device used, the **READINGS** page may look different. WGRs and WTRs share the same **READINGS** page and the data is displayed as shown in Figure 6. Figure 7 and Figure 8 show examples of what the WSTM and WFM readings pages look like.

Timestamp	NodeID	Description	InletTemp(C)	OutletTemp(C)	DeltaTemp(C)
03/08/2009 23:48:49	1	Steam Trap 1	156.7 -Inactive	120.0 -Inactive	36.8 -Inactive
03/08/2009 23:53:14	4	Steam Trap 2	143.0 -Inactive	97.8 -Inactive	45.2 -Inactive
03/08/2009 23:59:22	7	Steam Trap 3	146.4 -Inactive	96.3 -Inactive	50.1 -Inactive
07/10/2009 13:34:47	154	WSTM_154	20.7 -OK	21.3 -OK	0.6 -Lower Ctl Limit
	206	WSTM_206			

Figure 7. The Wireless Steam Trap Monitor (WSTM) READINGS Page



Timestamp	NodeID	Description	LowStageCurrent	HighStageCurrent	Temperature	DoorSwitch
03/08/2009 23:59:29	25	Freezer 12345	3.34 -Inactive	3.02 -Inactive	-78.8 -Inactive	CLOSE
03/08/2009 23:58:56	29	Freezer 45678	2.86 -Inactive	3.91 -Inactive	-74.8 -Inactive	CLOSE
	100	WFM_100				
07/10/2009 13:33:35	162	Freezer 67890	2.05 -OK	0.25 -OK	24.2 -Upper Ctl Limit	CLOSE
	202	WFM_202				

Figure 8. Wireless Freezer Monitor (WFM) READINGS Page

5.4 Configuring Nodes

Nodes can be added, deleted, and edited on the **CONFIGURATION** page. The **CONFIGURATION** page is password protected; access is restricted to the system administrator.

5.4.1 Access Node Configurations Page

To access the Node Configuration screen:

1. **Click the CONFIGURATION menu tab in the Main Menu bar.**
   A dialog box, shown in Figure 9, appears asking for a user name and password.

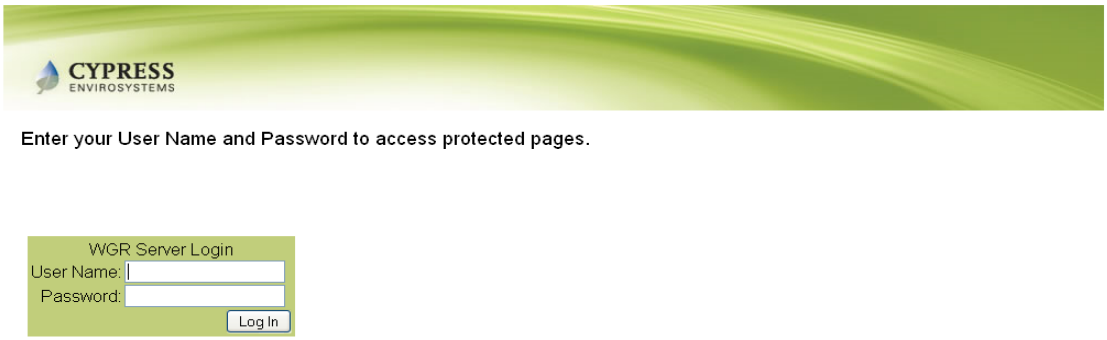
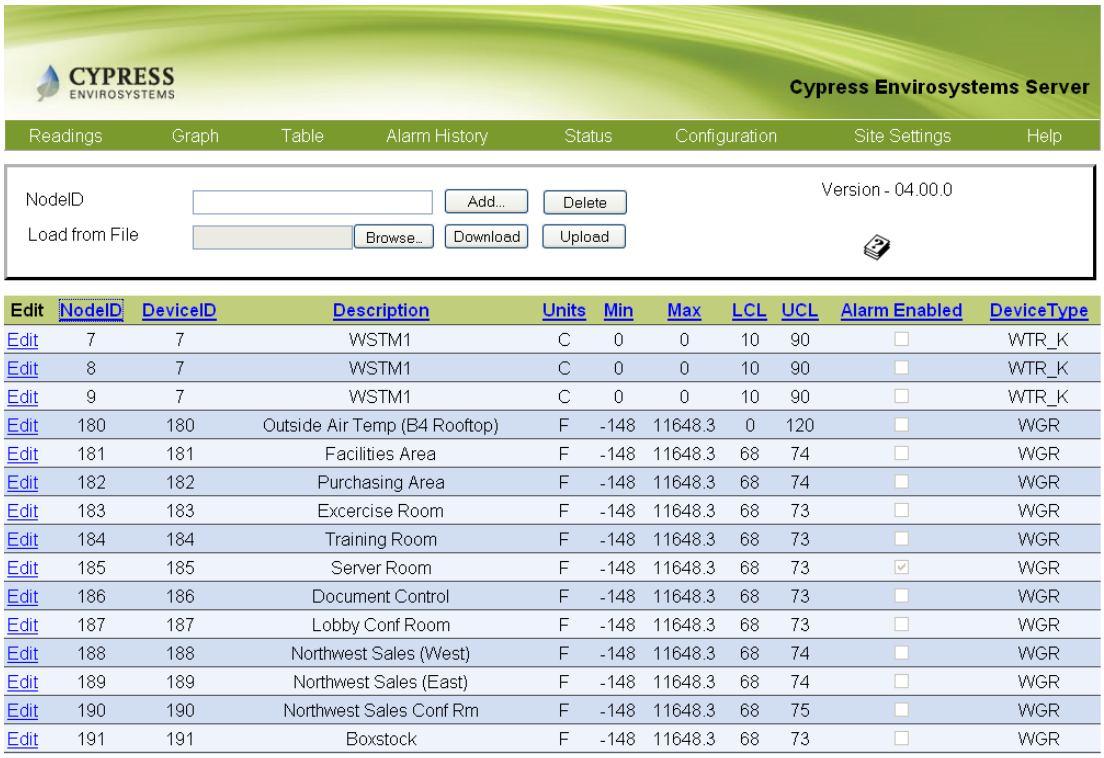


Figure 9. Administrator login page

2. **In the dialog box, enter a user name and password, and click Log In.**
   The configuration page appears, as shown in Figure 10. The page has two clearly defined sections: a top section, used to add and delete individual or multiple nodes, and a bottom section that displays all the nodes in the system that are visible to the server.



Edit	NodeID	DeviceID	Description	Units	Min	Max	LCL	UCL	Alarm Enabled	DeviceType
Edit	7	7	WSTM1	C	0	0	10	90	☐	WTR_K
Edit	8	7	WSTM1	C	0	0	10	90	☐	WTR_K
Edit	9	7	WSTM1	C	0	0	10	90	☐	WTR_K
Edit	180	180	Outside Air Temp (B4 Rooftop)	F	-148	11648.3	0	120	☐	WGR
Edit	181	181	Facilities Area	F	-148	11648.3	68	74	☐	WGR
Edit	182	182	Purchasing Area	F	-148	11648.3	68	74	☐	WGR
Edit	183	183	Excercise Room	F	-148	11648.3	68	73	☐	WGR
Edit	184	184	Training Room	F	-148	11648.3	68	73	☐	WGR
Edit	185	185	Server Room	F	-148	11648.3	68	73	☑	WGR
Edit	186	186	Document Control	F	-148	11648.3	68	73	☐	WGR
Edit	187	187	Lobby Conf Room	F	-148	11648.3	68	73	☐	WGR
Edit	188	188	Northwest Sales (West)	F	-148	11648.3	68	74	☐	WGR
Edit	189	189	Northwest Sales (East)	F	-148	11648.3	68	74	☐	WGR
Edit	190	190	Northwest Sales Conf Rm	F	-148	11648.3	68	75	☐	WGR
Edit	191	191	Boxstock	F	-148	11648.3	68	73	☐	WGR

Figure 10. Main CONFIGURATION page

5.4.2 Add or Delete a Node

The dialog box in the top section of the **CONFIGURATION** page enables a user to add or delete nodes, as shown in Figure 11.

Figure 11. The upper dialog box in the CONFIGURATION page

Every Cypress Envirosystems field device is configured with a NodeID. Field devices are configured using the handheld configuration tool. Once configured, the field device will start transmitting data. The BBS must then be configured to collect data for that device. To add a node, enter the Node ID for the field device and press the Add button. This will bring up a pop-up dialog box, shown in Figure 12. This dialog box will allow you to edit the node settings. Please see the "Edit a Node" section below for details.

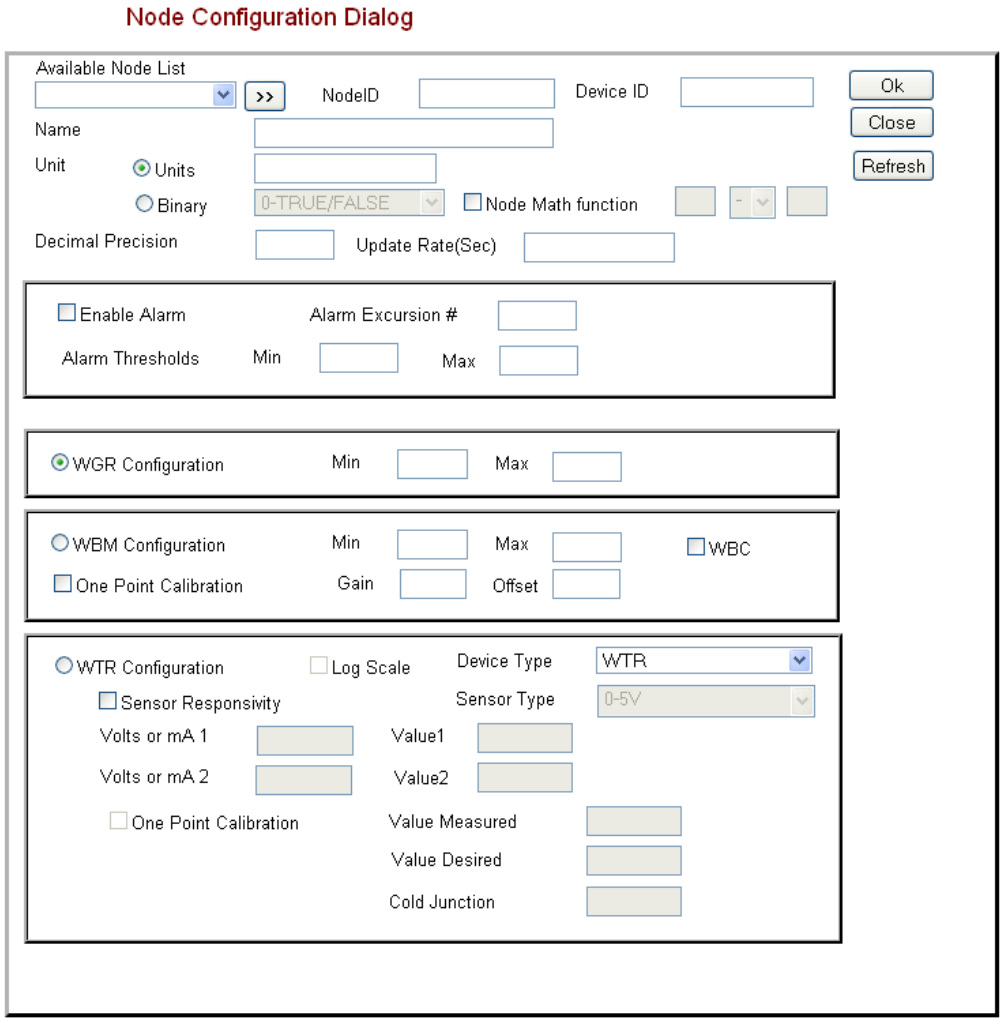
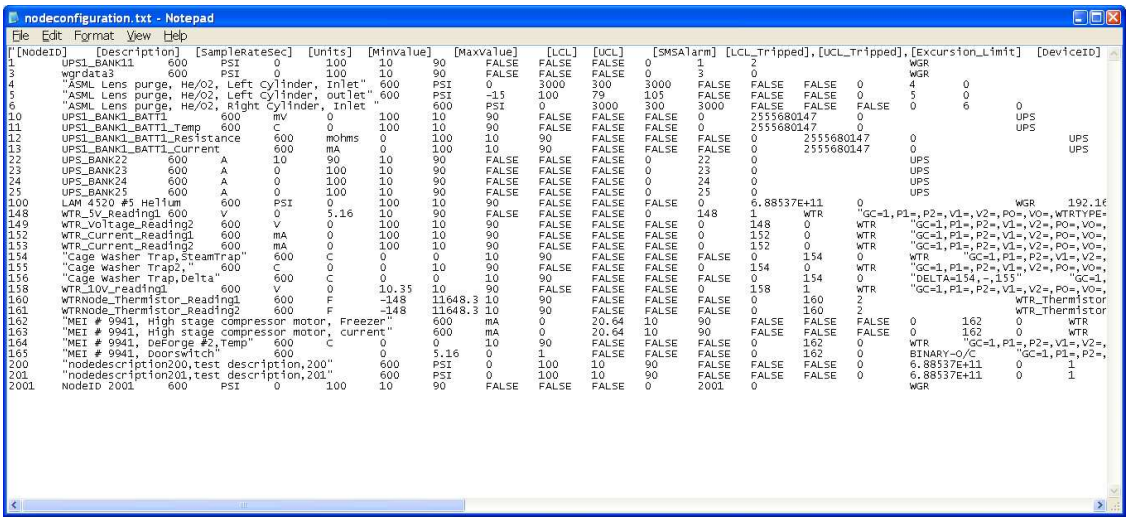


Figure 12. Node Configuration pop-up dialog box

An alternate method is available, and can be more convenient to setup multiple nodes. Simply enter the node information to the Nodeconfiguration.txt file. This file is a tab-separated text file that lists all the configuration parameters. An example file is shown in Figure 13. Use the "Load from File" section of the

dialog box, shown in Figure 11, to find the configuration file. Use the Upload button to upload nodes and parameters from the configuration file.



[NodeID]	[Description]	[SampleRateSec]	[Units]	[MinValue]	[MaxValue]	[LCL]	[UCL]	[SMSAlarm]	[LCL_Tripped]	[UCL_Tripped]	[Excursion_Limit]	[DeviceID]	
1	UPS1_BANK11	600	PSI	0	100	10	90	FALSE	FALSE	FALSE	0	1	2
3	wgrdata3	600	PSI	0	100	10	90	FALSE	FALSE	FALSE	0	3	0
4	"ASML Lens purge, He/O2, Left Cylinder, Inlet"	600	PSI	0	3000	300	3000	FALSE	FALSE	FALSE	0	4	0
5	"ASML Lens purge, He/O2, Left Cylinder, outlet"	600	PSI	-15	100	79	105	FALSE	FALSE	FALSE	0	5	0
6	"ASML Lens purge, He/O2, Right Cylinder, Inlet "	600	PSI	0	3000	300	3000	FALSE	FALSE	FALSE	0	6	0
10	UPS1_BANK1_BATT1	600	mV	0	100	10	90	FALSE	FALSE	FALSE	0	2555680147	0
11	UPS1_BANK1_BATT1_Temp	600	C	0	100	10	90	FALSE	FALSE	FALSE	0	2555680147	0
12	UPS1_BANK1_BATT1_Resistance	600	mOhms	0	100	10	90	FALSE	FALSE	FALSE	0	2555680147	0
13	UPS1_BANK1_BATT1_Current	600	mA	0	100	10	90	FALSE	FALSE	FALSE	0	2555680147	0
22	UPS_BANK22	600	A	10	90	10	90	FALSE	FALSE	FALSE	0	22	0
23	UPS_BANK23	600	A	0	100	10	90	FALSE	FALSE	FALSE	0	23	0
24	UPS_BANK24	600	A	0	100	10	90	FALSE	FALSE	FALSE	0	24	0
25	UPS_BANK25	600	A	0	100	10	90	FALSE	FALSE	FALSE	0	25	0
100	LAM 4520 #5 Helium	600	PSI	0	100	10	90	FALSE	FALSE	FALSE	0	6.88537E+11	0
148	WTR_5V_Reading1	600	V	0	5.16	10	90	FALSE	FALSE	FALSE	0	148	1
149	WTR_Voltage_Reading2	600	V	0	100	10	90	FALSE	FALSE	FALSE	0	148	0
152	WTR_Current_Reading1	600	mA	0	100	10	90	FALSE	FALSE	FALSE	0	152	0
153	WTR_Current_Reading2	600	mA	0	100	10	90	FALSE	FALSE	FALSE	0	152	0
154	"Cage Washer Trap,SteamTrap"	600	C	0	0	10	90	FALSE	FALSE	FALSE	0	154	0
155	"Cage Washer Trap2,"	600	C	0	0	10	90	FALSE	FALSE	FALSE	0	154	0
156	"Cage Washer Trap,Delta"	600	C	0	0	10	90	FALSE	FALSE	FALSE	0	154	0
158	WTR_10V_reading1	600	V	0	10.35	10	90	FALSE	FALSE	FALSE	0	158	1
160	WTRNode_Thermistor_Reading1	600	F	-148	11648.3	10	90	FALSE	FALSE	FALSE	0	160	2
161	WTRNode_Thermistor_Reading2	600	F	-148	11648.3	10	90	FALSE	FALSE	FALSE	0	160	2
162	"MEI # 9941, High stage compressor motor, Freezer"	600	mA	0	20.64	10	90	FALSE	FALSE	FALSE	0	162	0
163	"MEI # 9941, High stage compressor motor, current"	600	mA	0	20.64	10	90	FALSE	FALSE	FALSE	0	162	0
164	"MEI # 9941, DeForge #2,Temp"	600	C	0	0	10	90	FALSE	FALSE	FALSE	0	162	0
165	"MEI # 9941, Doorswitch"	600		0	5.16	0	1	FALSE	FALSE	FALSE	0	162	0
200	"nodedescription200,test description,200"	600	PSI	0	100	10	90	FALSE	FALSE	FALSE	0	6.88537E+11	0
201	"nodedescription201,test description,201"	600	PSI	0	100	10	90	FALSE	FALSE	FALSE	0	6.88537E+11	0
2001	NodeID 2001	600	PSI	0	100	10	90	FALSE	FALSE	FALSE	0	2001	0

Figure 13. Example Nodeconfiguration.txt (tab-separated) file

To delete a node, enter the NodeID in the dialog box shown in Figure 11 and click on the Delete button. WARNING: This action will delete the node and all associated data.

5.4.3 Edit a Node

To edit an existing node, go to the table in the lower half of the **CONFIGURATION** page. Click the Edit button in the far right column next to the node. This will launch the Node Configuration pop-up dialog box, as shown in Figure 12.

Table 2 describes the node configuration parameters in the dialog box. After editing the parameters, click the **Ok** button to save the newly edited fields. To cancel the edits, simply click on the **Close** button to close the dialog box without saving.

To see the change log of the nodes that have been added/deleted/edited, click on the  icon.

Node Config Parameters	Description
Available Node List	Nodes that can be seen by the BBS but have not been configured for data collection
NodeID	NodeID of the Cypress Envirosystems field device
Device ID	A unique identifier for a WTR, WFM, or WSTM device. The default value is the NodeID number.
Name	A basic description of the node
Unit	Unit of measurement for each field device. The user will either specify the type of measurement such as PSI, H2O, Inch, LBS, or a binary type (TRUE/FALSE, ON/OFF, ACTIVE/INACTIVE, OPEN/CLOSE, or CLOSE/OPEN). In case of Binary unit type the Unit column display is empty in the Readings page.

Node Detail	If a binary value was used in the “Unit” column, the type of binary is displayed in this column. Additionally, in applications requiring a delta reading between two existing nodes a virtual delta node can be configured. Values for the delta nodes are computed based on the delta logic specified and are updated whenever the existing nodes change.
Node Math function	A node can be defined to calculate the sum or difference between two other nodes. Enter Node1 and Node2 that will be used to calculate the reading for Node3. This calculation is used to determine the differential temperature for a steam trap node. E.g. Node3 = Node1-Node2
Decimal Precision	Precision is used to set the number of decimal places to display on the readings page. If no precision is used, decimal places will be displayed depending on how large or small the reading value is at the time.
Update Rate	The sample rate of the field device, in seconds
Enable Alarm	This field enables alarm notification for the node. If a limit is exceeded, and the Enable Alarm box is checked for the node, an SMS text message and/or email will be sent to all configured alarm recipients.
Alarm Excursion #	The number of consecutive times the node data limit has is exceeded before an SMS and/or email notification is sent (only works when Enable Alarm is checked)
Min Alarm Threshold	The lowest allowable value. If the node reading drops below this number, an alarm condition is created.
Max Alarm Threshold	The highest allowable value. If the node reading rises above this number, an alarm condition is created.
WGR Configuration	Select this radio button if configuring a WGR node
WGR Min	Minimum gauge value for the WGR
WGR Max	Maximum gauge value for the WGR
WBM Configuration	Select this radio button if configuring a WBM node
WBM Min	Minimum WBM value
WBM Max	Maximum WBM value
WBC	Check this box if configuring a battery current monitor node
WBM One-Point Calibration, Gain, Offset	Used to calibrate the WBM thermocouple
WTR Configuration	Select this radio button if configuring a WTR type node (including WFM, WSTM)
WTR Log Scale	Select this check box if the reading needs to be calculated in Log scale
WTR Device Type	Select the proper WTR device type. Options are WTR, WFM, WSTM.
WTR Sensor Type	Select this to specify the right sensor type. Options are 0-5V, 0-10V, 0-20mA, Thermocouple Type K, OPT1-2, Thermistor. E.g. For a WFM, Reading1 is current sensor1 and sensor type is OPT1-2, Reading2 is current sensor2 and the sensor type is OPT1-2, Reading3 is Thermocouple and sensor type is Thermocouple Type-K, Reading4 is door switch, can be set to OPT1-2. For Binary unit type sensor type is ignored.

Sensor Responsivity - Volts or mA 1, Volts or mA 2, Value1, Value2	Select this to calculate slope and intercept values in y = mx+B Enter these readings for calculating the slope and intercept. This will be used later to calculate the Min and Max values and engineering reading. These can be either be taken from the data sheet or the actual reading from the device. E.g. For WTR type 0-10 V, Volts1 = 0, Volts2 =10.35, Value1 = 0.0001, Value2 = 1000
WTR One-Point Calibration	Check this box if a 1 point calibration can be done. This is typically used for calibrating thermocouples.
WTR One Point Calibration – Value Measured, Value Desired, Cold junction	Use this to apply the offset correction value to the ADC readings. E.g. Temp measured might be 40°C. The user believes the correct temp is 45°C. Enter the inputs here to calculate the gain constant (correction factor) that is used internally for the correction.

Table 2. Node configuration details

5.5 Battery and Signal Strength Status

The Cypress Envirosystems wireless field devices will periodically transmit battery status and signal strength back to the BBS. The battery status can be viewed by looking at the **STATUS** page. This read-only screen, shown in Figure 14, displays the status of configured nodes on the server. The RSSI column shows the signal strength of the last hop for each node.

Timestamp	NodeID	Description	BatteryStatus(%)	RSSI
7/10/2009 2:26:35 PM	21	Filter Differential Pressure	100	31
7/10/2009 2:43:26 PM	152	WTRNode_152	100	23
7/10/2009 2:43:26 PM	153	WTRNode_152_Current	100	23
7/10/2009 2:44:19 PM	154	WSTM_154	100	24
7/10/2009 2:28:20 PM	158	WTRNode_158_Voltage	100	31
7/10/2009 2:28:20 PM	159	WTRNode_158_Voltage2	100	31
7/2/2009 4:27:22 PM	160	WTRNode_160_Thermistor	100	23
7/2/2009 4:27:22 PM	161	WTRNode_160_Thermistor2	100	23
7/10/2009 2:43:17 PM	162	Freezer 67890	100	31

Figure 14. Battery and Signal Strength Status

5.6 Setting up the Alarm

One of the benefits of Cypress Envirosystems Web Console is it immediately alerts you to potential problems as they arise in your facility. The system triggers an alarm when a node reading climbs above an upper control limit, drops below a lower control limit, or the battery level goes below 70%. When an alarm is triggered, two things happen:

- The Alarm Status button turns red.

- The system sends out alerts via SMS text message and optionally email to everyone on the notification list.

Only devices that are capable of receiving SMS text messages will receive text alarms. Also keep in mind that once an alarm is triggered, it needs to be reset it before the system can send another alarm for that node.

5.6.1 Configure Alarm Notifications

Alarm notifications can be sent via text message and optionally email. Before setting up the notifications go into the **CONFIGURATION** page and do the following:

1. **Check the Enable Alarm box for the nodes to be monitored.**
   This tells the system to send an email or text message only when these particular nodes go into an alarm state.
2. **Enter a value for Alarm Excursion #.**
   Small fluctuations can cause readings to spike. This value sets the consecutive number of times a reading exceeds a limit before the system triggers an alarm.

Once those values are set, follow these steps to configure the alarm notification:

1. **Click SITE SETTINGS in the Main Menu.**
   Dialog box appears asking for a user name and password. If the password was entered in the last 20 minutes to access a restricted page, the dialog box will not re-appear.
2. **Enter the admin user name and password, and click Log In.**
   Site Settings page appears. The screen contains two sections. The top section is for those who want to configure their own internal SMTP Server. The lower section is for entering phone number and email addresses. Most systems are set up to use the Internet to send alerts.

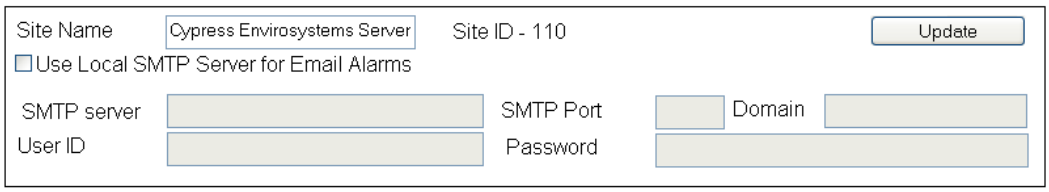


Figure 15. Site Settings page, SMTP Server configuration section

3. **In the "Alarm Recipients" box, enter a phone number, name, and email address, shown in Figure 16 below.**
   Note, the phone number is a required field, so it cannot be left blank. The phone number is a 10-digit number that includes an area code and a "1" prefix.
4. **Click Add.**
   System saves the data. The information displays below the dialog box.
5. **Repeat steps 3 & 4 to add additional names.**
   The system can be set up to send alerts to several people.
6. **Click Edit or Delete next to an entry to make changes.**
   Changes can be made directly to an entry by clicking Edit.
7. **Click Update to save the changes.**
   When done editing an alarm recipient, make sure to click Update at the left of the edit line to save the changes.

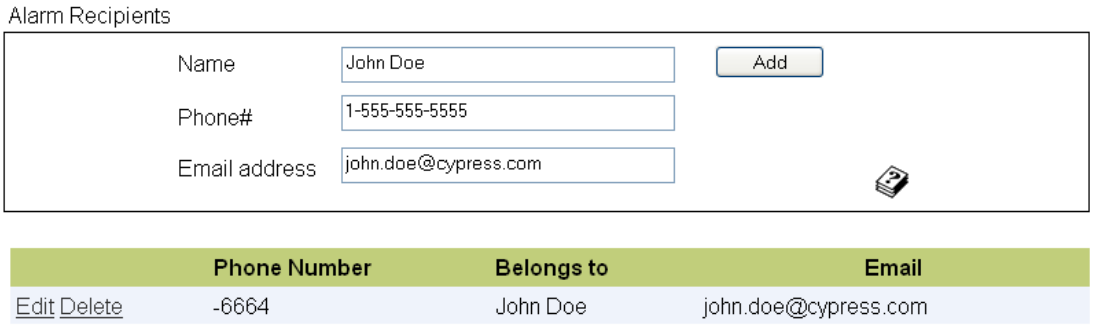


Figure 16. Alarm Recipients dialog box

Tip: Click on the  icon in the "Alarm Recipients" box to view a log of recent changes in entries.

5.7 View Alarm History

To view a history of all past alarms in the system, click on the **ALARM HISTORY** menu item, or click the Alarm Status button to bring up the **ALARM HISTORY** page. By default the system shows the last two hours for all nodes. The time period and the nodes for alarm history can be specified by using the dialog box at the top of the page, as shown in Figure 17.

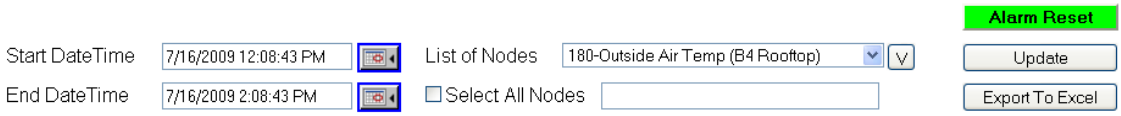


Figure 17. Alarm History dialog box

To specify an alarm history:

1. **In the dialog box, shown in Figure 17, enter a value for Start Date Time and End Date Time.**
   The format is m/dd/yyyy h:mm:ss AM/PM
2. **Select nodes to view.**
   Use the pull-down menu in the List of Nodes field or check the box next to Select All Nodes. Once you select a node using the List of Nodes pull-down menu, you must click the small carrot next to the field to accept the section. Select All Node enters all nodes in the system.
3. **Click Update to accept the changes and view history.**
   The alarm history displays at the bottom of the screen, shown in Figure 18.
4. **To export the data, click Export to Excel.**
   The system creates and downloads the data in an Excel format.

Timestamp	NodeID	Description	MinValue	MaxValue	LCL	UCL	Reading	Units	Above_UCL	Below_LCL	BatteryStatus
07/10/2009 14:28:20	159	WTRNode_158_Voltage2	0	100.2907	10	90	0.05	V		TRUE	100
07/10/2009 14:28:20	158	WTRNode_158_Voltage	0	100.2907	10	90	0.07	V		TRUE	100
07/10/2009 14:13:37	153	WTRNode_152_Current	0	100	10	90	0.12	mA		TRUE	100
07/10/2009 14:13:37	152	WTRNode_152	0	100	10	90	0.17	mA		TRUE	100
07/10/2009 13:58:35	159	WTRNode_158_Voltage2	0	100.2907	10	90	0.04	V		TRUE	100
07/10/2009 13:58:35	158	WTRNode_158_Voltage	0	100.2907	10	90	0.06	V		TRUE	100
07/10/2009 13:43:48	153	WTRNode_152_Current	0	100	10	90	0.12	mA		TRUE	100
07/10/2009 13:43:48	152	WTRNode_152	0	100	10	90	0.17	mA		TRUE	100
07/10/2009 13:28:50	159	WTRNode_158_Voltage2	0	100.2907	10	90	0.06	V		TRUE	100
07/10/2009 13:28:50	158	WTRNode_158_Voltage	0	100.2907	10	90	0.06	V		TRUE	100

Figure 18. Alarm History page

5.7.1 Reset the Alarm

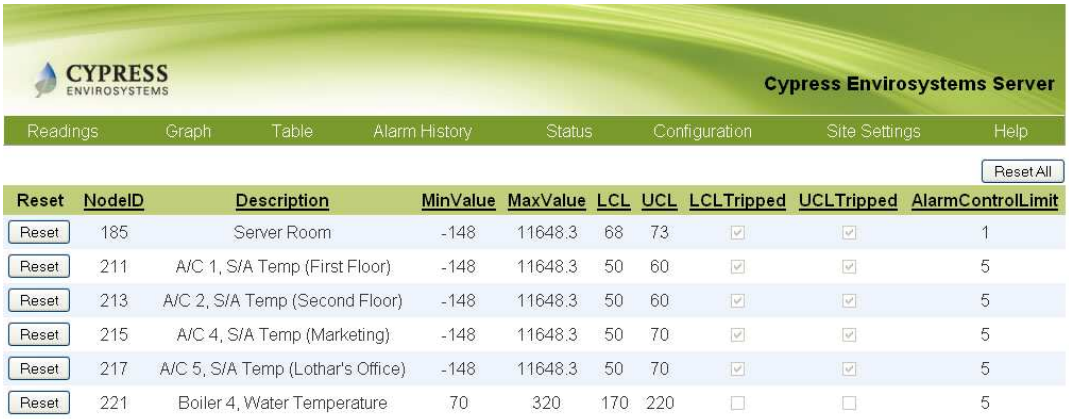
Once an alarm is triggered, it must be reset to receive new alarm messages for that node. This is designed so that an alarm notification recipient does not receive an alarm message every time a new out-of-limit reading is obtained.

To reset all alarms:

1. **Click the red Alarm Status button from any page in the Main Menu.**
   This displays the Alarm History page. A green Alarm Reset button is located at the top of this page.
2. **Click the green Alarm Reset button.**
   This loads the Alarm Reset page.
3. **Click the Reset All button.**
   This resets the alarm for all the nodes.

To reset alarms for individual nodes:

1. **Click the red Alarm Status button from any page in the Main Menu.**
   This displays the Alarm History page. A green Alarm Reset button is located at the top of this page.
2. **Click the green Alarm Reset button.**
   This loads the Alarm Reset page, shown in Figure 19.
3. **Find the node in the list and click the Reset button.**
   This resets both the upper and lower alarm limits.



Reset	NodeID	Description	MinValue	MaxValue	LCL	UCL	LCLTripped	UCLTripped	AlarmControlLimit
Reset	185	Server Room	-148	11648.3	68	73	☑	☑	1
Reset	211	A/C 1, S/A Temp (First Floor)	-148	11648.3	50	60	☑	☑	5
Reset	213	A/C 2, S/A Temp (Second Floor)	-148	11648.3	50	60	☑	☑	5
Reset	215	A/C 4, S/A Temp (Marketing)	-148	11648.3	50	70	☑	☑	5
Reset	217	A/C 5, S/A Temp (Lothar's Office)	-148	11648.3	50	70	☑	☑	5
Reset	221	Boiler 4, Water Temperature	70	320	170	220	☐	☐	5

Figure 19. Alarm Reset page

5.8 Querying the System Remotely

You can use your SMS text messaging device to remotely query data on the system or to reset the alarm for a particular node ID. Before you begin, you must first authorize your device by adding its phone number to the notification list on the **SITE SETTINGS** page. (See Section 5.6, Setting Up the Alarm.) Once the device is authorized, the BBS will recognize text messages from the device. Choose from the commands in Table 3 below to query the server, sending a text message to 32075 in the United States, or 447786204951 outside the United States.

Command*	Function
CYWGR ?AS?SiteID#,NodeID	Find Node status for specified NodeID
CYWGR ?TR?SiteID#,NodeID	Get Node reading for specified NodeID
CYWGR ?AR?SiteID#,NodeID	Reset Alarm for specified NodeID
CYWGR ?TH?SiteID#,NodeID,hh	Get Node history for specified NodeID in Last hh Hour
CYWGR ??SiteID	SMS command Help

* There is only a space between CYWGR and ?

Table 3. SMS Query commands

5.9 Graphs

Graphs are a good way to present data and often make it easier to understanding large data sets or spot trends. The Cypress Envirosystems Web Console enables a user to easily extract information on node readings and plot them out on colored graphs.

5.9.1 Create a Graph

To generate a graph from one or more node readings:

1. **Click on GRAPHS in the Main Menu**.
   The graph page appears. It includes two sections: a dialog box at the top, shown in Figure 20, and a graph portion at the bottom.

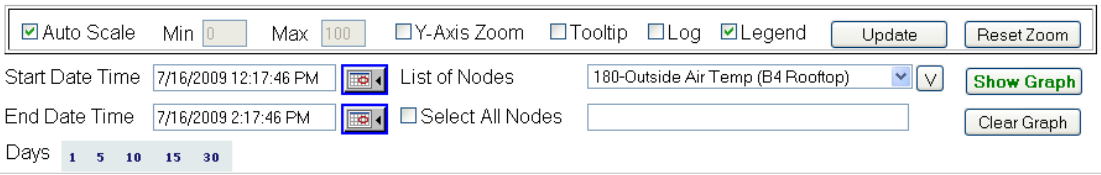


Figure 20. Graph Page dialog box

2. **In the graph dialog box, enter values for Start Date Time and End Date Time.**
   The format includes both date and time as m/dd/yyyy hh:mm:ss AM/PM. By default, the system shows the last two hours. 1, 5, 10, 15, and 30 days can also be selected.
3. **Specify the node IDs you want to graph in the "NodeID for Graph" field**.
   Nodes can be selected individually using the List of Nodes drop down list, enter node IDs manually, or check the box next to Select All Nodes. For example, the nodes can be listed as 1 or 1,2,5,9 or 1-5, 9, 20. Clicking Select All Nodes will load all the nodes into the **NodeID for Graph** field.

Tip: When selecting a node using the drop down list, click the small carrot button next to the field to complete the selection.

4. **Select from the following additional options:**

Auto Scale	The graph will automatically scale based on values it depicts. By default, this is selected. To turn off auto scale, uncheck the checkbox, and the "Min" and "Max" fields will enable.
Min	If Auto Scale is turned off, the user must specify the min Y value on the graph.
Max	If Auto Scale is turned off, the user must specify the max Y value on the graph.
Y-Axis Zoom	Allows the user to zoom into data on both the x and y axis. By default zooming occurs only on the x axis
Tooltip	This allows the user to see the actual reading value on the graph by hovering the mouse pointer over a point on the graph. By default this option is turned off to speed up graphing time
Log	This displays the graph on a logarithmic scale.
Legend	This is checked by default, and will display the legend in the graph. Uncheck this to make more room for the graph.
Update	If graphing options have change, the user may click the "Update" button for the changes to take effect on the graph
Reset Zoom	Resets the graph back to the default view (no zoom)

5. **Click Show Graph to display the graph.**
   A graph appears at the bottom of the page with several points that represent nodes and timestamps, shown in Figure 21.

Tip: Clicking Clear Graph deletes all the data in the dialog box, except for the selected node ID list. To delete a node, look up the Node ID and then go into the list and delete it manually.

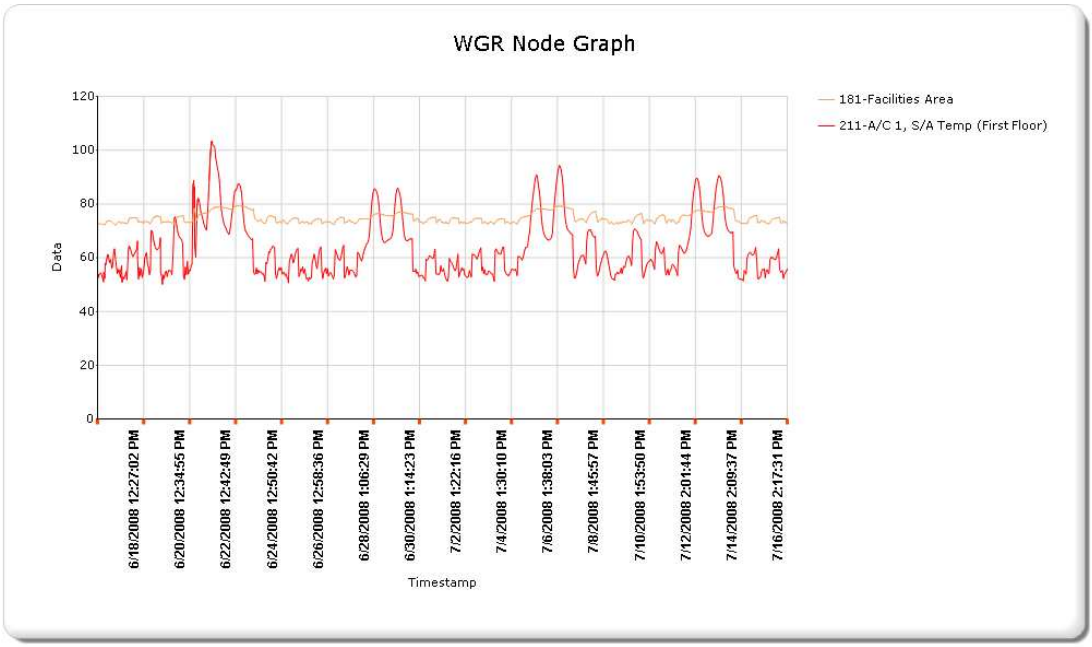


Figure 21. Sample Node Graph

When graphing multiple nodes, the legend will have the nodes listed from the highest reading value to lowest readings value. These values will be based on the first displayed value.

To improve graphing performance, individual values may be removed for very large sets of data. To ensure all points are graphed, the user may need to adjust Start Date and End Date.

5.9.2 Identify a Point

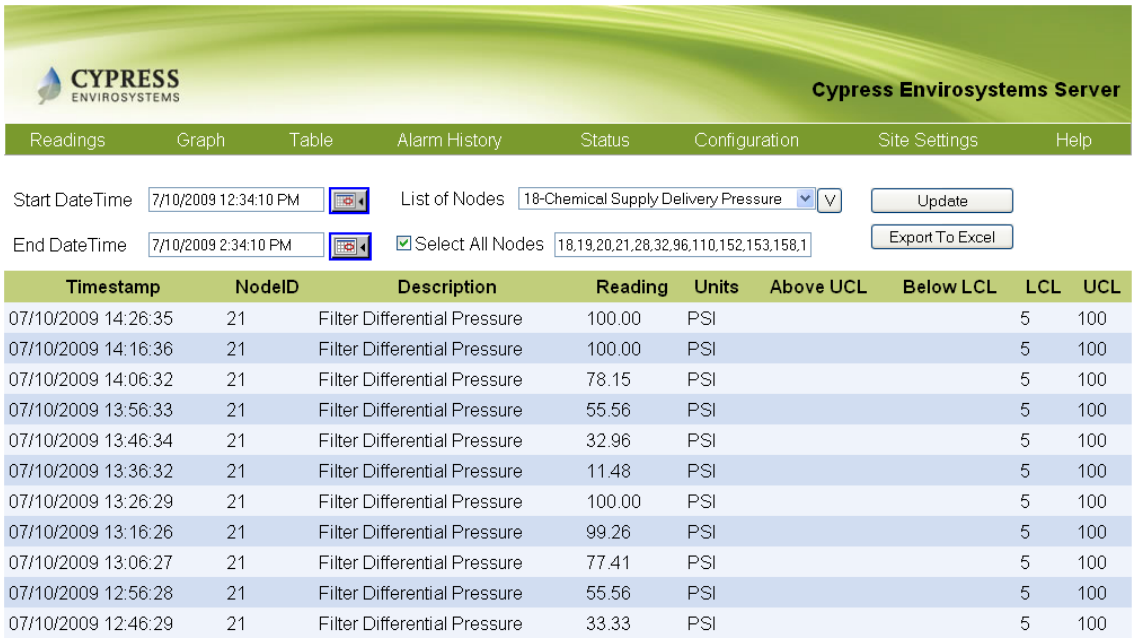
To find at the value of a point on the graph, click on a point. The node ID number, the timestamp, and the value display on the top left corner of the graph.

5.9.3 Zoom a Point

To zoom a point, hold down the left-click button on a point and drag the point. Release the left-click and the program zooms onto the point. Scroll left or right, and the system automatically scales the Y axis. By default, zooming occurs in the X direction only. To zoom in on the Y axis, the user must select "Y-Axis Zoom."

5.10 Using Tables to Export Data

Exporting data into a spreadsheet gives you access to another large set of tools you can use to track and manipulate data. The Cypress Envirosystems Web Console enables you to collect data in a table format that you can easily export into Excel.



Timestamp	NodeID	Description	Reading	Units	Above UCL	Below LCL	LCL	UCL
07/10/2009 14:26:35	21	Filter Differential Pressure	100.00	PSI			5	100
07/10/2009 14:16:36	21	Filter Differential Pressure	100.00	PSI			5	100
07/10/2009 14:06:32	21	Filter Differential Pressure	78.15	PSI			5	100
07/10/2009 13:56:33	21	Filter Differential Pressure	55.56	PSI			5	100
07/10/2009 13:46:34	21	Filter Differential Pressure	32.96	PSI			5	100
07/10/2009 13:36:32	21	Filter Differential Pressure	11.48	PSI			5	100
07/10/2009 13:26:29	21	Filter Differential Pressure	100.00	PSI			5	100
07/10/2009 13:16:26	21	Filter Differential Pressure	99.26	PSI			5	100
07/10/2009 13:06:27	21	Filter Differential Pressure	77.41	PSI			5	100
07/10/2009 12:56:28	21	Filter Differential Pressure	55.56	PSI			5	100
07/10/2009 12:46:29	21	Filter Differential Pressure	33.33	PSI			5	100

Figure 22. Sample Table page

5.10.1 Create a Table

To generate a table from several node readings:

1. **Click on TABLE in the Main Menu.**
   The **TABLE** page displays. It looks similar to the graph page, with a dialog box on the top and a table at the bottom.
2. **In the dialog box, enter a Start Date and an End Date.**
   The format includes both date and time as m/dd/yyyy hh:mm:ss AM/PM. By default, the system shows the last two hours.
3. **Specify the node IDs to display**.
   Nodes can be selected individually using the List of Nodes drop down list, entering the node ID number manually, or checking the box next to Select All Nodes. To select a node using the drop down list, click the small carrot button next to the field to complete the selection.
4. **Click Show Table to display the table**.
   The table appears at the bottom on the screen. The following parameters are displayed.
   - **Timestamp**: Timestamp of data reading
   - **Node ID**: The unique ID number of the field device
   - **Description**: The name of the node
   - **Reading**: The value read by the field device
   - **Units**: The units of the reading (e.g. PSI)
   - **Above UCL**: Indicates if an over-limit alarm occurred
   - **Below LCL**: Indicates if a below-limit alarm occurred
   - **LCL**: The lower control limit (LCL) value
   - **UCL**: The upper control limit (UCL) value
5. **Click Export to Excel**.
   The system creates an Excel file (.xls) for download to a user-specified location.

6.0 OPC Interface

To interface to existing plant infrastructure, the BBS can communicate via industry standard OPC. The OPC Server is visible to OPC Clients as WGR.OPC.1.

The following OPC tags are available:

- **WGRNodeID**: The configured field device NodeID
- **WGRReading**: field device reading
- **WGRUnit**: Reading unit type (e.g. PSI, C, F)
- **WGRBatteryStatus**: Battery status reading (%)
- **WGRTemperature**: Internal temperature reading (C)
- **WGRRSSI**: Received Signal Strength Indicator (max = 31)
- **WGRTimestamp**: Timestamp when the data arrived
- **WGRFriendlyName**: WGR device friendly name

The OPC interface is an option that must be enabled by your service representative. Please contact them for further details.

7.0 Care and Maintenance

The database is backed up on a routine basis. Please contact your service representative for further details.

The Blue Box Server should be treated as an industrial PC. Please contact your corporate IT group to install and maintain anti-virus software or to configure the firewall as needed.

8.0 Troubleshooting

I get an error message when I try and enter an email address into the SMS Alert.
Phone number is a required field. If you do not enter a phone number first, the system does not accept the input.

The system is not saving my changes.
Anytime you make a change, you need to click on “Update” to keep the changes or else the system reverts back to the old settings.

I am not able to create a graph. When I click, “Show Graph,” nothing happens.
Generally, this means no data was available. Check your start and end time to make sure that it includes data.

Sometimes the system asks me to enter an administrative password, and other times it doesn’t.
You must enter a password to access the SMS ALARM page and the CONFIG NODE page. If you enter the password for one page, you do not need to enter it again until 20 minutes has passed.

The readings on the server do not match the readings on the device.
The readings are based on a percentage of full scale determined from the “MinValue” and “MaxValue”. If the “MinValue” and “MaxValue” are not set up correctly on the WGR or BBS, the “Reading” value may be incorrect.

If you have additional problems, please contact us. See Section 10.0, Support, for details.

9.0 Technical Specifications

Server Capacity	Receives data from up to 255 Cypress Envirosystems field devices (typical)
Compatibility	PC or Macintosh
User Interface	Built in Web Server for easy browser access to data and trending
Available Data Protocols	OPC, BACnet, ODBC, ADO.NET, web services via plant Ethernet LAN
Mobile Access	Alarm notification and user queries via cell phone, PDA or email
Wireless Frequency	2.4GHz Direct Sequence Spread Spectrum, 100mW peak output
Wireless Range	Up to 1600 ft (488 m), high interference immunity, extendable with repeaters
Wireless Protocol	Cypress Semiconductor's highly optimized industrial DSSS radio and protocol. Integrates robust security, antenna and frequency diversity, optional encryption and minimal interference with existing wireless systems (for additional details, please see FAQ at www.cypressenvirosystems.com)
Approvals	FCC Class B compliant, RoHS, ETSI compliant
Power Supply	90-240VAC
Humidity	10-90% RH, non-condensing
Operating Temperature	32°F to 113°F (0°C to 45°C)
Storage Temperature	-4°F to 176°F (-20°C to 80°C)
Enclosure	Ruggedized aluminum and stainless steel chassis
Dimensions	4.1” x 8.3” x 11.8” (104.5mm x 210mm x 300mm)
Weight	13.9 lbs (6.3kg)

10.0 Support

For additional support, including configuration, maintenance and troubleshooting, please contact us.

Cypress Envirosystems
198 Champion Court
San Jose, CA 95134
+1 888 987 3210
Email: cys_support@cypress.com

11.0 Warranty Information

Every product comes with a full one-year parts and labor warranty. Cypress Envirosystems monitoring of battery status, product status, and potential communications packets are included during this period, so that proactive service can be provided to our customers.