User Guide

Enhanced Network Time Appliance

Model ENTA-R

P/N 001-XXXX (0226/0286)

Revision B

August 2011

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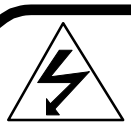
Revision History

REVISION	DATE	COMMENTS
A	July 2011	Initial Release
B	August 2011	Added new FPGA load procedure.

Safety Warnings

WARNING: This unit contains lethal AC voltages. Disconnect the unit from the AC supply before removing the cover.



WARNING:
The lightning flash with an arrowhead inside of an equilateral triangle is intended to alert the user to the presence of un-insulated “dangerous voltage” within the product’s enclosure. The “dangerous voltage” may be of sufficient magnitude to constitute a risk of electrical shock to people.

CAUTION:
The exclamation point inside of an equilateral triangle is intended to alert the user to the presence of important operation and maintenance instructions in the user guide.

WARNING:

Rack Mount Instructions -

The following instructions shall be followed with the installation of the unit:

Elevated Operating Ambient –

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

Reduced Air Flow –

Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

Mechanical Loading –

Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

Circuit Overloading –

Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring.

Reliable Earthing –

Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the J1 Connector

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1 Specifications

1.1 GPS Receiver

1.1.1 Receiver Type

Architecture	12 parallel channels

- Dynamics

Velocity	1000 knots everywhere > 1000 knots at altitudes < 60000 ft.
Acceleration	4 g
Jerk	5 m/s^3

- Acquisition Time

Hot (with the current almanac, position, time, and ephemeris)	< 20 s typical
Warm (with the current almanac, position, and time)	< 50 s typical
Cold	< 300 s typical

- Positioning Accuracy

Fix mode	< 25 m SEP
Site Survey mode	< 5 m SEP typical after position average

- Datum

WGS-84

1.2 Internal Oscillator

1.2.1 Oscillator Type

GPS disciplined High Precision OCXO	
Aging (typical)	< $5x10^{-10}$ per month when free running
Temperature coefficient	± $2x10^{-9}$;-20°C to +50°C
Design lifetime	> 20 years

1.3 Inputs

1.3.1 Antenna

Type	Active patch antenna
Connector	BNC
Pre-amp power	5 VDC @ 80 mA via center conductor

1.3.2 1 PPS

Signal used	1 PPS
Connector	BNC
Level	2.0 V min & 5.0 V max (TTL compatible)
Impedance	50Ω
Minimum pulse width	5 microseconds
On time	Rising edge

1.3.3 IRIG-B

Signal used	IRIG B122 and B123 per IRIG 215.98
	2 – 5 Vpp
Connector	BNC

1.4 Outputs

1.4.1 Reference Frequency Output

Frequency	10 MHz
Connector	BNC
Output level	TTL INTO 50Ω

1.4.2 Time Code - IRIG B + IRIG E

Code format IEEE 1344 Ext.	IRIG B modulated DC Level Shift IRIG E DC Level Shift
Modulation ratio	3:1 nominal
Amplitude	3 Vpp into 600 ohm (modulated) TTL into 50 ohm (DC Level Shift) DC offset voltage < 0.05 V
Connector	BNC

1.4.3 Serial Time Code RS 232/ RS 422 (Not Used)

1.4.4 Pulse Rates

- 1 PPS

Amplitude	0-5 V logic compatible V_{OH} > 2.4 V & V_{OL} < 0.55 V Output impedance 50 ohm
Connector	BNC
Pulse width	10 microseconds
On time	Rising edge
Phase relationship to 10 MHz	When synchronized there are always 10^7 10 MHz cycles between each 1 PPS rising edge

1.5 Network Ports

Number of ports	2
Port type	Ethernet 10/100BaseT
Protocols supported	NTP (RFC 1305), Telnet (RFC 854)
Connector	RJ-45

1.6 Status Indicators

- LEDS

Power (Green)	Indicates power is available

1.7 Time Display

DOY;HH:MM:SS – UTC or Local time

1.8 EnvironmENTA-RI

- Temperature

Unit	Operating -20°C to +50°C
Antenna	Operating -40 to +85°C
All units	Storage -55 to +85°C

- Humidity

Unit	Up to 95% RH non-condensing
Antenna	Not limited

- Altitude

Unit	Operating 20, 000 ft Transport 40, 000 ft

- Power (Dual redundant PSU; Hot swappable)

Range	85-264 VAC 50/60 Hz
Power	40W Nom.
Connector	IEC 320 with integrated switch and fuse
Fuse	1A 5x20mm slo-blo

- EMC

MIL-STD_461E
RE101
RE102
CE102

1.9 Mechanical

Size (unit)	17” x 1.72” x 9” excluding the connectors and handles. Front panel width 19”.
Weight	5 lbs. nominal

1.10 Rear Panel Connections

J-Number	Connector Type	Connector Name	Pin	Pin Description	Jumper Defaults	Signal Levels
J1	SMA-Female	1PPS GPS 1	Center	1PPS A input		TTL levels
			Shield	1PPS A return		
J2	SMA-Female	HQ GPS 1	Center	HQ A input		TTL levels
			Shield	HQ A return		
J3	SMA-Female	1PPS GPS 2	Center	1PPS B input		TTL levels
			Shield	1PPS B return		
J4	SMA-Female	HQ GPS 2	Center	HQ B input		TTL levels
			Shield	HQ B return		
J5	SMA-Female	Output 1	Center	1PPS/ HQ output 1	1PPS	TTL levels
			Shield	GND		
J6	SMA-Female	Output 2	Center	1PPS/ HQ output 2	1PPS	TTL levels
			Shield	GND		
J7	SMA-Female	Output 3	Center	1PPS/ HQ output 3	1PPS	TTL levels
			Shield	GND		
J8	SMA-Female	Output 4	Center	1PPS/ HQ output 4	1PPS	TTL levels
			Shield	GND		
J9	DB9-Female	Diff Outputs 5-7	1	1PPS/HQ output 5	1PPS	LVDS + levels
			2	/1PPS/HQ output 5	1PPS	LVDS - levels
			3	1PPS/HQ output 6	1PPS	LVDS + levels
			4	/1PPS/HQ output 6	1PPS	LVDS - levels
			5	1PPS/HQ output 7	1PPS	LVDS + levels
			6	GND		
			7	GND		
			8	GND		
			9	/1PPS/HQ output 7	1PPS	LVDS - levels
J10	DB9-Female	Diff Outputs 8-10	1	1PPS/HQ output 8	1PPS	LVDS + levels
			2	/1PPS/HQ output 8	1PPS	LVDS - levels
			3	1PPS/HQ output 9	1PPS	LVDS + levels
			4	/1PPS/HQ output 9	1PPS	LVDS - levels
			5	1PPS/HQ output 10	1PPS	LVDS + levels
			6	GND		
			7	GND		
			8	GND		
			9	/1PPS/HQ output 10	1PPS	LVDS - levels
J11	DB9-Female	Diff Outputs 11-13	1	1PPS/HQ output 11	1PPS	LVDS + levels
			2	/1PPS/HQ output 11	1PPS	LVDS - levels
			3	1PPS/HQ output 12	1PPS	LVDS + levels
			4	/1PPS/HQ output 12	1PPS	LVDS - levels
			5	1PPS/HQ output 13	1PPS	LVDS + levels
			6	GND		
			7	GND		
			8	GND		
			9	/1PPS/HQ output 13	1PPS	LVDS - levels
J12	DB9-Female	Diff Outputs 14-16	1	1PPS/HQ output 14	1PPS	LVDS + levels
			2	/1PPS/HQ output 14	1PPS	LVDS - levels
			3	1PPS/HQ output 15	1PPS	LVDS + levels
			4	/1PPS/HQ output 15	1PPS	LVDS - levels
			5	1PPS/HQ output 16	1PPS	LVDS + levels
			6	GND		
			7	GND		
			8	GND		
			9	/1PPS/HQ output 16	1PPS	LVDS - levels
J13	DB15-HD-Male	Diff Inputs/Alm Outputs	1	1PPS Input A+		LVDS + levels
			2	HQ Input A+		LVDS + levels
			3	1PPS Input B+		LVDS + levels
			4	HQ Input B+		LVDS + levels
			5	Alarm Out NO		Potential free Relay Contact
			6	Alarm Out Common		Potential free Relay Contact

J-Number	Connector Type	Connector Name	Pin	Pin Description	Jumper Defaults	Signal Levels
			7	GND		
			8	GND		
			9	GND		
			10	GND		
			11	Alarm Out NC		Potential free Relay Contact
			12	HQ Input B-		LVDS - levels
			13	1PPS Input B-		LVDS - levels
			14	HQ Input A-		LVDS - levels
			15	1PPS Input A-		LVDS - levels
J14	DB9-Male	Console Port	1			
			2	Receive Data		RS232 levels
			3	Transmit Data		RS232 levels
			4			
			5	GND		
			6			
			7			
			8			
			9			
J15	RJ45	Ethernet Port 1	1	Transmit +		Ethernet 10/100
			2	Transmit -		Ethernet 10/100
			3	Receive +		Ethernet 10/100
			4			
			5			
			6	Receive -		Ethernet 10/100
			7			
			8			
J16	RJ45	Ethernet Port 2	1	Transmit +		Ethernet 10/100
			2	Transmit -		Ethernet 10/100
			3	Receive +		Ethernet 10/100
			4			
			5			
			6	Receive -		Ethernet 10/100
			7			
			8			
J17	MS3102A-10SL-3P	Power Input B	A	AC Neutral		
			B	AC GND		
			C	AC Live		
J18	MS3102A-10SL-3P	Power Input B	A	AC Neutral		
			B	AC GND		
			C	AC Live		

Table 1 Connector Pin-outs

2 General Description

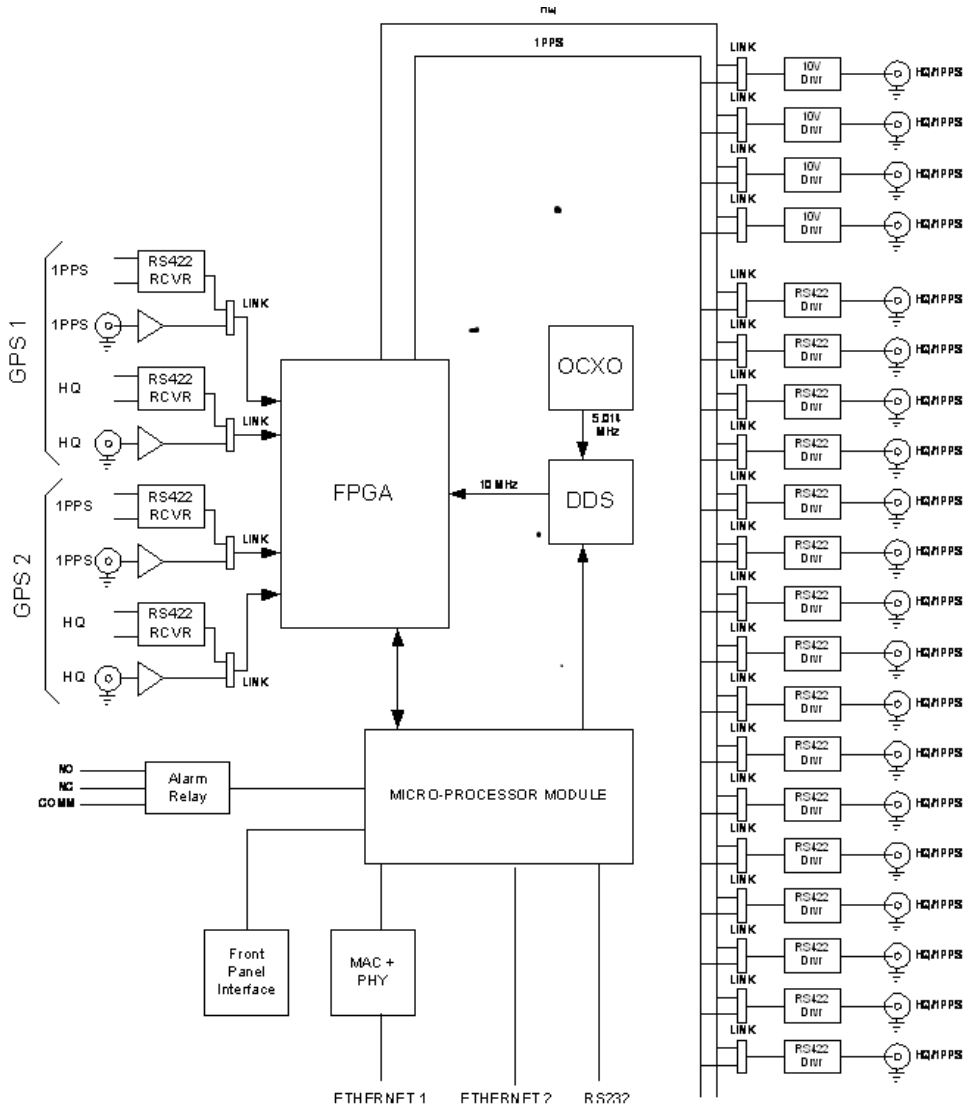


Figure 1 ENTA-R Block Diagram

The main PCB assembly uses a microprocessor module and an FPGA to do input signal decoding, clock disciplining, frequency division, delay generation, output signal encoding, fault detection and display control. The processor further handles all dual-port ethernet communications and memory management. A fifth overtone 5.014MHz OCXO (ovenized crystal oscillator) is used as the timing oscillator. An accurate 10MHz frequency is synthesized by a DDS, and used as the control frequency. The control frequency is divided down to 1PPS and compared to the 1PPS input signal from the GPS. The phase error between these 2 signals drive the DDS control, which keeps the control system locked to the GPS. *The GPS in the ENTA-R is the equivalent of 1PPS and HQ.*

3 Unpacking and Installation

3.1 Unpacking

Carefully remove the ENTA-R from the shipping carton. The following items are included in the shipment:

- 1 ENTA-R
- 2 power cords (optional)
- 1 user guide

3.2 Installation

Install the ENTA-R in its mounting rack location and secure with four rack mounting screws

3.3 Connections

3.3.1 Power

Insert both the provided power cords into the rear of the power entry module and connect the power cord to an AC power outlet.

3.3.2 GPS Connections

Connect the GPS signals, HQ and 1PPS to the GPS 1 inputs, J1 and J2 on the rear panel of the ENTA-R. Contact Brandywine Communications for more details on suitable cables. Connect the second set of GPS signals to J3 and J4 respectively. The ENTA-R will automatically select the GPS input signals that exhibit the best TFOM (Time Figure Of Merit).

3.3.3 RF Loss (Talk about cable lengths and input impedances)

The most important cause of signal loss is the RF signal attenuation experienced in the cable. The amount of attenuation is related to the type (quality) of coaxial cable and cable length. The antenna provides about 30 dB of gain to the received GPS signal. The purpose of this gain is to offset the loss that is experienced in the cable between the GPS antenna and ENTA-R. It is recommended that the overall antenna system gain (antenna gain - cable loss) be between 10 to 33 dB. Thus, using an antenna with 30 dB of gain allows about 20 dB of cable loss.

The ENTA-R is shipped with 100' of high quality antenna cable, which has a loss of approximately 13 dB. Refer to Table 2 for additional cable configurations. For distances beyond 330' an in-line amplifier is required.

PART NUMBER	CABLE LENGTH	CABLE TYPE
002-0037	100 ft	RG 58 (supplied)
002-0039	330 ft	RG 8
002-0040	150 ft	RG 8
051000001	In-line amplifier 20 dB	TNC/TNC connectors

Table 2 Antenna Cables

3.3.4 Network Connection

Connect one end of the network cable to the RJ-45 10/100 BaseT Network port (J15 PORT 1/J16 PORT 2) and connect the other end of the network cable to your network. The ENTA-R configuration process is described in Section 4 and Section 5 .

3.3.5 Other Connections

Connect the output signals as required. For additional help connecting the output signals please refer to Section 1.10.

4 Getting Started

4.1 Powering Up the ENTA-R

Once all connections to the ENTA-R have been made, apply power to the unit by setting the On/Off switches to the on position. The On/Off switches are located on the rear panel power entry module.

The POWER LED's on the front panel should be illuminated green within 2 seconds. The POWER LED indicates that the ENTA-R has power.

Once the GPS has locked to the input GPS signals time will be displayed on the front panel in the format: DDD: HH:MM: SS.

4.2 Setting the Network Address

The ENTA-R is shipped with DHCP (Dynamic Host Configuration Protocol) enabled.

To set the network address, the user may use either IPSetup.exe or a web browser. The two processes are described below.

4.2.1 IPSetup.exe

To set up the network address using the IP Setup program, follow the steps given below. Please note that IPSetup uses a local broadcast on UDP port 20034.

1. Download the IP Setup program from the NetBurner website located at http://www.netburner.com/support/public_downloads.html .
2. Double click on the IPSetup.exe icon and Figure 2 will be displayed.

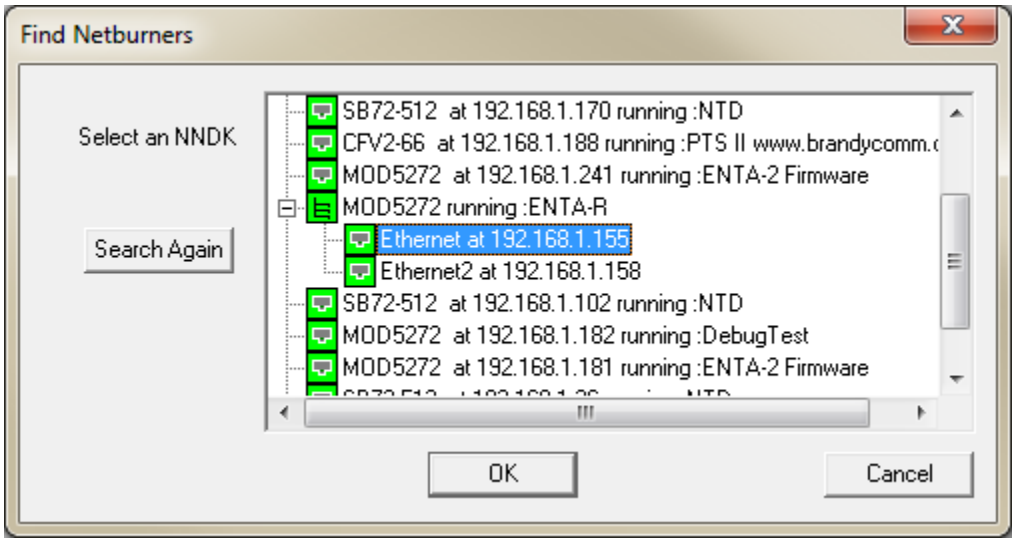


Figure 2 NetBurner IPSetup Screen

3. Verify that the "Select a Unit" displays the current MAC and IP address of the ENTA-R unit connected to the network.
4. Click on the ENTA-R unit that needs to be configured. Please note that the ENTA-R unit is identified by MOD5272.
5. Enter the NDK Settings (IP, Network Mask, GateWay, and DNS).
6. To transfer the NDK Settings to the selected ENTA-R unit, click the Set--> button.
7. Wait 15 seconds for the NDK Settings to be loaded into the ENTA-R unit and for the ENTA-R unit to restart.
8. Verify that the ENTA-R unit has the correct NDK Settings and is connected to the network by clicking the Search Again button.
9. To exit the IP Setup program, click the Close button.
10. Open a web browser, type the IP Address of the ENTA-R unit in the Address bar, and press <Enter>. For example, type 192.168.1.240 or http://192.168.1.240 and press <Enter>.
11. Figure 3 will be displayed.
12. Configure the ENTA-R unit. For more information on ENTA-R configuration, refer to the Configuration section of the user guide.

IMPORTANT INFORMATION:

If the new NDK Settings make the ENTA-R unit inaccessible from the setup computer, the IP Setup program won't be able to locate the ENTA-R unit on the network.

4.2.2 Web Browser

To set up the network address using the web browser, follow the steps given below.

1. Connect one end of an Ethernet cable to the ENTA-R Network Port.
2. Connect the other end of the Ethernet cable to your network.
3. Open a web browser, type the IP Address of the ENTA-R unit in the Address bar, and press <Enter>. For example, type 192.168.1.240 or http://192.168.1.240 and press <Enter>.
4. Figure 3 will be displayed.
5. Configure the ENTA-R unit.

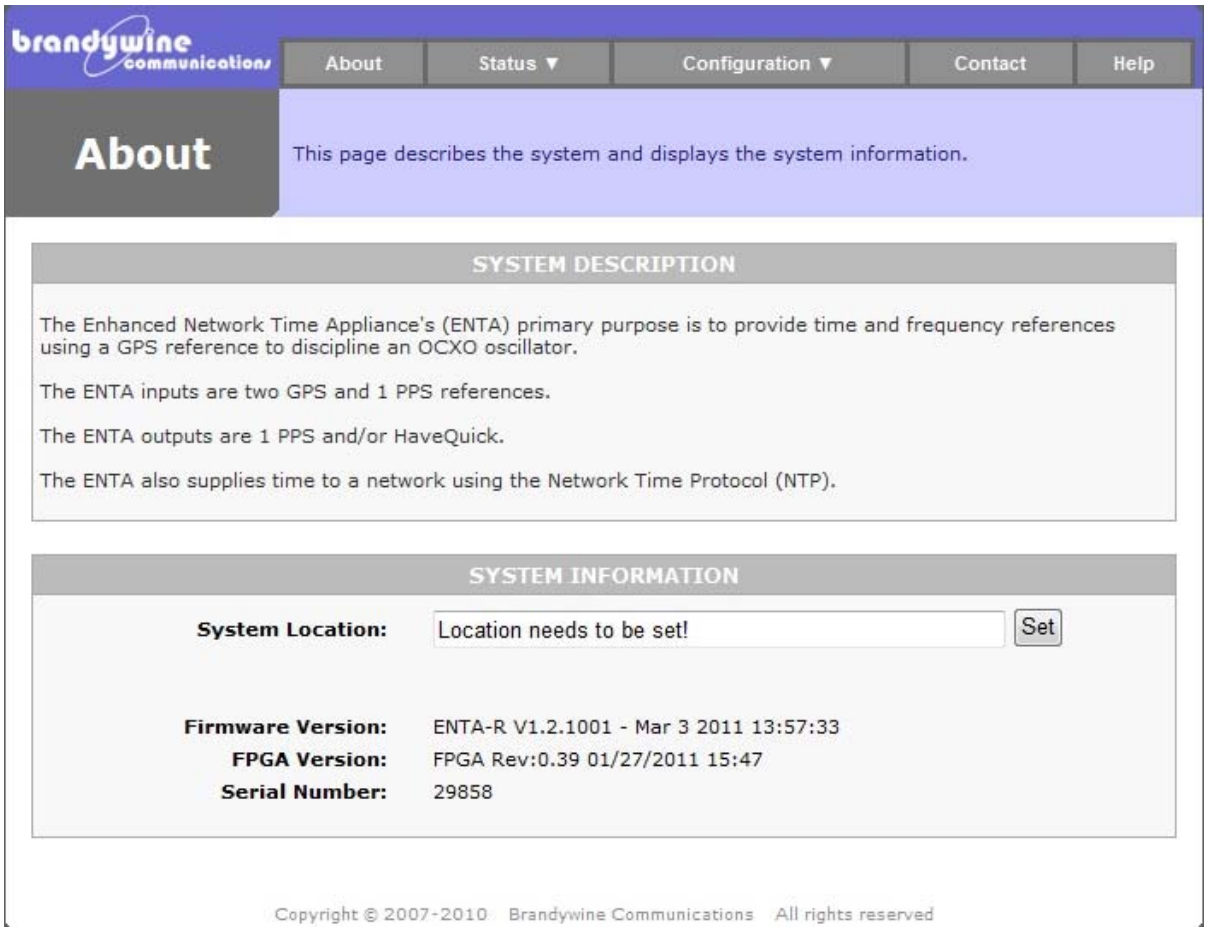


Figure 3 ENTA-R System Screen

Latest Version of Java Software

To properly control and monitor the ENTA-R via a web browser based interface, Java software must be installed on your computer. To obtain the Java software, follow the steps given below.

1. Go to http://www.sun.com/ .
2. Click on the Downloads link.
3. Click on the Java Download link.
4. Download Java.
5. Complete the installation process.

5 Configuration

The ENTA-R configuration may be completed in one of two ways.

- Via the web browser (recommended)
- Via SNMP

5.1 Web Browser Configuration

5.1.1 *About*

The About tab, Figure 4, describes the system and displays the system information.
The About tab allows the location of the unit to be set and displays the firmware and FPGA versions as well as the Serial Number of the ENTA-R.

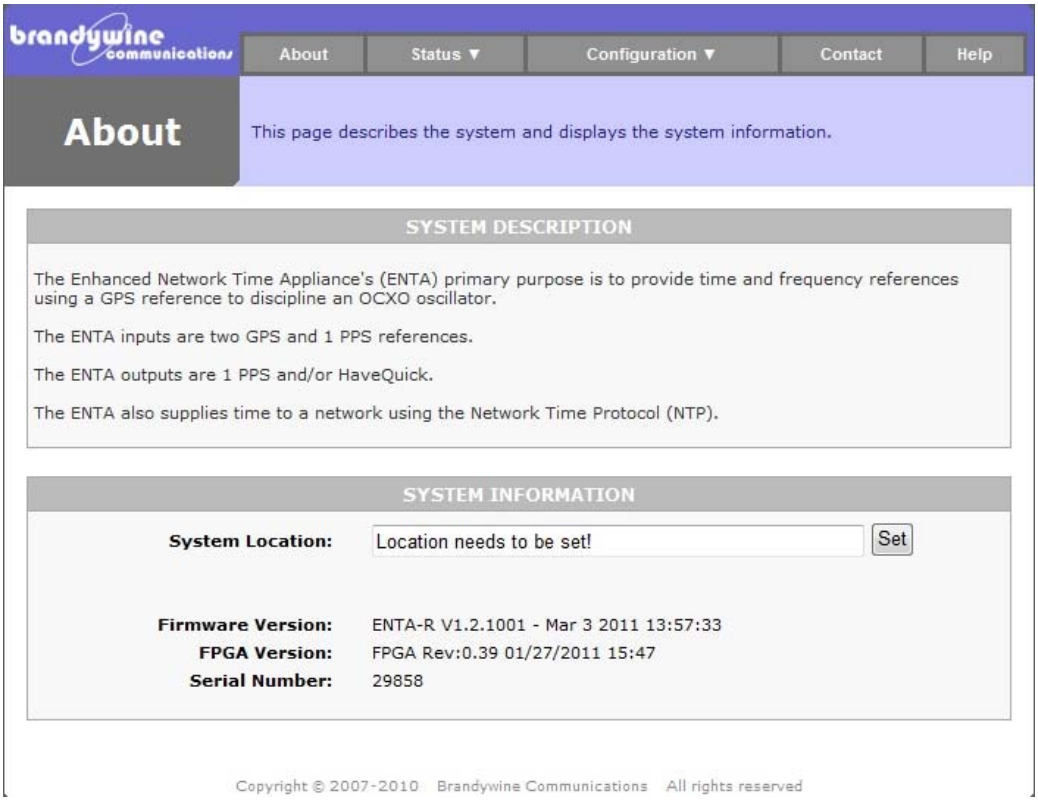
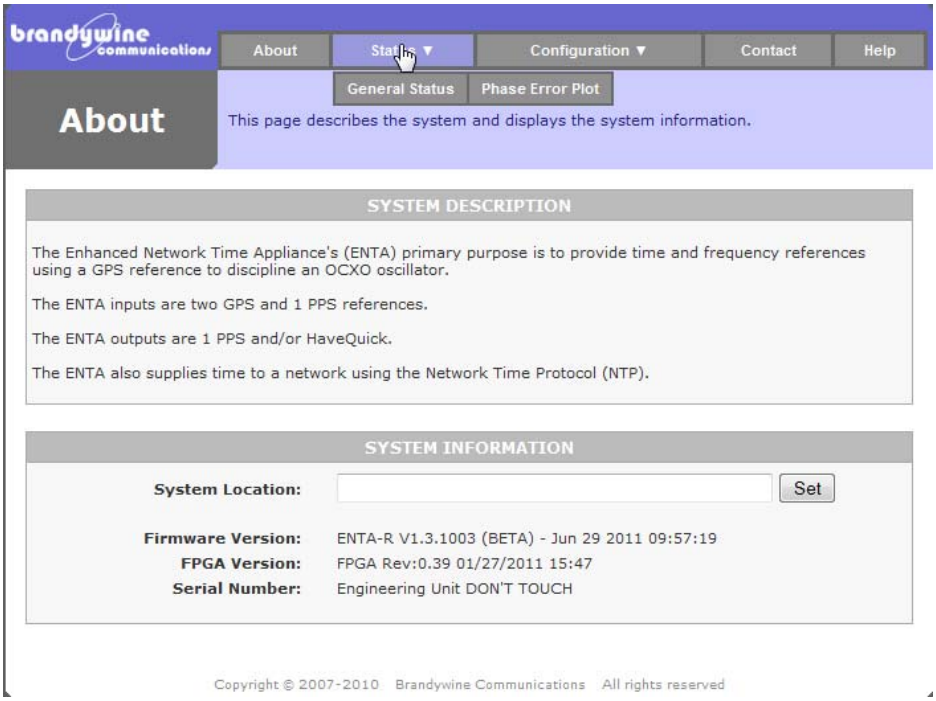


Figure 4 ENTA-R About Screen

5.1.2 *Status*



Under the Status tab there are two drop down tabs, *General Status* and *Phase Error Plot*. The Phase Error Plot is not utilized in this module.

5.1.2.1 General Status

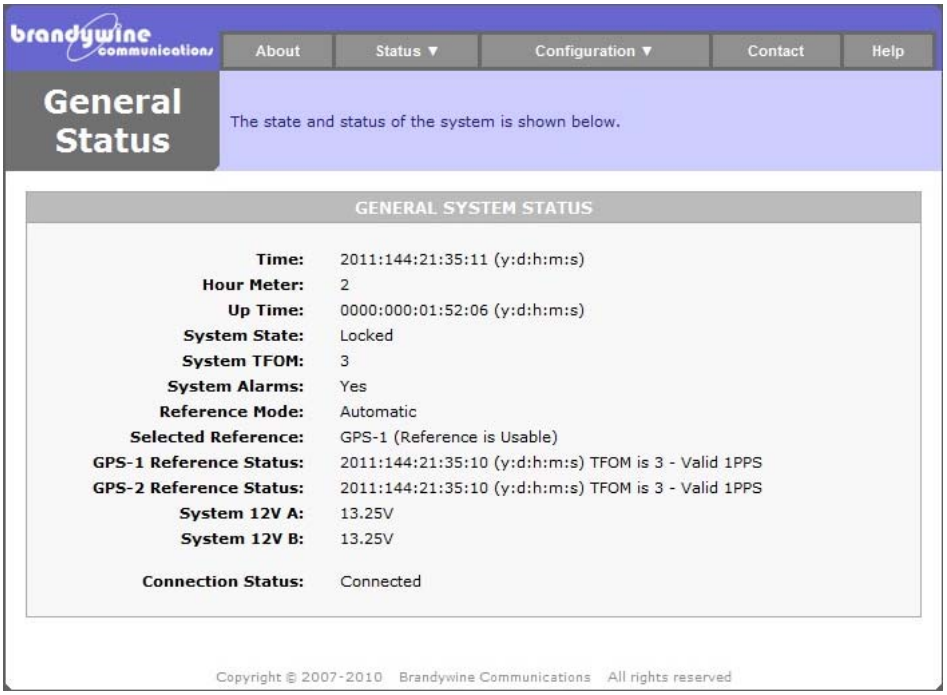


Figure 5 General Status

The General Status consists of 13 fields which indicate the Time, Hour Meter, Up Time, System State, System TFOM, System Alarms, Reference Mode, Selected Reference, GPS-1 Reference Status, GPS-2 Reference Status, System 12V A, System 12V B and Connection Status.

STATE	DESCRIPTION
WARMUP	The power up warm-up period.
READY	The system is ready.
ACQUIRE	The system is acquiring its reference.
LOCKED	The system is locked to its reference.
HOLDOVER	The system is in holdover.

Table 3 System States

5.1.2.2 Status Phase Error Plot

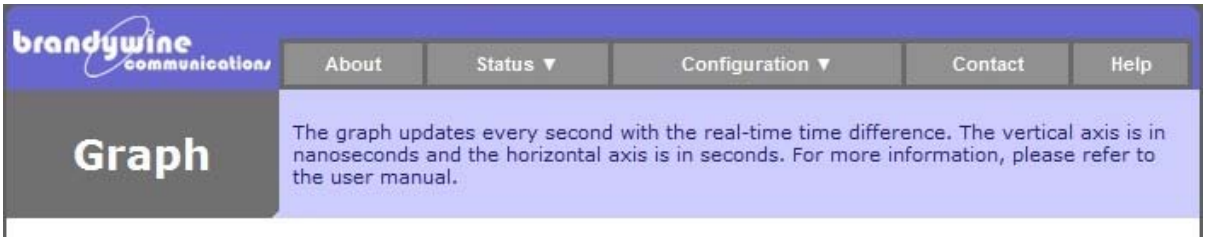
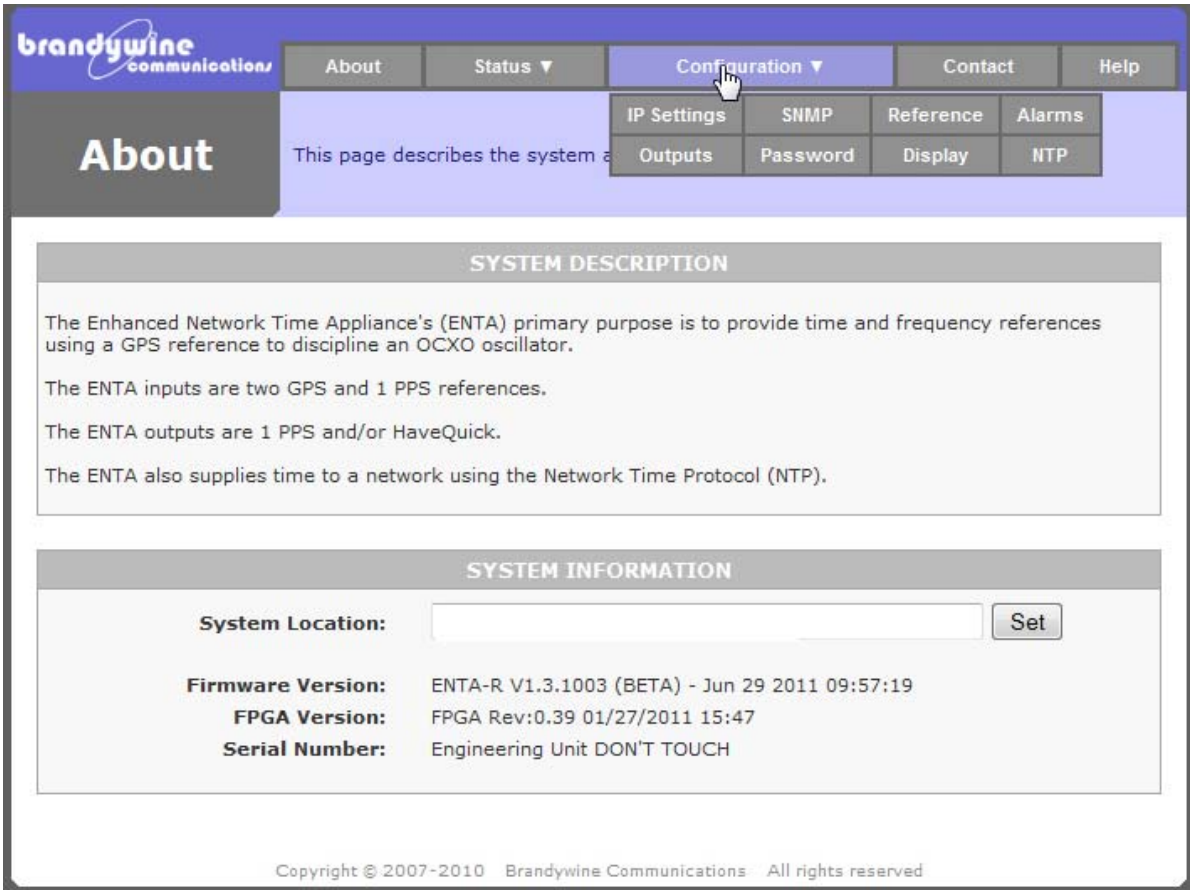


Figure 6 Status Phase Error Plot

Not used.

5.1.3 *Configuration*



Under the Configuration tab there are eight drop down tabs; *IP Settings, SNMP, Reference, Alarms, Outputs, Password, Display, and NTP.*

5.1.3.1 IP Settings

The IP Settings tab consists of 8 fields which include IP Address, Subnet Mask, Gateway, DHCP Enabled, IP Address, Subnet Mask, DHCP enabled with a Submit button and a Reset button.

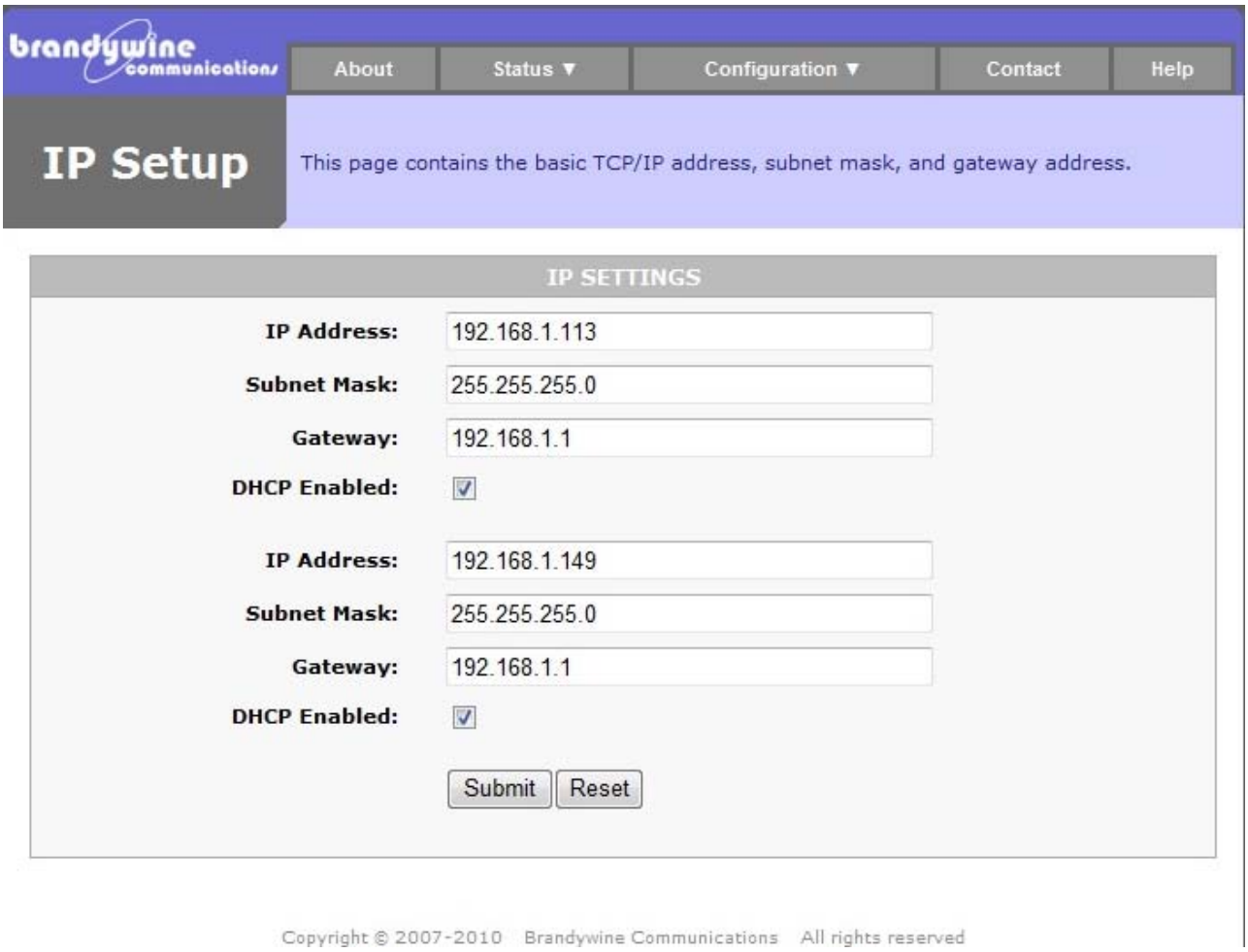


Figure 7 IP Settings

5.1.3.2 SNMP

The SNMP tab consists of 4 fields Read Community, Write Community, Trap IP Address and Download MIB file with 2 buttons; Submit and Reset.

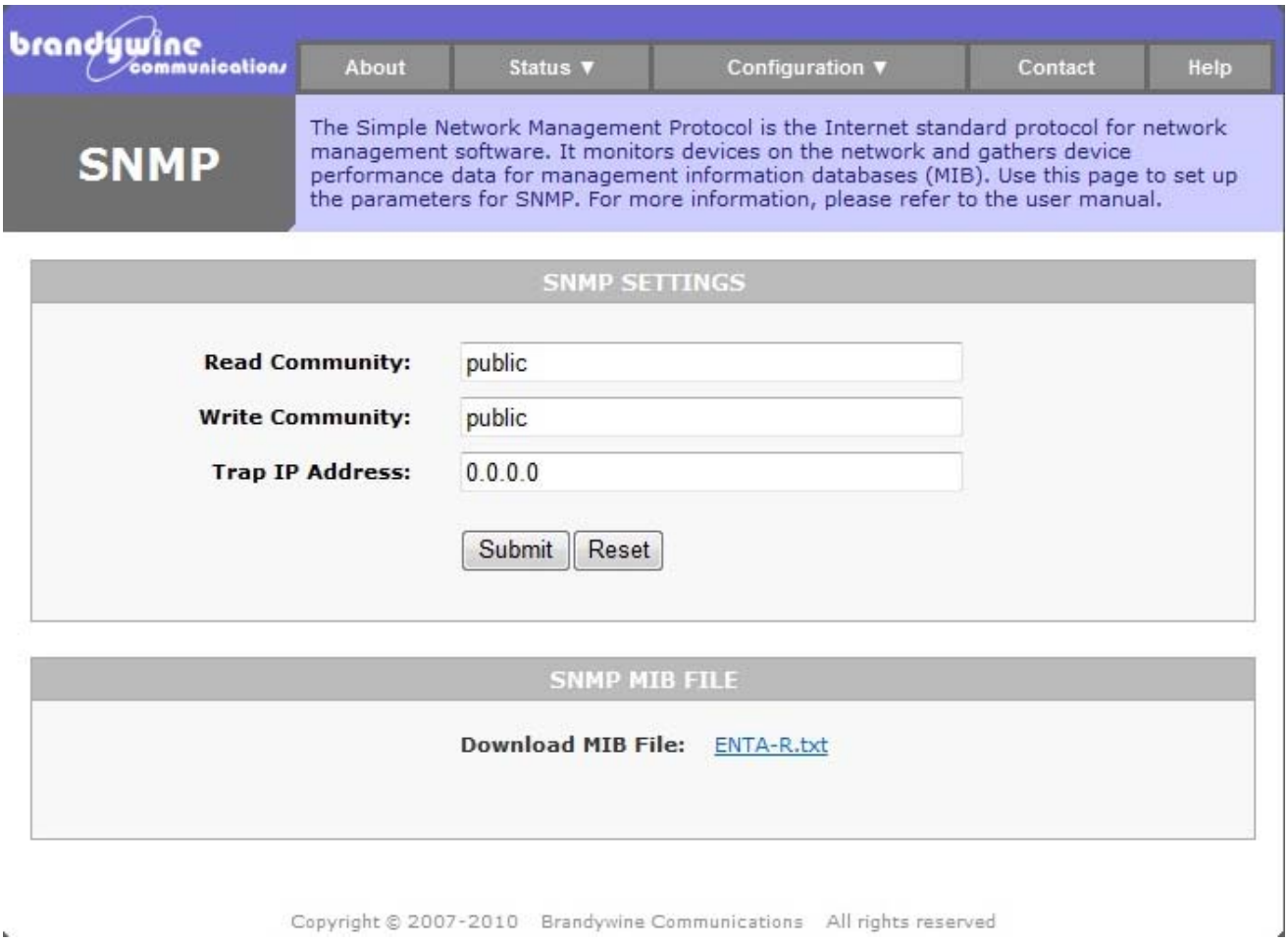


Figure 8 SNMP

5.1.3.3 Reference

Figure 9 Reference

The Reference tab consists of three fields, the Reference Selection, Manual Time Settings and the Input Delay Settings.

5.1.3.3.1 *Reference Selection*

The Reference Selection section has two radio buttons, Automatic Mode of Manual Mode and a Select Reference drop down box; free run, GPS-1 and GPS-2.

5.1.3.3.2 *Manual Time Settings*

The Manual Time Settings section has manual settings for the month, day, year and for the hour , minute, seconds if the Manual Reference Selection mode is used.

5.1.3.3.3 *Input Delay Settings*

The Input Delay Settings is used to set the 1PPS input delays in 5 nanosecond units for both inputs; GPS-1 Input 1PPS Delay and GPS-2 Input 1PPS Delay.

5.1.3.4 Alarms

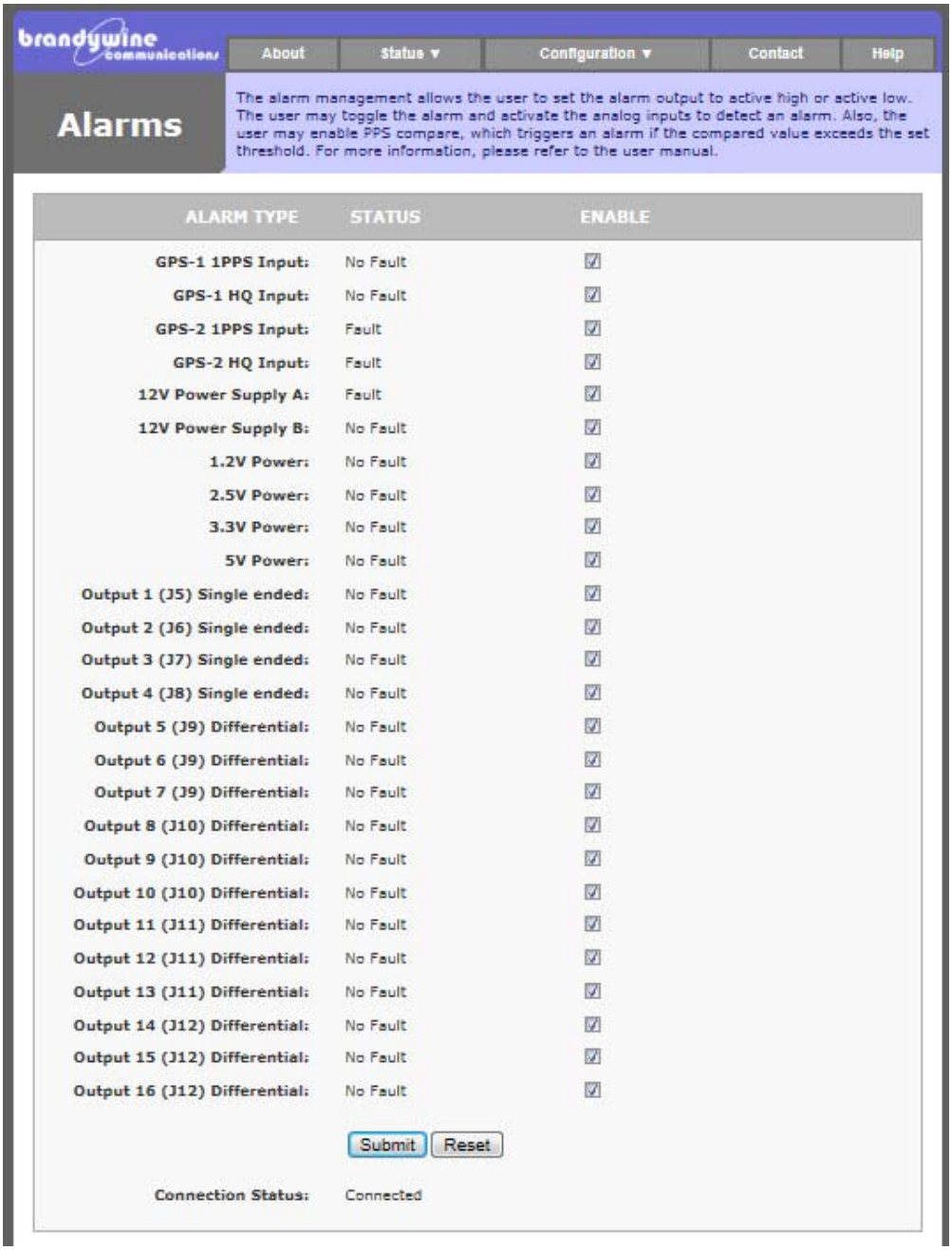


Figure 10 Alarms

The Alarm tab indicates all the Alarm States as shown in Figure 10 Alarms.

5.1.3.5 Outputs

Figure 11 Outputs

The Outputs tab allows the user to set the 1PPS output delay time and pulse width in 5 nanosecond units.

5.1.3.6 Password

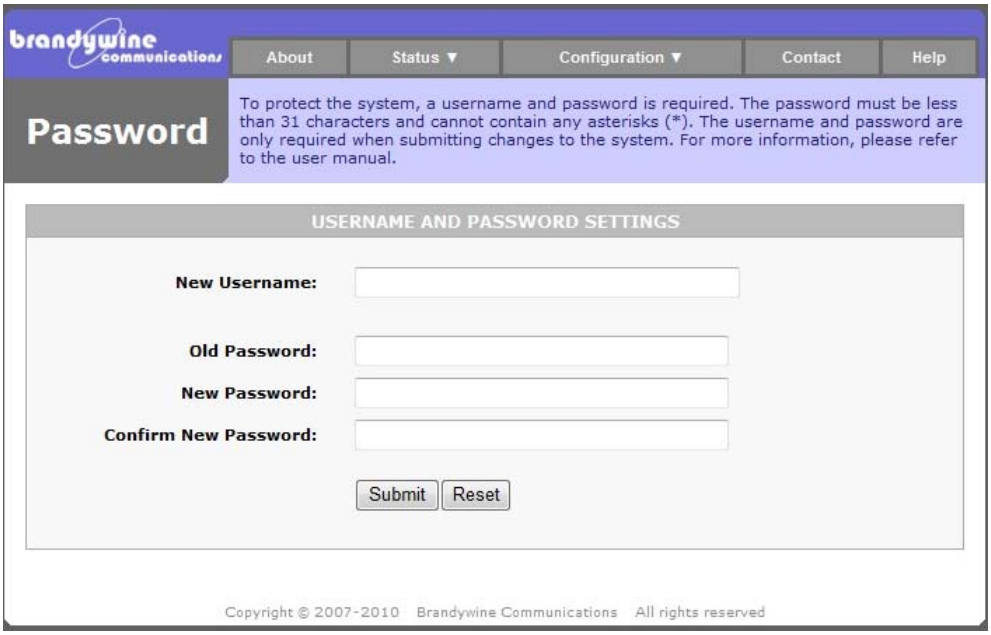


Figure 12 Password

The Password tab allows the user to change the user name and password for the system. To save all modifications made to the Password screen, click the Submit button. To undo all modifications made to the Password screen, click the Reset button.

IMPORTANT INFORMATION:The default user name and password for the system are both BRANDYWINE. The user must always enter a user name and password when submitting changes to the system.

The Password consists of four fields, the New User Name, Old Password, New Password, and Confirm New Password. The new password must be less than 31 characters and cannot contain any asterisks. Moreover, the user name and password are case sensitive.

5.1.3.7 Display

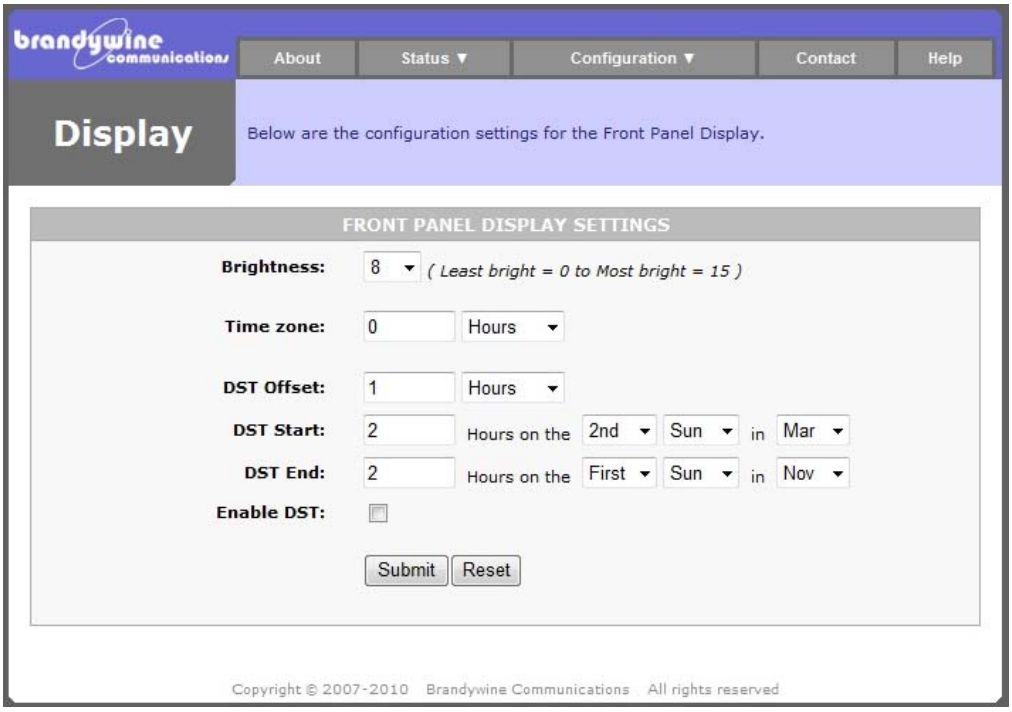


Figure 13

The Brightness box is available to adjust the brightness of the display. The least bright is equal to 0 and the most bright is equal to 15.

The Time Zone combo box allows the user to enter the Standard Time offset from the Universal Time. The Time Zone combo box allows the user to select either hour or minute. The Time Zone Table lists all time zones and their Standard Time offsets from the Universal Time.

TIME ZONE	STANDARD TIME OFFSET FROM UNIVERSAL TIME
Eniwetok (Marshall Islands)	-12
Samoa (Polynesian Islands)	-11
Hawaii	-10
Alaska	-9
Pacific Time	-8
Mountain Time	-7
Central Time	-6
Eastern Time	-5
Atlantic Time	-4
Brazilia (Brazil)	-3
Mid-Atlantic	-2
Azores (Azores Islands)	-1
Rome (Italy)	1
Israel	2
Moscow (Russia)	3
Baku (Azerbaijan)	4
New Delhi (India)	5
Dhakar (Jordan)	6
Bangkok (Thailand)	7
Hong Kong	8
Tokyo (Japan)	9
Sydney (Australia)	10
Magadan (Russia)	11
Wellington (New Zealand)	12

5.1.3.7.1 **Daylight Savings Time**

The Daylight Savings Time consists of three fields and a check box, the Daylight Savings Time Offset (DSTO), Daylight Savings Time Start, and Daylight Savings Time End. The DSTO is a number that is added to or subtracted from the time zone setting. The DSTO entered by the user may be either in hours or minutes.

The Daylight Savings Time Start allows the user to add the DSTO to the time the daylight saving should start. The user must enter the daylight saving start time, the occurrence of the specific day, the day of the week, and the month that the daylight saving should start. For example, Pacific Standard Time adds an hour at 02:00 on the second Sunday of March.

The Daylight Savings Time End allows the user to subtract the DSTO from the time the daylight saving should stop. The user must enter the daylight saving stop time, the occurrence of the specific day, the day of the week, and the month that the daylight saving should stop. For example, Pacific Standard Time subtracts an hour at 02:00 on the first Sunday of November.

Please note that the daylight saving start time and daylight saving stop time must be in 24 hour format. For example, if daylight saving start time and daylight saving stop time are at 1:00 pm, the user must enter 13:00.

The Enable DST check box must be checked to enable Daylight Savings Time adjustments.

5.1.3.8 NTP

Figure 14 NTP

Figure 14 is displayed when the NTP sub-tab is selected. The NTP sub-tab consists of three sections, the Automatic mode radio button, the Manual mode radio button and the Select Leap Indicator Mode . To save all modifications made to the NTP Server screen, click the Submit button.

The Select Leap Indicator has four drop down selections No Warning, Last minute has 61 seconds, last minute has 59 seconds and Alarm Condition.

The Manual Mode Settings consist of one combo box, the Select Leap Indicator. This allows the user to manually set the leap indicator setting used. The table below describes the supported leap indicator settings used.

DESCRIPTION
No warning
Last minute has 61 seconds
Last minute has 59 seconds
Alarm condition (clock not synchronized)

Table 4 Leap Indicator Settings

If the leap indicator setting is set to no warning, the ENTA-R automatically warns of an impending leap second only if the internal GPS receiver is used as the synchronizing source.

5.1.3.9 Contact

The Contact tab provides the Brandywine Communications address and contact phone, fax and email numbers.

5.1.4 Help

The Help tab provides the user with help while using difficult areas in the system. Help links are located throughout the entire system so the user has access to the Help screen whenever the user encounters a problem. Once the user clicks on the Help link the user will be automatically redirected to the Help screen. Various topics are discussed in the Help screen.

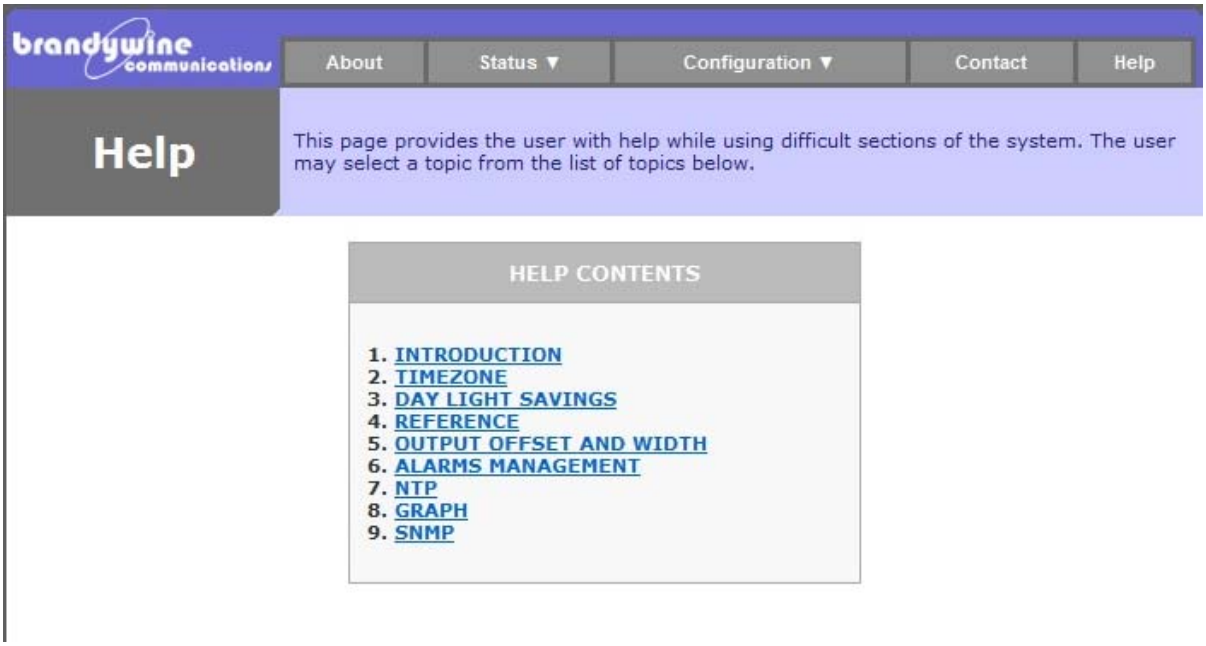


Figure 15 Help

6 Uploading Firmware

To upload new firmware for the ENTA-R, the user will need a software application such as AutoUpdate, the IP address of the ENTA-R, and the file name of the new released file. Follow the steps listed below to upload new firmware for the ENTA-R. Please note that AutoUpdate uses unicast on UDP port 20034.

1. Double click on the AutoUpdate icon and Figure 16 will be displayed.

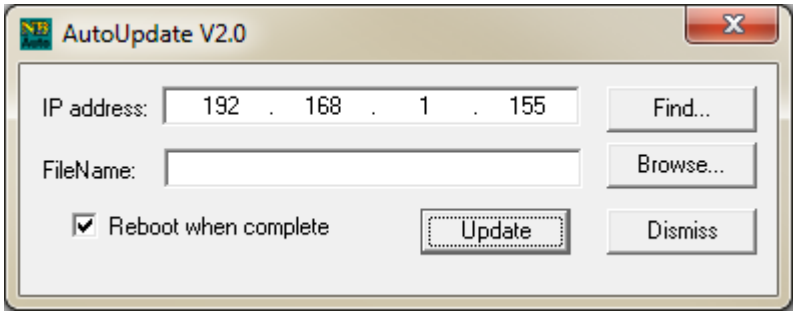


Figure 16 AutoUpdate Screen

2. Enter the IP address of the ENTA-R in the IP address field. If the user does not know the IP address, press the Find button and figure below will be displayed. Locate and click on the IP address of the unit and click the OK button. The IP address field will be completed for you. If the unit is not on the list, click the Search Again button.

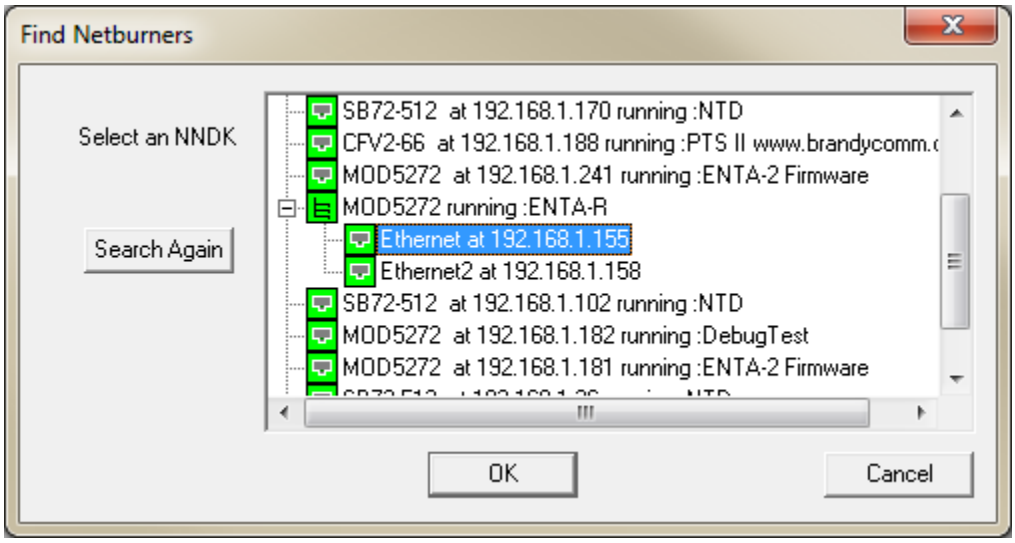


Figure 17 Find NetBurners Screen

3. Enter the path name to the new released file. If the user does not know the path name, press the Browse button and Figure 18 will be displayed. Locate and click on the file and click the Open button.

The file will be in the form '*925000062A ENTA-R2v1.00Build 1129_APP.s19*' . The File Name field will be completed for you.

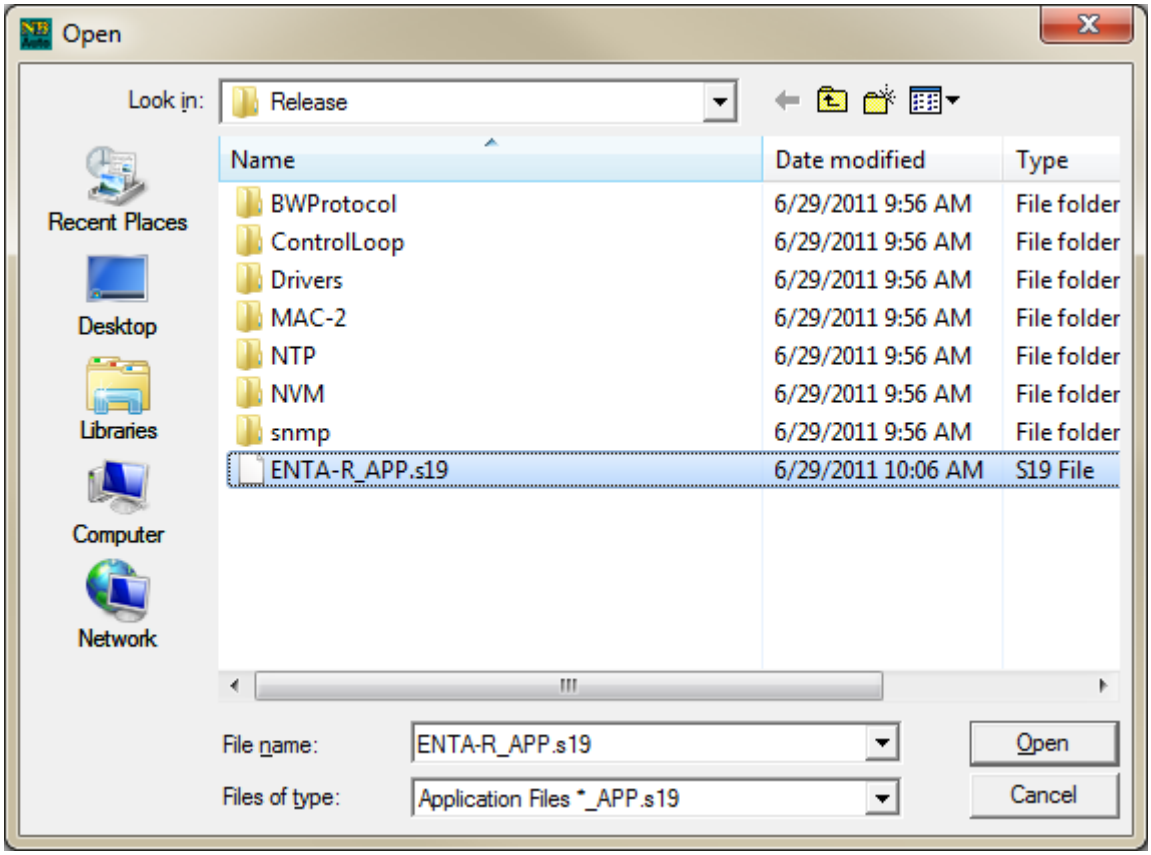


Figure 18 Open Screen

4. Now, click on the Reboot when complete check box.
5. To close the application, click the Dismiss button.
6. To upload the new firmware, click the Update button and Figure 19 will be displayed for a few seconds.

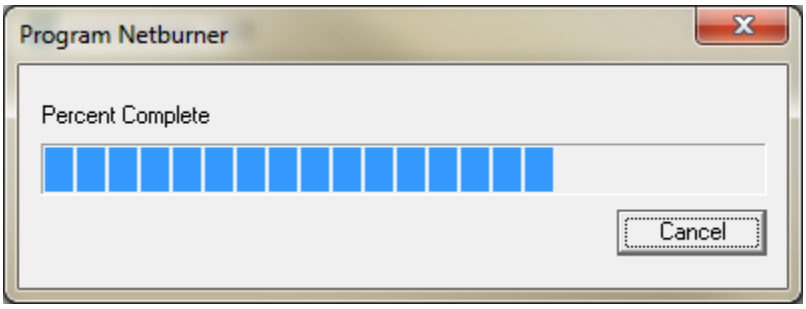


Figure 19 Programming Screen

7. After above figure automatically closes, Figure 20 will be displayed. Click the OK button and now the uploading firmware process is completed.

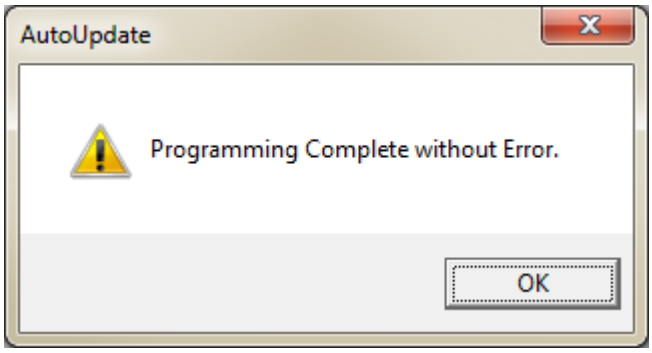
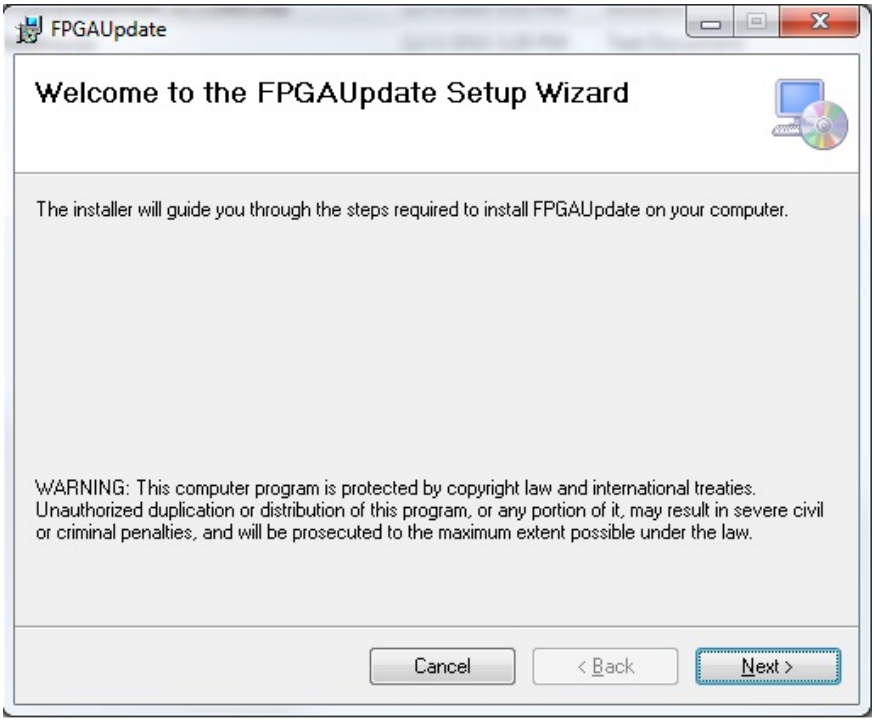


Figure 20 AutoUpdate Complete Screen

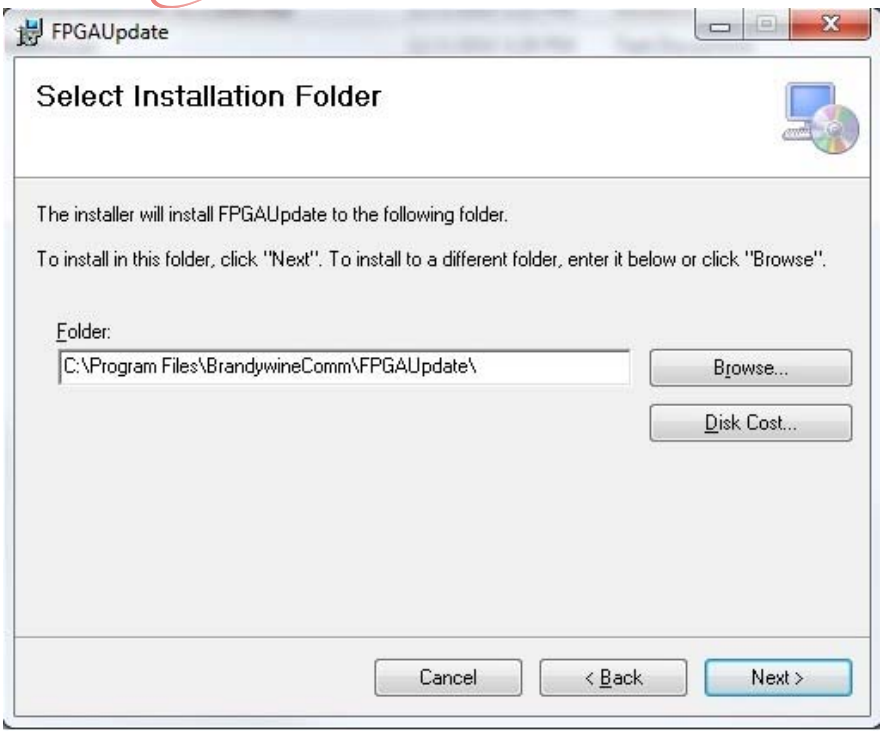
7 Uploading FPGA

To upload the FPGA for the ENTA-R, the user will need a software application called FPGA Update provided by Brandywine. Follow the steps listed below to upload new FPGA for the ENTA-R.

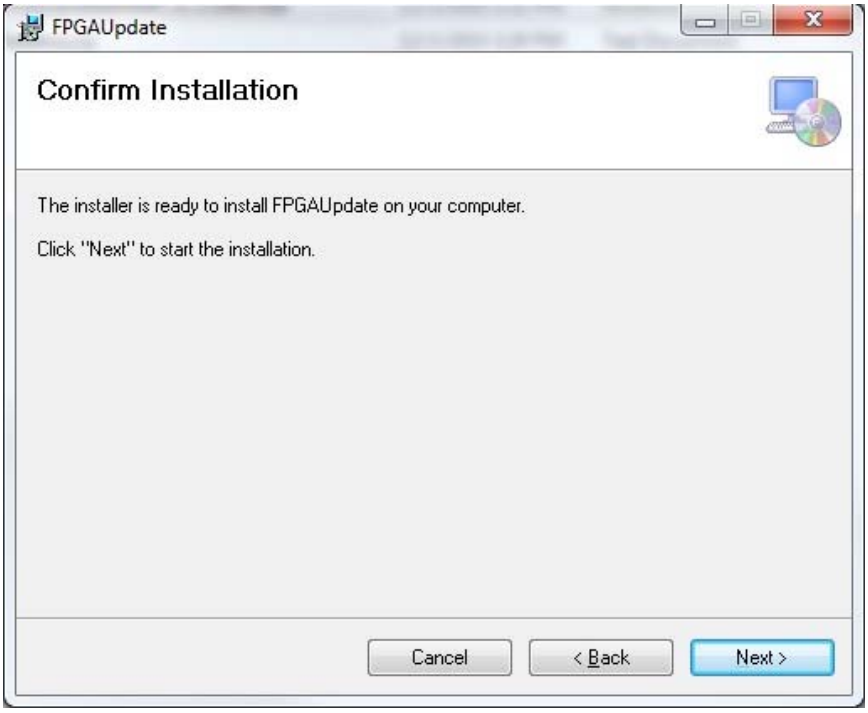
7.1 FPGA Update



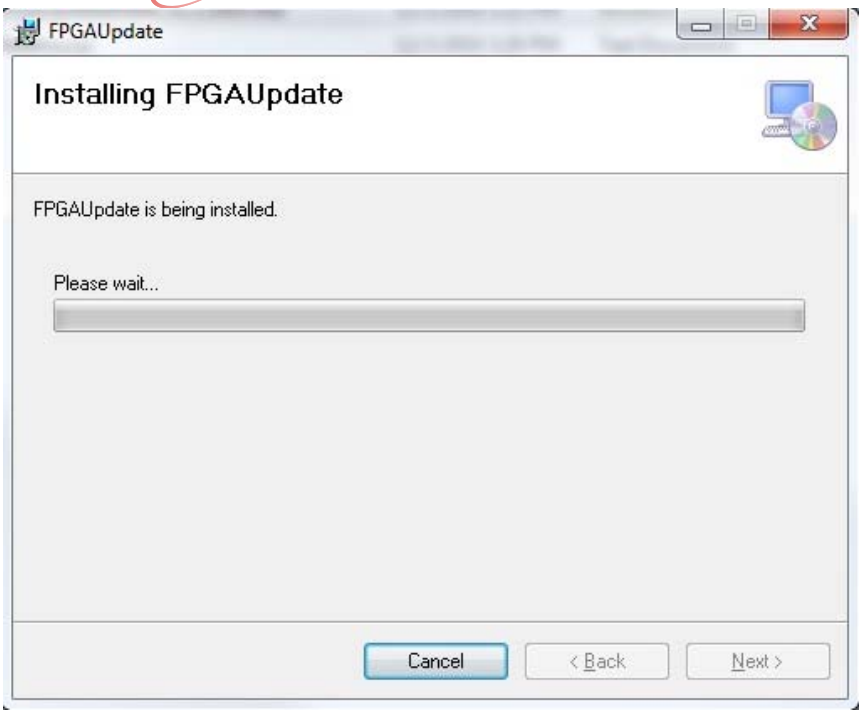
When installing the FPGAUpdate Application this is the initial Welcome screen. Click the “Next” button.



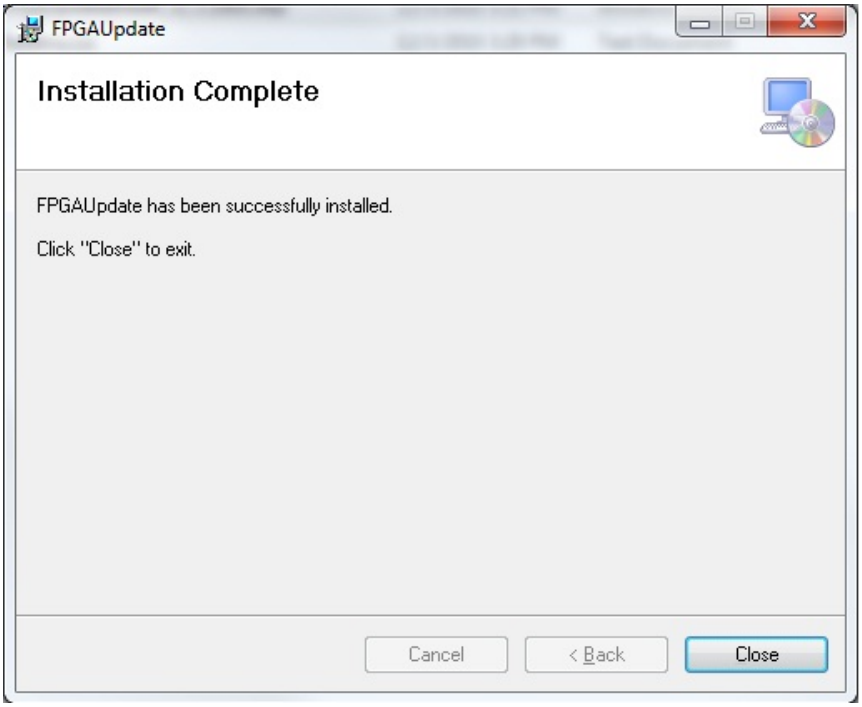
The FPGA Update application will then request the folder to install the application to. Keep the existing folder or browse for a new folder on the user's compluter. Click "Next".



Confirm by clicking "Next" to start the installation.

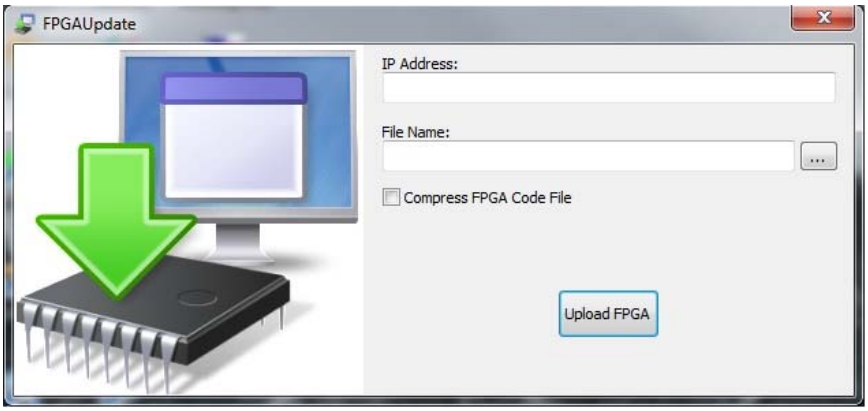


FPGAUpdate will be installed.

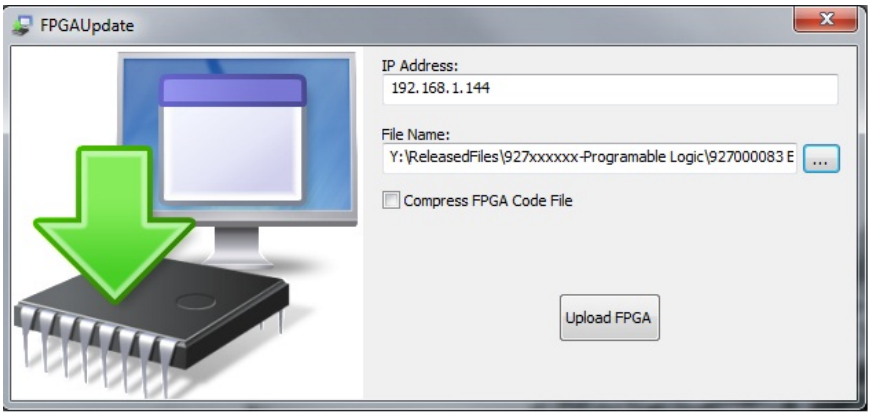


FPGAUpdate is installed. Click “Close” to exit.

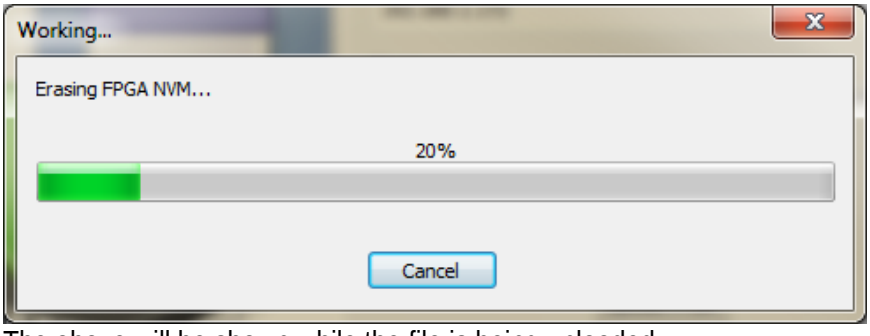
7.2 FPGA Upload



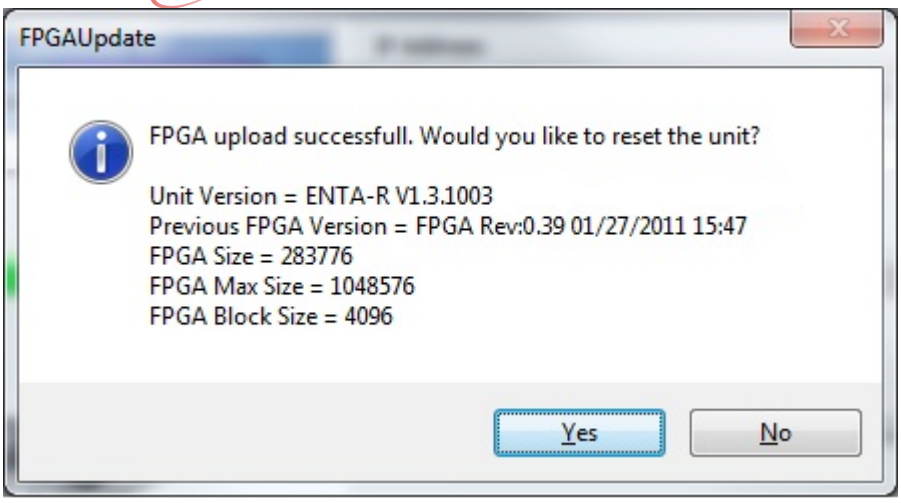
Start FPGA Update



Provide the IP address of the unit and the file name of the FPGA to be uploaded.
Make sure that the Compress FPGA Code File box is not checked.
Click the "Upload FPGA" button.



The above will be shown while the file is being uploaded.



The Unit Version and the Previous FPGA Version will be shown in the above box.
The new FPGA version will take effect once the unit has restarted. Click the “Yes” button to restart the unit now or the “No” button to restart later.

8 Maintenance and Troubleshooting

There is no required preventive maintenance for the ENTA-R. To troubleshoot the problems, refer to Table 5.

SYMPTOM	POTENTIAL CAUSE	CORRECTIVE ACTION
Power LED does not illuminate	1. There is no power. 2. There is a blown fuse. 3. There is a ENTA-R power supply failure.	1. Verify that the AC power is available. 2. Replace the fuse. 3. Return unit to the factory.
Display colons continue flashing	1. ENTA-R is performing a cold start. 2. Antenna is in bad location. 3. The antenna is bad. 4. There is an excessive cable loss. 5. There is excessive EMI interference with the antenna. 6. The oscillator is not synchronized. 7. There is an oscillator failure.	1. Wait for 15 minutes. 2. The antenna should see > 50% of the sky. Use the GPS screen to verify which satellites (if any) are being tracked. 3. Replace the antenna. 4. Replace the cable with a lower loss cable. 5. Check for nearby interfering radiators and move the GPS antenna. 6. Allow the system to warm up for 10 minutes. 7. Return unit to the factory.
Fault LED is illuminated	1. There is an internal failure.	1. Check the alarm screen to verify cause of the fault. 2. Recycle the power.
No signal outputs	1. There is an internal failure.	1. Return unit to the factory.

Table 5: Troubleshooting ENTA-R Problems

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9 Drawings

FIGURE	DESCRIPTION
21	ENTA-R Front Panel
22	ENTA-R Rear Panel

Table 21 ENTA-R Drawings

Figure 21 Front Panel

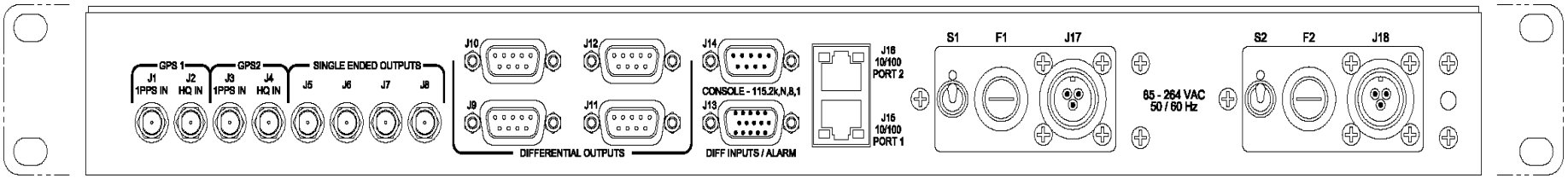

Figure 22 Rear Panel