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## **Alert Eagle® 400**

### Diagnostic SAME/EAS Decoder and System

04/23/06

#### Instruction Manual

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#### Product Description:

The patented ALERT EAGLE® 400 (AE400) diagnostic SAME/EAS (Specific Area Message Encoded/Emergency Alert System) decoder monitors unmuted audio and decodes SAME/EAS alert messages.

There are four main steps in the AE400 operational process:

- 1) Decoding the SAME/EAS Alert.

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- 2) Matching the decoded alert against a user defined event and location table.
- 3) Translating the decoded alert from government issued codes into understandable text streams.
- 4) Outputting the translated text stream onto printers, LED signboards, email and paging and across LAN networks.

The AE400 can be configured as either a stand alone unit, where the user supplies analog audio to be decoded (such as from AM/FM/TV broadcast/Emergency Management signals) or the AE400 can be integrated with the WE105.

In the integrated configuration, the WE105 supplies 12VDC power and audio to the AE400. Otherwise, all of the WE105 features operate independently of the AE400. For example, the WE105 will be able to detect the 1050 Hz NWS wide area alert tone. This acts as a backup to detect alerts for which SAME/EAS alert signal did not decode or was not issued. All 1050 Hz alert toned messages will be recorded into the WE105. Usually, in the integrated configuration, the 1050 Hz unmuting and beep features will be disabled by the users in the configuration setup so that the integrated unit only activates audibly for SAME/EAS matched alerts, although the WE105 will still have the visual LED indication of activation upon detecting the 1050 Hz alert tone. See the WE105 manual and configuration menu for more details.

The user configures a text file of events and locations to 'match' against the incoming alert SAME/EAS alert message. Upon detecting a SAME/EAS match, the AE400 will close a relay, start recording the audio alert message and will unmute for a period of time between 1 second and 18 hours, as set by the user in the AE400 configuration menu. The default unmute time is 90 seconds. At the end of the alert

period, the relay will open and the AE400 will re-mute. The AE400 will record up to 4 minutes of alert audio. If an End of Message signal is decoded by the AE400, the recording action will stop. If another alert is matched while a first alert is active, the AE400 will keep the relay closed and unmuted for a new entire alert period.

As a result of years of research and development, the AE400 has many patented diagnostic features that provide the user with positive feedback about the operation of the system. These include a FSK Lock detect LED, digitally saving the last alert into the AE400 (including each SAME/EAS burst and the event and location matched and whether the End of Message signal has been decoded).

An Audio In port is provided to enable the user to test the system with prerecorded .wav audio files, many of which are available at [www.thuneagle.com/support/audiofiles](http://www.thuneagle.com/support/audiofiles).

The AE400 may be installed as a 'filter' to automatically place only selected weather warnings on other communication systems such as public address systems and police, fire, public utility radio systems, etc. in manners that should minimize disruption of the other communication system. EAS is also broadcast on AM/FM/TV/Emergency Management Frequencies and the AE400 can also be used to decode these alerts.

The AE400 is engineered for durability with modern surface mount technology and few moving parts. The AE400 has special audio filters and amplifiers to provide the most reliable SAME/EAS decoding capabilities. The AE400 is especially useful for emergency operations centers, security offices, mobile communications vehicles, command posts, and search and rescue units.

The firmware in the AE400 is flash memory for customer field upgrade, using the optional Thunder Eagle® programmer. Upgraded firmware may be posted on [www.thuneagle.com/login](http://www.thuneagle.com/login) and downloaded by the client and then programmed into the AE400. A user ID and Password are needed to access this portion of the Thunder Eagle web site. The field firmware upgrade feature will prevent unit downtime and will hopefully eliminate shipping time and expense in keeping the unit in operation.

The AE400 has a battery backed-up real time clock to tag each incoming alert with the local day, date and time stamp. The local date and time is normally displayed on the AE400 LCD display. Each new alert, or replay of the last alert, displays the event and day, date and time stamp on the LCD display. As a backup check on the time of actual issuance of each alert, the serial number/date and time stamp (DTS) issued as part of each alert is also added to the text stream. This DTS is in the form of `DDDZZZZ`, where the `DDD` is the day of the year using the Julian calendar, and the `ZZZZ` is the Zulu time of issuance of the alert message. This data is only available when the diagnostics has been chosen in the setup menu. Normally the FIPS data is refined and the expiration date and time is calculated and displayed by the AE400.

The AE400 has many different configurations. It can be stand alone in a plastic case, 19" rack mounted alone, and 19" rack mounted with the WE105.

NWR is broadcast from over 960 transmitters located throughout the United States and Canada on seven FM channels operating between 162.400 MHz and 162.550 MHz. Most populated areas of the United States and Canada are covered by at least one channel. Some areas are covered by more than one channel. Maps and a database of the NWR transmitters and a listing of the county location codes and which location codes are broadcast on each transmitter are located at [www.weather.gov/nwr](http://www.weather.gov/nwr).

The alert match text file is easily created by using the Thunder Eagle® FipsFilemaker™ software. These files can be edited by the user to add new alerts and locations, so there will be no delay in decoding new alerts as the SAME/EAS system evolves. The alert match text file is easily uploaded from a user's workstation using the Thunder Eagle® free FipsFileloader™ software. These software programs are available to Thunder Eagle® customers at [www.thuneagle.com/login](http://www.thuneagle.com/login). User names and passwords will be provided to Thunder Eagle® clients.

A watch means that conditions are favorable for the occurrence of severe weather. A warning means that severe weather is imminent. You may wish to contact your local forecast office or [www.weather.gov](http://www.weather.gov) for further information.

The NWS normally tests the tone alert system once per week, on Wednesdays, between the hours of 11 a.m. and noon, if no severe weather is anticipated. Please make sure that your AE400 receives the weekly alert message.

#### 1) POWER SUPPLY:

The AE400 is powered by 12 volts DC. The unit draws less than 200 milliamps. Plug the wall transformer into 120-volt AC 60 Hz and plug the 2.1 mm plug, center positive, connector into the rear panel of the unit. It is recommended that the AE400 be plugged into an uninterruptible power system to provide service during power failures. A computer UPS of 500VA should power the AE400 for 24 to 36 hours and will also provide power surge protection for the unit. The AE400 is operational as soon as it receives power. There is NO on/off switch.

If the AE400 is used with the WE105, the power into the WE105 will power the AE400 and NO second power supply is needed.

The unit may also be operated from any 12 volt DC, negative ground system in a car, boat or other vehicle. Vehicle connections should be protected by a 1-amp fast blow fuse. An optional fused cigarette lighter adapter is available from the Thunder Eagle, Inc.

## 2) Programming the Match Events and Locations and Translations

The user can select any combination of the possible events and any of the over 5500 location codes to 'match'. BOTH the event and the location need to match for the AE400 to activate the alert sequence.

The AE400 can hold up to approximately 2000 match codes, although most users will usually have less than 31 match locations programmed into the AE400 as each NWS transmitter can transmit up to a maximum of 31 locations. Each transmitter only transmits the locations in the transmitter's broadcast coverage area. Check [www.weather.gov/nwr](http://www.weather.gov/nwr) for transmitter/county code coverage.

The match text file is created by using the Thunder Eagle® FipsFileMaker™ software. All events and the nationwide 000000 code are defaults. It is highly recommended to also include each statewide alert code for every state that you can monitor. These entire state area codes are in the FipsFilemaker™ database and are in the format of 0XX000 where the XX is the state code. For example, 051000 is the statewide code for Virginia. Many important alerts, such as the Amber missing child alert, are transmitted with the 0XX000 statewide code. The FipsFileMaker™ software will

verify the format of the file before it permits the file to be saved. Save the file in a location on your workstation where you can find it with the FipsFileLoader™ software.

If needed, the user can edit the text file in the FipsFileMaker™ to add new event codes or location codes or translation codes. This will be very important as the SAME/EAS system evolves and changes.

When creating the .txt file to upload into the AE400 using the FipsFileMaker software, make sure to click the AE400 button under the Translations tab. While the AE400 can hold up to approximately 2000 translations, the larger the stored database in the AE400, the more time it will take to decode and translate the SAME/EAS alerts. In most cases, choosing the up to 31 codes on the monitored transmitter should be sufficient. Please make sure that you also include all translations for the marine areas for the Special Marine Warnings if you wish to translate these alerts.

If the AE400 cannot find a translation for an originator (like NWS), an event, or location, the AE400 will place the incoming, non decoded code in the output text stream. The user will be able to quickly determine which translation codes need to be added to the AE400 by reviewing the output of the alert messages.

Use the following steps to load the match text file into the AE400:

- a) Unplug the AE400.
- b) Open the FipsFileLoader™ software on your workstation.
- c) Connect the supplied standard serial cable between your workstation's comm port and the printer port on the rear of the AE400 \*\*using the supplied null modem connector\*\* between the serial cable and the printer port.

d) HOLDING IN the AE400 Reset/Program button, plug the power into the AE400 (or into the WE105 if the WE105 is being used to supply power to the AE400). Within 15 seconds (as the AE400 boots up), the AE400 should enter programming mode as shown by the Match and No Match LEDs staying solidly lit.

e) Open the FipsFileLoader™ software and open the comm port on your workstation. Make sure you get a green confirmation light that the comm port is open. On Windows XP you can quickly find which comm ports are installed on your workstation by right clicking on the My Computer desktop icon, then go to properties/ hardware/ device manager/ ports (comm-lpt) and the comm port numbers should be listed.

f) Press the FipsFileLoader™ connect button and a green icon indicating that the Alert Eagle is Ready to Program should appear.

g) Press the Erase button (and yes in the confirmation message box) and the AE400 memory should erase. This should take less than 90 seconds. The data LED should flash quickly during this time, indicating that the erase process is running. The memory must be erased before programming to prevent prior information stored in the memory from causing unreliable operation. Once the memory has been erased, the new match file MUST be uploaded for any matches to occur.

h) Click the Select File button and navigate on your drives to the \*.txt file you created with the FipsFileMaker™.

i) Click the Upload button and the uploading progress should take less than one minute and is tracked by the progress bar and by the byte counter.

j) When the file has been successfully uploaded, a green success icon will appear. If it does NOT appear, retry the above steps.

k) Power down the AE400.

l) Close FipsFileLoader™.

NOTE: It is an excellent idea to include the FIPS code 051059 for Fairfax County, VA in your match counties and to test the AE400 database with a test audio file from [www.thuneagle.com/support/audiofiles](http://www.thuneagle.com/support/audiofiles) and make sure your AE400 is functionally perfectly.

### 3) Readback the AE400 Match Database

a) Connect the AE400 to your workstation's comm port, using the serial cable and the null modem adapter.

b) Open a Hyperterminal session (start/programs/accessories/communications/Hyperterminal). Create and save a new connection with the following parameters (9600 baud, 8, N, 1 NO flow control).

c) Hold in the Plus button on the AE400 while you power up the unit (for up to 15 seconds while the AE400 reboots) and the programmed database should appear on your Hyperterminal. Review the match events and locations for accuracy.

### 4) Test the Relay and the Sign and the Printer

Hold in the Play button on the AE400 while you power up the unit (for up to 15 seconds while the AE400 reboots) and the relay should close. Press the Reset button to return to normal operation.

Hold in the Last Alert button on the AE400 while you power up the unit for about 10 seconds and a test message should be sent to the printer and the LED signboard with the firmware version number. Move the jumpers in pairs (J111/J116 for printer and J103/J107 for LED signboard) from positions 1-2 to 2-3 and retest as necessary to ensure proper operation of the LED signboard and the printer.

### 5) Configure the AE400 menu options

- a. The AE400 and WE105 menu options are constantly being upgraded with improvements in firmware. Updated firmware may be loaded in the field with the purchase of a programmer from Thunder Eagle®.
- b. Open a new Hyperterminal session (start/programs/accessories/communication/hyperterminal) on your PC with a serial port. Choose the serial port option for the connection. The parameters are 9600 baud, 8 data bits, 1 stop bit, no parity, no flow control. In the ascii settings in Hyperterminal, make sure the add carriage return/line feed to incoming lines is checked. If it is not checked, each menu item will overwrite over the previous menu item and the menu will not be useable. Save the Hyperterminal session and it is often useful to add a desktop icon for the session. (Right click on the session after navigating from the start menu as above and choose the send to desktop option.)
- c. Connect a straight though serial cable (DB9) between the PC comm port and the printer port of the AE400.
- d. Hold in the menu button on the AE400 for about 10 seconds. The match and no match leds should turn on and menu should appear on the hyperterminal screen. NOTE: On power up, the AE400 reads the FIPS database. The data led is on during this boot up time period. DO NOT access the menu until the boot up period has terminated as is shown by the data led being off. If the menu does not appear on the pc screen, change the printer port jumpers as described above.
- e. A current AE400 should appear as follows:

#### Alert Eagle(R) 400 SetUp Menu

##### C- Current settings.

- 1 - Set hrs/min/sec of relay closure on SAME alert match.
  - 2 - Set hrs/min for AE400 clock.
  - 3 - Set year/month/day/day of week for AE400 clock.
  - 4 - SAME/EAS diagnostics on comm port (Enable/Disable).
  - 5 - Printer Port - Set for printer or paging.
  - 6 - wav file - Set LED port to wav file sync.
  - 7 - Set LED port for Visiplex paging terminal.
  - 8 - LED sign with alert colors.
  - 9 - Refine the alert message.
- D - Restore default settings.  
E - To End.

- f. Press C on your computer and the current settings should appear in Hyperterminal. You may need to scroll up to see them.
- g. Option 1 sets the time period for relay closure on a same match. The normally open relay contact closures go to the green connector on the rear of the AE400 (pins 2-3). Pin 1 of the green connector is 12 VDC and pin 4 of the green connector is ground. These 4 pins are configured to supply power and switch connectivity to the optional strobe light.
- h. Option 2 sets the day and date on the AE400 lcd time stamp for the alert messages. In option 2, press N to insert a new time and day.

- i. Option 3 similarly sets the year/month/day/day of week for the AE400 clock. The clock is battery backed up with a BR 1225 3.0 volt lithium battery. If the clock resets, you can replace this battery in the field.
- j. Option 4 is the SAME/EAS diagnostics. Normally this option should be Disabled and it will print out each SAME/EAS burst, as opposed to the refined alert message.
- k. Option 5 is sets the printer port for paging or printing. This should normally be set for printing. The paging option is when the printing port is used with Air Messenger serial for sending emails and pages (as opposed to using FipsSender and taking the alert data from the led signport and using Air Messenger ascii).
- l. Option 6 is to turn on and attached wav audio files to outbound emails. If this option is turned on, and an audio cable is connected to the RCA muted audio on the AE400 and to the mike input on your pc, and the wav file option is turned on in FipsSender, the alert audio message should be attached to the outbound emails. This audio message can be up to 1 meg in size. Determine if this is a useful option for your situation.
- m. Option 7 is to set the led signport for on site paging with the Visiplex paging terminal. See <http://www.visiplex.com/products/vs3100.htm> for more information about this interface.
- n. Option 8 is for color coded alert messages (tests in green, watches in yellow, and warnings in red) and should normally be enabled.
- o. Option 9 is for the 'refined' message where the AE400 computes the duration event time and makes the output message more readable. This option is normally enabled.
- p. Option D restores the default settings.
- q. Option E ends the menu session.
- r. It is always a good idea to power down and power up the AE400 after making any setting changes.

#### WEATHER EAGLE® Settings for Use with AE400

Holding in the Manual button on the WEATHER EAGLE® during powerup, with the WEATHER EAGLE® connected to Hyperterminal, (9600 baud, 8,N,1 NO flow control).

Suggested menu options appear below:

- 1 - Channel on powerup (Last Selected).
- 2 - RSSI/Tone diagnostics on RS232 port (Disable).
- 3 - Remote Unmute Logic in (Disable).
- 4 - Rescan for strongest signal every 60 seconds (Disable).
- 5 - Relay closure on 1050 alert (Disable).
- 6 - Live audio on 1050 alert (Disable)
- 7 - Beep on 1050 alert (Disable).
- 8 - Set hrs/min/sec of live audio on 1050 Hz alert or live timeout. (At least 1 min 30 seconds)
- 9 - Set hrs/min/sec of relay closure on 1050 Hz alert. (n/a)
- A - Close relay on Live and Play. (Enabled)

- D - Restore default settings. (n/a)
- E - End menu setup routine. (n/a)
- F - Live Timeout Reset. (Enable).
- G - Beep channel number. (Disable).

The theory of operation is that on a match (event and location) the AE400 sends a pulse (+5) signal to the Weather Eagle® as if the Weather Eagle® live button was pressed electronically. If the Weather Eagle® is also interfaced to an outside remote control, and this line is held logic low, the AE400 will be unable to activate the Weather Eagle®. The solution is to place a diode on the incoming logic line into the Weather Eagle® for live and reset. See the interface schematic. At the end of the alert (timeout or EOM decoded) the AE400 sends a reset signal to the Weather Eagle®. The backup is the live timeout timer, which times out a set period after the Weather Eagle® goes live.

## 6) Description of the Front Panel Buttons and Switches

a) Monitor Switch - Turn this switch on to monitor the audio coming into the AE400. Note, this audio will sound different from the audio source due to the special filters in the AE400 to maximize the audio for EAS/SAME decoding. The output audio, muted and unmuted will sound more normal. When the monitor switch is in the down position, adjust the AE400 audio volume to minimum comfort level.

b) Menu - See above Set the Alert Activation Time; Time of Day and Date; Enable/Disable Diagnostics.

c) Plus + See above Readback the AE400 Match Database and pressing the Plus button, with diagnostics enabled in the configuration menu, sends the details of the last received alert to the AE400 comm port 1 or Hyperterminal (9600 baud, 8, N, 1 NO flow control) with the following information:

### 1) Each of the 3 bursts received:

```
ZCZC-WXR-RWT-011001-024009-024017-024021-024031-024033-024037-051013-051043-051047-051059-051061-051099-051107-051113-051137-051153-051157-051177-051179-051510-051600-051610-051630-051683-051685-054037+0030-2761515-KLWX/NWS-À*
```

```
ZCZC-WXR-RWT-011001-024009-024017-024021-024031-024033-024037-051013-051043-051047-051059-051061-051099-051107-051113-051137-051153-051157-051177-051179-051187-051510-051600-051610-051630-051683-051685-054037+0030-2761515-KLWX/NWS-€*
```

ZCZC-WXR-RWT-011001-024009-024017-024021-024031-024033-024037-051013-051043-051047-051059-051061-051099-051107-051113-051137-051153-051157-051177-051179-051187-051510-051600-051610-051630-051683-051685-054037+0030-2761515-KLWX/NWS-Å\*

2) Whether an Event match was found, and which one:

EventMatchFound\*  
-RWT--RWT--RWT-a\*

3) Whether a Location Match was found, and which one:

Location Match Found:\*  
-----051059--051059--051059-a\*  
-----\*

4) Whether the End of Message signal was decoded

End Of Message Signal Received\*

Pressing the plus button will send the last alert out the printer port on the rear of the AE400. If in the diagnostic mode, this information will show if a good signal is being received, at least two of the three bursts should regularly decode. If one or no bursts are decoded, try to improve your signal quality by changing antenna location or using an outside and/or directional antenna.

By reviewing the SAME/EAS Location codes, you will learn what codes are being transmitted on your local transmitter and you can adjust your match files accordingly. If diagnostics are not enabled, pressing the last alert button will only print out the last translated alert.

d) Play/Record Button - Press this button to play back the last alert. Press the Reset button to stop the playback. Pressing and holding in the Play/Record button for about 10 seconds will start a test record sequence. Press the Reset button to stop the test record sequence. The unit will record 4 minutes of audio. Power down and up the AE400 to stop this sequence.

e) \_Last Alert Button - Pressing the Last Alert button sends the last translated alert to Page Z of the LED signboard.

f) Reset Button -

Pressing the reset button resets the AE400 opens the alert relay and sends a reset message to comm port1 and/or Hyperterminal (9600 baud, 8,N,1 NO flow control) and will reset the LED signboard to Page A and will reset most other functions.

g) Volume Knob - Controls the volume on the AE400 monitor speaker.

h) All Alert Switch - Placing this switch in the up position tells the AE400 to activate on all decoded SAME/EAS alerts. This is useful if you move the AE400 into a new location and have not programmed in the alert codes, if the match data base becomes corrupted, or if you want to hear all SAME/EAS alerts or if you need to temporarily switch to a backup transmitter and do not want to program in the FIPS codes for the back up transmitter, or if the backup transmitter does not broadcast the fips codes for your area.

## 7) Audio Input and FSK Lock LED

The AE400 needs 'clean, filtered' audio with an amplitude of about 500mV (millivolts) peak to peak. The audio is input into the AE400 from ONE (\*\*use only one audio input at a time!) source: a) RCA connector on the rear of the AE400; or b) a cable to the WE105 inside the AE400.

When the unit is powered up, and audio is applied to the AE400, the FSK Lock LED on the front panel should flash each time the audio 'passes through' the SAME/EAS audio passband. By looking at the FSK Lock LED you can tell if the decoder is receiving audio and whether the unit is 'locked' onto a SAME/EAS alert, during which the LED should stay on solidly for the duration of each SAME/EAS burst.

The decoder can be tested by playing a recorded .wav audio file into the rear RCA audio in jack of the AE400 using a standard workstation's Sound Recorder (start/programs/accessories/communications/sound recorder). Connect a cable between the workstations speaker output (1/8" phono) the RCA jack on the rear of the AE400. Audio cables and adapters are available from many electronic stores. The audio volume on your workstation should be set no higher than 1/3 of maximum volume. The AE400 responds well to low audio level signals. High level signals, despite the AE400's filters, may cause distortion of the signal and a failure to properly decode.

Sample .wav files are posted on [www.thuneagle.com](http://www.thuneagle.com). /support /audio files

#### 8) Description of Front Panel LEDs

- a) No Match - Lights when the last alert does NOT match EITHER the Event or the Location.
- b) Match - Lights when the last alert matches BOTH the last Event and Location.
- c) FSK Lock - Lights when the input audio is in the FSK alert audio passband. See above description of operation.
- d) EOM - Lights during the alert cycle when the relay is closed.
- e) Data - Flashes as data is moved in and out of the digital memory. This is a great diagnostic. You will see this LED flash briefly at the end of each SAME/EAS burst as the data is saved to memory and you will see this light flash during the match sequence at the end of each new alert sequence.
- g) Power - This light indicates that the AE400 has power.
- f) Play/Record - Flashes when the record chip is either recording or playing back an alert.

#### 9) Description of Rear Panel Connectors

a) 12VDC - This is used to power the AE400 where the AE400 is not being powered by the WE105.

b) Sign Port - This RJ14 modular connector is a comm port which sends alert data to the LED signboard. Jumpers inside the AE400 can switch the transmit and receive pins in this comm port to act like a null modem cable. Change both settings so one jumper is from pins 1-2 and the other is from pins 2-3. In installations placing the translated alerts into a LAN or WAN of the FipsSender software for decoding by the Alert Eagle® SignPrinter® Interface, the data for insertion into the LAN or WAN comes from this port.

c) Printer Port - This is a standard 3 wire serial port using pins 2, 3 and 5. Pins 2 and 3 are transmit and receive, but can be reversed (instead of using a null modem cable) by reversing the position of jumpers inside the AE400. Change both settings so one jumper is from pins 1-2 and the other is from pins 2-3. Pin 5 is a ground. Configuration menus and programming the AE400 with the SAME/EAS match file is input into this port using the null modem adapter.

d) Relay Output - A removable green screw terminal wire connector has outputs for 1) Ground, 2) Relay Normally Open, 3) Relay Common, and 4) 12VDC out to power the strobe light.

e) Muted Audio - This is a high impedance audio output and a volume pot for this port is located next to the RCA connector.

f) Unmuted Audio - This port monitors the unmuted audio coming into the AE400. The volume pot sets the level of the incoming audio, which should be between 300 and 500 millivolts peak to peak. You will be able to hear the effect of this pot on the AE400 monitor function. Unmuted audio should usually not be connected to another audio output to avoid distorting the audio going into the AE400 decoder.

g) LCD Contrast - Turn this pot to control the LCD display contrast.

h) Audio In - Place SAME/EAS high impedance audio into this port. **\*\*CAUTION - DO NOT** leave this test connected to an external audio source if you plan to receive alert audio from the WE105. It is permissible to insert external text audio into this port for testing while the AE400 is connected to the WE105.

#### 10) Location of Decoder

Like any piece of electronic equipment, the AE400 should be kept in a warm and dry location, away from direct heat sources and out of direct sunlight. Better reception may be obtained by moving the AE400 to a different location away from operating equipment. Computers and monitors generate significant RF and compete against the relatively weak NOAA All Hazards radio signals to capture the receiver. Always verify that you have good reception in order to receive severe weather alerts. Make sure you receive the weekly test.

#### 11) Upload New Firmware

The AE400 is operated by a powerful computer (microcontroller) with electronically flash program memory. You need the ICD-40U programmer to update the firmware. Install the ICD-40S on your workstation. Open the AE400 case (six screws on the top of the case). With the AE400 powered on, plug the ICD-40S into the RJ-45 on the AE400 and plug the USB connector into your workstation. Click download to target. Navigate to the file to upload to the AE400. **\*\*MAKE SURE YOU ONLY UPLOAD AE400 SOFTWARE TO THE AE400.\*\*** A progress bar should appear and the download and file verification should take less than 30 seconds. Click the Run Program button. The AE400 should come to life. Press the buttons on the AE400 to make sure the download was successful and test the unit with a test .wav audio file. Unplug the ICD-40S from the AE400 and from your workstation. Reassemble the AE400 case and close the ICD-40S

software. It is always a good idea to power down and power up your AE400 after any reprogramming.

## 12) Specifications

Specifications are nominal, unless otherwise indicated, and are subject to change without notice.

### General:

- Input voltage: 12 volts DC adapter or battery
- Dimensions: 3.25" x 8" x 6" (H x W x D)
- Alarms relay, text and visual
- DC input power 12 volts DC (less than 200 milliamp draw)

### FCC/ Industrie Canada Compliance Statements

FCC Part 15.21 requires that the Manual include the following statements:

“Changes or modifications not expressly approved by the manufacture could void the user's authority to operate the equipment.”

“NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.”

“Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.”

### 13) Warranty

#### Procedure

1. Refer to Operating Instructions Section of this User's Manual for proper operation.
2. If the above procedures do not correct the problem you are experiencing with your unit, return the unit with proof of purchase to point of purchase for warranty exchange or further warranty instructions.

#### Limited One Year Warranty:

Equipment manufactured and sold by Thunder Eagle, Inc. (“ThunderEagle”) is warranted to be free from defects in workmanship and materials for a period of one (1) year from date of shipment.

If dissatisfied with the equipment within thirty (30) days of receipt, the Buyer may return the equipment freight pre-paid to ThunderEagle for a refund. The Buyer MUST contact ThunderEagle for a RMA (Return Merchandise Authorization) before returning any equipment. Shipments received without a RMA will not be accepted by ThunderEagle.

Should any item manufactured by ThunderEagle become defective during the warranty period, it will be repaired or replaced at ThunderEagle’s sole discretion.

Warranty repairs made at Thunder Eagle’s factory, or in the field, shall be at no charge to the customer. ThunderEagle shall pay SURFACE transportation charges both ways within the contiguous United States if the equipment proves to be defective WITHIN 30 DAYS from the date of shipment. Throughout the remainder of the warranty period, the customer shall pay transportation charges to return the equipment to ThunderEagle, and ThunderEagle shall pay SURFACE transportation charges to return the repaired equipment to the customer. All requests for warranty service must be received within the warranty period.

All ThunderEagle warranties are contingent upon the proper use of the equipment, and will not apply if the equipment is subjected to unusual physical stress, neglect, misuse, or inadequate storage. Damage caused by electrical power surge, lightning, water, temperature and/or other environmental causes are SPECIFICALLY EXCLUDED from this warranty.

The Buyer, by acceptance of the equipment, assumes all liability for consequences of its use or misuses by the Buyer, the Buyer's employees, and/or all others. No amount of engineering will guarantee that ThunderEagle products will perform flawlessly in all circumstances. If the Buyer cannot accept this risk, the products should not be purchased.

In no event shall ThunderEagle be liable for any special, indirect, incidental, or consequential damages arising out of, or as a result of, the sale, delivery, servicing, or loss of use of the equipment or any part thereof, or for any charges or expenses of any nature incurred.

This warranty is in lieu of all other warranties, including without limiting the generality of the foregoing warranties of merchantability and fitness for a particular purpose, express or implied.

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