



## Element Software Package 2.0.1r1 Installation Instructions

8 July 2008, Cleveland, Ohio USA

### Software version compatibility

- Engine: v2.4.8w3 or higher
- Livewire Nodes: v2.3.3b2 or higher

Element sub-module firmware:

- Fader and Navigation Modules: 4.17
- User and Accessory Modules: 4.18
- GPIO: 4.0

### New in this release

See release notes at the end of this document for details

### Preparation for Update

**Note:** If you are upgrading from a version earlier than v1.1.13.7, please contact Axia support before proceeding with this update. You will need to perform an intermediary update before applying this software.



Before updating it is highly recommended to back up your show and source profiles from the Element Maintenance page. Navigate to the Maintenance page in the Element Show and Source Profiles and save your various backup files to your PC hard drive. These files are version specific so note these files to the version of Element software you are currently running.


Download the file **element-2.0.1.r1.zip** from [www.AxiaAudio.com/downloads/](http://www.AxiaAudio.com/downloads/) and save it to your hard drive.

### Installation of New Software

Using the Web browser of the computer on which you downloaded the update package, enter the IP Address of the Element you wish to update. When the Element Control Center screen appears, choose "Setup" from the left-hand menu and enter your password if prompted.

Scroll to the bottom of the page to the section shown in the screenshot below and click the "Browse" button. Navigate to the directory where you saved the update package and select the file named **element-2.0.1.r1.zip**. Choose the "Upload Image" button and the new file will upload. When the screen refreshes, you will see **[element-2-0-1-r1.zip]** added to the Software Versions list. Select this update using the radio button, and click the "Set Current Image" button. The square brackets will move to "surround" your choice and display **[element-2.0.1.r1.zip]**. This indicates your selection was accepted and will be the version the Element will load on a reboot or power up.

Software versions:		
 2.40 MB	<input type="radio"/> element-2.0.0.r12.zip	2.0.0.r12 (24-Jan-2008)
 2.40 MB	<input checked="" type="radio"/> [element-2.0.1.r1.zip]	2.0.1.r1 (02-Apr-2008)
4.80 MB	Total	

 You need to [reboot](#) Element to finish software update

Upload new image:

**Note:** you should never need more than 3 software versions loaded in memory. Delete unneeded files by selecting them and clicking “Delete Selected Image.” (Make certain you are not trying to delete the active image!)

After setting the new software as the current image, choose the “Reboot” button. Your Element will reboot immediately and the Web screen will refresh automatically.

When Element has rebooted, return to the “Setup” screen and verify that the correct software version is active.

If you have trouble at any point during the upgrade process, please contact Axia Support via mail at [support@AxiaAudio.com](mailto:support@AxiaAudio.com) , or by telephone at +1 (216) 241-7225.



## Element 2.0.1r1 Release Notes (8 July 2008)

This is a maintenance release which fixes issues reported with v2.0.0r12.

### **Fixes**

#### **Talkback**

Fixed issue wherein the Talkback function from Mic sources defined as "Producer" would not work after a Profile reload.

#### **GPIO**

Fixed a rare problem wherein "GPIO ready" on some channels occasionally interfered with loading of subsequent sources in the same source profile.

#### **Source Allocation**

Cleaned up Source Allocation routines to ensure release of resources after sources are de-assigned from console.

## Element 2.0.0r12 Release Notes (11 March 2008)

It is our policy to continuously upgrade Axia products to provide new features. These upgrades are provided at no cost, of course. This release offers a number of significant enhancements.

### **New Features**

#### **Smart Source Sharing**

The system now supports full sharing of sources, including those with backfeeds. An interlock prevents multiple consoles from sending simultaneous backfeeds or logic commands. Element shows the user the owner of the source in this case, so that it can be released.

When a source is selected and has Backfeed enabled or Logic port (GPIO) enabled and another user attempts to select the same source elsewhere with the same settings enabled, an 'x' will appear where the channel number is shown, indicating the source is in Listen Only mode. Listen Only Mode allows auditioning of source audio, but no backfeed or GPIO control is generated.

Important note: with Smart Source Sharing implemented within Element, it is no longer necessary to set audio sources as "Sharable" using the settings contained on the Audio Node HTTP pages. We recommend that you set all Node "Sharable" fields to "No" after upgrading to Element 2.0.

#### **XML for Configuration**

All configuration data is now stored in XML text files for easier back-up and restore operations. General configuration and specific profiles may now be easily exchanged between Element consoles. Advanced users may edit XML files manually with a text editor.

#### **Support for Monitor + 2-Fader Module**

This new Element module features a compact monitor section combined with two fader



positions to facilitate designing smaller consoles with higher fader counts.

### **Compatibility with iProbe**

Axia's new iProbe software application can be used to administer and upgrade Element and Engine software, and to save, restore, and copy configuration files.

### **Element/NX12 integration**

The new Telos NX12 telephone interface is fully integrated into Element. The Call Controller + 2-Fader phone module or 4-Fader Phone module can be used for line selection, dialing can be done from the Element's keypad, and caller ID and status is displayed on the main screen. All audio and control is via the network and connected with a single RJ-45.

### **Split Phone Record Mode**

Split-channel recording is implemented so that the announcer mic can be recorded on one channel and the phone caller on the other.

### **Player Display on Source Labels**

Automation system vendors can send PAD info to show on the Element's alphanumeric channel LED displays.

### **Improved Meter Ballistics and Optional Peak Meter Display**

Upon popular request, the main bar graph now has true VU meter ballistics, though with an expanded scale. The red line at -20dBFS corresponds to the 0dB mark on a traditional analog meter. Just as with a traditional analog meter, the 300ms time-constant filter specified in the VU standard means that peaks are much higher than the meter indicates. Depending upon the nature of the program material, transient peaks will be 9-15dB higher than the VU-filtered average. This is why modern consoles, including Element, have 20dB headroom above the nominal operating level. Some of this headroom is used to cover the peak transients the VU meter can't see, and some is used for operator error or surprise margin (i.e., the well-known "excited sportscaster scream").

Because the original Element meter was more peak-responding than a VU, operators will adjust levels higher with this new version than they did before to get a normal reading. Thus, you will find significantly higher levels on analog, AES, and Livewire outputs. You might have to reduce the input gain on devices connected to these outputs. Conversely, you might find the need to boost input levels to get a satisfactory reading on the Element meter with a normal fader position.

The optional peak meter bar shows the real peak value, so you can have the best of both worlds. The peak bar shows absolute peak, so it indicates like the usual level meter found in PC-based audio editors. Note that since the RMS average-to-peak value of a sine wave is  $1.4 = 3\text{dB}$ , a sine tone will cause the peak bar to be 3dB above the VU bar graph. The red warning illuminates when the peak reaches or exceeds 0dBFS.

With digital connections such as with the Livewire PC driver and AES3, the peak bar "tells you the truth." If you play a full-scale sine wave generated by a PC with the LW driver set to the default zero offset, the Windows audio mixer level set to maximum (which leaves the level unaltered), and the Element fader set to "0", you will see the peak bar at the topmost position and the red warning will be on. The VU meter will be at -3dBFS.

With Livewire analog Nodes set to the default gain position, a sine test signal at the Element -20dB red line will deliver +4dBu into an analog audio circuit.

The peak bar is on by default, but it is possible to switch it off if you like. Simply press and hold the Timer Options key on the Monitor Module for 5 seconds; the Clock & Timer Options screen will display. Then, change the “Show Meter Peaks” option to “No.”

### **Motor Faders**

The new motorized fader modules are supported as follows:

- Fader position can be set via show profiles. A value stored in the profile will move the fader to the chosen position upon profile loading. Used, for e.g., to be sure a fader is up for unattended automation play.
- Fader mirroring allows one channel to be defined as “master” and another as “slave.” Example application: A mini-console could be installed for the second person in a two-person show. The second person can control his mic and player channels from his position.
- Remote control of fader position. This could be used by PathfinderPC software, for example. Or eventually by an Element located at a remote site.

### **V-Mixer from Profiles to Global**

The “Virtual Mixer” (VMix) function is now a global setting, and is not bound to an Element profile. It can also be operated stand-alone, such as with PathfinderPC software. Although provisions are made in the Element Control Center HTTP pages to operate VMix in the previous way, we recommend using the Engine-based web page controls instead.

### **VMode Mode Switching**

The Engine now has a flexible function to select left and right channels from audio streams and compile new streams from them. This is called VMode and is accessible from the Engine’s VMIX HTTP pages. This function is also controllable from PathfinderPC for use in some router applications.

### **Phone Talk/Preview Latch**

If an operator presses Talk on a fader to which a Phone source is assigned and, while holding it, presses the Preview button, both will latch on. Pushing either one clears both.

### **Pressing OFF Disables Fader Start**

In fader-start mode, holding the Off button while moving the fader up disables the usual GPIO start command. The On button may be later used to issue the command.

### **Small Meters in the Source Select Screen**

Both normal and backfeed audio are metered to enable operators to see if audio is present.

### **Remote Channel Control**

Some channel functions are now remote-controllable. Some new Pathfinder applications need this. This function is accessible from 3rd-party applications, as well. New remote functions include channel ON/OFF button up/down indication, and channel MUTE control and indication.

### **2nd NTP Server**

A back-up server for Network Time Protocol is now supported.

**Remote Logging**

Element's internal operations can now be logged to a PC attached to the network using the Linux "syslog" standard.

**Duplex Mismatch Warning**

Element now reports when the Ethernet switch port it is attached to is incorrectly configured.

**Operator Headphone Dynamics Presets**

Element v2.0 now includes Omnia dynamics processing for the CR Headphone channel, to allow operators who cannot listen to an actual air feed (typically due to STL and HD/DAB delay issues) an approximation of the familiar, processed "air sound." Its topology is wideband AGC, followed by a 3-band limiter.

There are three presets: Bypass, Smooth Headphones and Hot Headphones. These are selected from within the Engine web pages. Headphone Dynamics presets are a global function and are selected on the Program and Monitor Outputs page of the Engine HTTP pages. With subsequent releases, we will add a user control to the Element interface and expand the control options.

**Fixes****Slow Profile Loading**

In some cases (such as profiles containing unavailable audio sources, GPIO enabled on sources that didn't use it, or with large consoles), profile loading was slow. This is now less than two seconds in all cases.

**Record Mode/Monitor 2**

If the Monitor 2 source was other than PGM 1-4 or Aux 1-4, when Record Mode was activated and then de-activated, wrong source could appear on Monitor 2. The original source now always correctly returns.

**EQ LF/HF Limit Check**

At both maximum low and high EQ frequency ranges, there could be incorrect audio effects. This is now fixed with Engine support for expanded EQ ranges.

**Record Mode Headphones Switching**

When headphones were selected to Preview, Record Mode had incorrect switching. This now correctly works to switch the headphones to the record bus during Record Mode and back to the original selection after.

**Backdoor to Locked Functions**

In previous version, it was possible for an operator to access locked-down channel functions (press "Option"). The initial screen is EQ/PAN etc. Press the Source button and then select the new source. If you don't press the Source button and rotate the navigation knob, you can select through the different DSP functions and pressing Enter gives you access to that function and you can change it.) This "backdoor" is now closed.

**Free Memory Number on Status Page was Misleading**

Linux keeps data read from disks (or CF Cards) in RAM cache forever to optimize access. This resulted in the displayed free memory number going down over time. Showing this free memory number on the web status page was misleading. Some users who looked at the status page



thought that Element was about to run out of free memory and crash. The reported number now reflects actual application usage.

#### **GPIO Start Command from Profile Change**

When a source was maintained on a fader through a profile change, a new start command was issued. (This was fixed in Element version 1.1.13.11)

#### **Small Audio Break from Profile Change**

In some cases, there could be a very small (250ms) audio break during profile change. (This was fixed in Element Version 1.1.13.13)

### ***Hardware***

Version 2.0 runs on the originally-supplied 128M RAM memory. However, we recommend that you upgrade to 256M memory so that you will be ready for subsequent versions that will probably need it. (Lots of interesting new things in the works!) We will supply the memory upgrade module to you at no cost; please contact Tech Support for this.

While you have the Element power supply/CPU box open, you should also check the following items:

- Some CPU motherboards have been discovered with improperly manufactured electrolytic capacitors. These could cause eventual failure of the unit. If your motherboard contains electrolytic capacitors labeled "GSC" on the side of the can, please contact us immediately. We will send you a replacement board at no cost.
- The Compact Flash card should be an industrial-grade, branded card for best reliability. Cards of this type have been shipping in Element consoles for the last year or so. If your Element is older than that, there is a chance you may have a generic-type unbranded card, which should be replaced. Let us know if you need new cards, and we will provide them to you at no cost.

StudioEngines should also contain branded CF Cards. We sent replacement cards to everyone in our records in July 2007, so you probably have already received yours. If not, please contact Axia Support and we will provide you with them.



Element Version 1.1.13.13, 03-May-2007

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- Included new remote control protocol commands (LWCP, telnet <el.ip>:4010). Requires latest version of PathFinderPC (v3.7 or better) to use them. New commands as follows:

1) ON/OFF state indication  
EVENT LwCH#501 OFF\_But=Down,ON\_State=On  
EVENT LwCH#501 ON\_State=OFF  
EVENT LwCH#501 OFF\_But=Up,ON\_State=Off

2) Fader ON/OFF control.  
For example to turn fader ON:  
SET LwCH#501 ON\_State=ON  
EVENT LwCH#501 ON\_State=ON

To turn fader OFF:  
SET LwCH#501 ON\_State=OFF  
EVENT LwCH#501 ON\_State=OFF

3) Mute source and restore to normal - commands and indications.  
Indication - sent also if mic muted from console or GPIO  
SET LwCH#501 Mute\_State=MUTED  
EVENT LwCH#501 Mute\_State=MUTED  
SET LwCH#501 Mute\_State=NORMAL  
EVENT LwCH#501 Mute\_State=NORMAL

- Fixed GPIO bug that sends Next pulse for Computer type source if channel is on and show profile is reloaded that has that source on the same fader.
- Fixed problem where ON Lamp signal on GPIO gets turned OFF for short time (100msec) during this show profile reload.
- Fixed bug that can stop GPIO from operating if user first goes to GPIO indication web page, then leaves that web page and then uses GPIO quite extensively.



Element Version 1.1.13.7, 24-Jan-2007

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Software version compatibility

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Element Base: 1.1.6 (required to prevent so called busy-box bug)

Element sub-module firmware:

Modules	4.17, 05/09/2005
User Modules	4.18
Accessory Module	4.18
GPIO	4.0

Engine 2.4.7c5

LWIO nodes 2.3.3b

(Show profile version 21)

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New in this release

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- Fixed crash possibility in Element (acl) when there is no connection to Engine.
- Source list in Element source selection screen is refreshed automatically.
- Support for CAN connected Accessory modules -
  - Mic Control / Headphone Selector Panel, P/N 2001-00199,
  - Headphone Selector Panel, P/N 2001-00200
- Configuration added to Show profiles and full functionality implemented (source selection, volume control, preset assignment, Talk, Mute, ON, OFF).
- NTP timezone split in Hours and Minutes. Minutes option introduced so that it is possible to set timezone offshift by +/- 1 hour when daylight saving time is in effect and base timezone is not at round hour (9:30 for instance)

Element Version 1.1.12.1, 13-Nov-2006

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Fixed: NTP bug. Could cause clock to jump to year 2036. If source NTP server does not initialize its own clock and would indicate that by sync flag that we misinterpreted.

Fixed: memory leak found in 1.1.11.3

Change: Mic processing page disabled for source types line & computer

Element Version 1.1.12.0, 31-Oct-2006

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Requires Engine ver 2.4.5b1 and higher

Fixed: The V-mixer fader order (from 1-5) is inverted on GPIO pins

Added: New field in source availability mask - V-Mixer. In V-Mixer source selection only those sources that has this field checked will appear. New sources will have it checked. All existing sources (the ones that are in Element on time of upgrade) will have it unchecked.

Changed: Change defaults for show profile/Monitors/Prev, CR MO, ST MO, HP volume to -30dB.

Added: Lockout options for Navigation module all keys. Stored in show profile Monitor Section.

Fixed: Long profile name overlaps with the window title of "Load profile" screen.

Changed: Press "Talk to" on host microphone channel the icon changes to 'H'. Button should not do anything for the CR Host source.



Fixed: Dim during TALKBACK. Backfeed over original signal with dimming. (dimming for talkback/auto backfeed)  
Added/Changed: Global fader mode - add it to global profile settings (and remove from individual channel settings)  
Changed: Not available source (e.g. non-sharable and taken) shows up in list as gray and doesn't allow to be taken  
Changed: If channel is ON, but the same source is loaded in it (from profile), Don't need to reload source, just reload other parameters.  
Changed: Mic processing applies to all source types excluding lines and computer lines.  
Fixed: Meter switching - in surround affects PGM2. Name changes in screen and web. The rightmost meter (when console is in surround mode) is supposed to be switchable between PGM2 and MONITOR. The switch is on the UI (Global Options, Meters) but does not work.  
Fixed: there are more choices in the CRMO mode and CRHP mode switches when the console is in surround mode. These modes show up on the UI (Global Options, Monitors), but do not have corresponding entries on the web config pages. Therefore, they cannot be set unless through a profile capture.

Element Version 1.1.11.3, 1-Sep-2006

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Fixed: bug introduced in 1.1.11.2 that Elements Phone module will disconnect from 2101 quite regularly (about 30 sec) and reconnect back.

Element Version 1.1.11.2, 24-Aug-2006

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Fixed: GPIO READY fixed  
Changed: Aux Send adjustment step changed to non-linear for channel Aux adjustments:

- From OFF to -40, 3dB per click
- From -40 to -20, 2dB per click
- From -20 to +10, 1dB per click
- From -10 to +10, 0.5 dB per click

Changed: allow get/set Element hostname using LWRP protocol. Element host name can be set in "Setup" web page.  
Changed: change phone server ping period to 20 seconds (was 10 seconds)

Element Version 1.1.11.1, 18-Aug-2006

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Fixed: bug in 1.1.11.0 that VMIX source selection was disabled in global VMIX screen

Element Version 1.1.11.0, 18-Aug-2006

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Added: new feature: base file system update capability.  
Added: GPIO READY. New source attribute Ready enable (RDEN)



Changed: VMIX - removed settings from Show profile. Only Global configuration from web page is possible and from LWCP.

Element Version 1.1.10.2, 9-Aug-2006

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Fixed: VMIX: on profile load, if on some particular fader, new source ID is the same as old source ID and 'on state' also is the same, then do not reload source and do not turn it OFF/ON.  
Fixed: spelling error in LWCP: TimUp => TimeUp  
Fixed: user module TEXT didn't clear if rewriting new text to module..  
Fixed in firmware 4.18, 7-aug-2006:

- LWCP server: accept MOD\_USER.DISP#1 as valid index. Keep legacy support for DISP
- Text display on user modules should be in ON indication state by default
- New feature: base file system update. Added for now just for preliminary testing.

Element Version 1.1.10.1, 3-Aug-2006

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Added: LWCP implementation for VMIXer according to doc "LW Control Protocol v06.doc".  
Fixed: disables PAN in record mode as this was causing "killing" left or right track of main Program feed when Record mode are switched ON.

Element Ver 1.1.10

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Requires Engine ver 2.4.5a2

Added: V-Mixer Added/Changed: PHONE and RECORD mixing buses, update all places to reflect existence of 6 buses (PGM1-4, PHONE, REC)  
- New PHONE and RECORD mixing buses. PGM4 is constantly "post" as we have now RECORD and PHONE busses.  
- Change back that Talkback is handled (back as Talk to Previewed in SS).  
- Add PGM3-4, AUX A-D to Feed to source options list (screen and in web).  
Improvement: Do some file validity check before uploading Element update file. Improvement: Profile changed indicator. PGM1-4 should change. Preview changes should not. HP should change. Monitor selections, fader levels, monitor volumes, and channel ON/OFF should not. Options should change. Fixed: Default to "Unlocked" for source profile. Fixed: On-AIR annunciator on screen also ON for STMO or more exactly if STUD MIC is ON Changed: Clean-up the web interface: General page removed, Startup show profile in Show profile page. NTP parameters and Engine IP address moved to Element's main pages.

Element Version 1.1.9.1, 12-Jul-2006

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Fixed: Count down timer fix:  
1) have the digital timer round up, like the analog, when tenths are not showing. 2) when reset is executed manually, digital timer goes to preset value, but analog timer does not show anything, even if timer is reset to value less than 60 seconds."



Element Ver 1.1.9

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Requires Engine ver 2.4.4g1

Added: Turn off 1/10 of timer seconds. Options to turn OFF 10ths of second for both Count Down and Count Up timers.

Added: Computer - new Source Type. Implemented GPIO logic for Computer and changed for Line type according to GPIOs.xls. This includes fix that Line type didn't indicate Preview Lamp.

Added: control lock - locks also fader level and can capture now

Fixed: Timer Mode - didn't loaded mode from profile correctly

Fixed: some fixes in deferred source loading of Monitor sources (Mon1&2, HP) - if source stayed inactive, even taking Default Profile didn't clear red text "inactive source"

Element Ver 1.1.8a

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Fixed: - firmware update bug. bug is fixed also in 1.1.9 and further versions.