



1.01 LIGHTING CONSOLE AND ACCESSORIES

A. General

1. The lighting control console shall be a microprocessor-based system specifically designed to provide complete control of stage, studio, and entertainment lighting systems. The console shall be the Element as manufactured by Electronic Theatre Controls, Inc., or equal.
2. The control system shall be Net3 and ETCNet2 native, with both protocols output simultaneously over the network. The system shall also be able to control third party ACN devices directly. The system shall provide control of 1024 outputs on 250 or 500 channels.
3. A maximum of 10,000 cues, 1000 groups, 1000 Intensity Palettes, 1000 Color Palettes, 1000 Focus Palettes, 1000 Beam Palettes, 1000 effects, 1000 macros and 100 curves may be contained in non-volatile electronic memory and stored to an onboard hard disk or to any USB storage device.
4. The console may be placed in Tracking or Cue Only mode by the user as a system default and overridden on individual record actions as required.

5. A Master Playback fader pair and dedicated Grand Master/Blackout shall be provided.
6. The console shall provide 40 or 60 pageable faders and bump keys that may be operated in either LTP channel or HTP/LTP submaster mode. The console shall support a total of 300 submasters.
7. A high-resolution level wheel shall be provided to control intensity for selected channels and scrolling within selected displays. On demand moving light controls shall be provided for control of other non-intensity parameters. Non-intensity parameters shall be controllable via the on demand or keypad controls.
8. On demand moving light controls shall provide mouse-based tools for non-intensity parameters. The tools shall display the current value for each parameter and shall provide controls for adjusting each parameter.
9. Control and programming features for automated fixtures shall also include: a standard library of fixture profiles, the ability to copy and edit existing profiles and create new profiles, patch displays including channel and output addressing, 16-bit fade resolution, color characterization allowing color mixing and storing in Hue and Saturation or native device values.
10. System information, including playback status, live output and blind values for all record targets shall be displayed on a maximum of two external high resolution DVI monitors, or one SVGA monitor, which may also be touch-screen(s). Only one display shall be required for operation.
11. The system shall direct user input through on-screen dynamic prompts and integral LEDs on console keys indicating current operating mode. A context sensitive on-line Help feature shall explain and provide an example of the operation of each feature of the system.
12. An optional, fully-functioning, detachable alphanumeric keyboard shall be supported. The keyboard shall allow labeling of channels, cues, presets, groups, palettes, effects, macros, curves and the show. An integral electronic keyboard shall be provided.
13. A row of softkeys shall be provided, which change function based on the selection and context of the console. These softkeys shall be labeled on the connected external display.
14. Console software upgrades shall be made by the user via a USB port; changing internal components shall not be required.
15. The console operating software shall be loaded into program execution memory from the internal hard drive when the console is powered. In the event of an uncontrolled shutdown, the console shall return to its last output state when power is restored.
16. Show data may be created and modified on a personal computer, using either Windows XP or Vista operating systems, using a free offline editing application. The offline editor may also run natively on Macintosh platforms using OS X.
17. A PC, using either Windows XP or Vista running a client software application shall be able to connect to a control system via the network and view current show data in a mirrored display environment.
18. The system shall allow remote control from a purpose-built wireless remote focus unit (Radio Focus Remote). Systems without these remote control devices shall not be acceptable.
19. The system shall support a Telephone remote control that allows basic functions to be controlled from a standard wireless phone producing touch-tone signals. This allows the use of a standard telephone for a low cost remote control. Systems that do not allow this function shall not be acceptable.
20. The system shall support up to 16 individual Time Code Event lists.

B. Controls and Playback

1. Manual Control and Programming Section

- a. The console keyboard shall be grouped by function. Major groupings shall be record target functions, numeric keys, level assignment functions, display navigation functions and controls.
 - b. Non-intensity parameters may be set numerically or via the on demand moving light controls. This control shall be fully interactive. In either case the current parameter value shall be displayed on the console monitor. -
 - c. Only those parameters available for control in the active lighting system shall be displayed for control.
 - d. Lamp controls provide direct access to luminaire functions such as striking and dousing arc lamps and calibrating entire fixtures or individual mechanisms of fixtures, as provided by the luminaire manufacturer. User access to these features is normalized across all manufacturers for ease of use. Use of a "control channel" for accessing these functions shall not be required and systems requiring use of a control channel shall not be acceptable.
 - e. Fixtures with CMY or RBG color mixing may be set with direct CMY or RBG controls, as well as the Hue and Saturation controls and/or color picker. Color may also be set directly to a gel match, normalized to 3200K.
2. Playback Section
- a. The master fader shall consist of a 60mm Master Fader pair with associated Load, Go and Stop/Back buttons.
 - b. It shall be possible to instantaneously halt an active cue, go back to the previous cue, manually override the intensity fade or manually override the entire fade.
3. Integral Channel/Submaster Faders
- a. Submaster and fader support shall be provided via 40 or 60 integral 45mm faders with bump leys. These faders shall be pageable and shall operate in LTP channel and LTP/HTP submaster modes.
 - b. LTP channel mode shall allow the user access to intensity of the first 120 channels and shall operate with LTP logic. Faders that are not currently set to the same level as the corresponding channel shall have to be matched to that level before affecting said channel.
 - c. Up to 240 proportional, fully overlapping additive or inhibitive submasters may be defined. Submasters shall have colored LEDs to indicate submaster status. Each submaster may have fade up, dwell and down fade times. Each has a bump and assert/channel select button. Submasters may be set to independent, exclusive and proportional/intensity master control.
 - d. The submaster blind buffer shall be linked directly to live playback allowing live editing of live submaster content via the command line.
 - e. It shall be possible to set submaster values directly from the command line.
4. Grand Master
- a. A dedicated 60mm grand master and blackout button are provided.
 - b. The grand master shall proportionally fade intensity values to zero. Blackout shall send all intensity outputs to zero. Non-intensity outputs shall not be affected. No additional configuration shall be required to withhold non-intensity values from Grand Master and Blackout control.
- C. Display Controls
- 1. Format shall change the view of selected displays.
 - 2. Channel views may be displayed either in a expanded table view combining conventional channel symbols with table views for multi-parameter devices, or in a channel summary view.
 - 3. Flexichannel shall change which channels are viewed in selected displays, based on a variety of different criteria.

4. Expand shall extend the selected view sequentially across connected displays.
 5. Data shall display absolute values of referenced data.
- D. Operating Modes
1. Live Mode
 - a. Channel lists may be constructed using the +, - and Thru keys.
 - b. Levels may be set with the keypad, level wheel and on demand moving light controls. "Selected" channels shall be those last addressed and under keypad control.
 - c. Sneak shall be used to restore specified channels to background states, default values, or to send them to specified values, in user specified or default times.
 - d. Selected channels may be set at a level or held to current values while all other channels are set to zero using Rem Dim. Toggling Rem Dim shall restore all unselected channels to original levels. The Rem Dim level shall be user definable.
 - e. Channels may be recorded into groups for fast recall of commonly used channels. 1000 groups shall be available. Groups shall store selection order. The Offset function supports rapid creation of ordered groups, including reverse and random order.
 - f. Parameter settings may be stored to Focus and Color Palettes. All referenced data may be stored to whole numbers or to up to 99 decimal places between each whole number. It shall be possible to store 1000 of each palette type.
 - g. Any collection of channel data, as determined by the use of "Record" or selective store commands may be stored to palettes (as appropriate to the type).
 - h. The following conditions may be placed on a channel or channel parameter to be included with a cue record action.
 - 1) Block flag
 - 2) Note
 - i. Cues may be recorded in any order. Up to 99 decimal cues may be inserted between any two whole number cues. Each cue may contain a maximum of twenty parts. Parameters may be automatically assigned to specific parts or assigned when the part is created.
 - j. It shall be possible to record cues and cue parts with the following information:
 - 1) Any collection of channel data, as determined by the use of "Record" or selective store commands.
 - 2) Cue Level timing and delays for Intensity Up and Intensity Down, Parameter moves shall follow the Intensity Up time.
 - 3) Follow or hang time
 - 4) Link instruction
 - 5) Loop value
 - 6) Block and/or preheat
 - 7) Curve
 - 8) Label and note
 - 9) Execute list to trigger other activity
 - k. Non-intensity channel parameters may be marked (preset using Automark. Automark presets any parameter transitions in the cue just prior to intensity becoming active. Automark may be disabled on a cue or cue part basis, enabling a "live" move.
 - l. Any channel parameter may be stored with an effect instruction. These effects may contain relative offsets from current value, or absolute instructions. Effects may be progressive action or on/off states. Entry and exit behaviors shall modify the channel parameters activity when beginning and ending the effect.

- m. Update may be used to selectively add modified parameter data quickly to that parameter's current source. It shall be possible to update inactive record targets. It shall also be possible to update back to the current source of the move instruction without specifying that cue via Trace.
 - n. Recall From quickly pulls specified data from record targets into the current view.
 - o. Copy To quickly copies selected data to specified record targets.
 - p. Address and channel check functions shall be provided.
 - q. Channel parameters may be "parked" at levels. Output addresses may also be parted directly. Parked levels shall not be added to any live record operations, nor may they be changed until the parked element is "unparked". Address park shall also be provided.
 - r. About shall provide detailed status of selected channels or specified record targets, including utilization information. About shall also access lamp control functions to calibrate devices, strike and douse arc sources. Use of a luminaire control channel for these functions shall not be acceptable.
 - s. Live data may be displayed in an expanded table view containing conventional symbols and table views for multi-parameter devices or in a summary view.
 - t. Undo shall be used to sequentially step back through manual operations, record, update and delete actions. Redo functions shall be provided. Multiple undo commands may be executed at once.
 - u. Home shall set selected channels non-intensity parameters to their default values.
 - v. Move shall allow all show data to be moved from one record target to another.
- 2. Blind
 - a. The Blind display allows viewing and modification of all record targets without affecting stage levels.
 - b. Record target data may be displayed in an expanded table view containing conventional symbols and table views for multi-parameter devices, in a summary view or a spreadsheet view, which allows quick data comparisons, move and replace with functions.
 - c. Changes made in blind displays shall be stored automatically.
 - d. Blind editing shall be possible for all record targets.
 - e. It shall be possible to show or hide parameter data in spreadsheet views for simplicity in viewing/editing.
 - 3. Patch Display
 - a. Patch shall be used to display and modify the system control channels with their associated library data.
 - b. Each channel may be provided with a proportional patch level, preheat, curve, label, swap and invert functions.
 - c. Offset functions in patch shall allow selection of channel ranges and shall allow the user to establish a "custom" footprint for any device output.
 - d. Custom color wheels, color scrolls and gobo wheels shall be defined in patch. These devices shall be created with a simple table and graphical user interface supported by images of major manufacturers.
 - e. Copy to and Move functions shall be supported in patch.
 - 4. Setup/Browser
 - a. Setup shall access system, show and desk configurations.
 - b. The browser shall access show data storage, import, export, print to .pdf and clear functions, as well as show data utilities.
- E. Interface Options
- 1. The console shall support a variety of local interfaces.
 - a. AC input.

- b. USB (a minimum of five ports shall be provided for connecting devices such as a Alphanumeric keyboard, mouse, touch screens, USB Flash drive, etc.) The desk shall provide at least four ports on the rear of the console and one on the control surface itself.
- c. Ethernet (one port) 802.3af compliant
- d. Two DVI video output connectors, supporting a maximum of two DVI monitors at 1280x1024 resolution minimum.
- e. One VGA output connector.

F. Accessories

- 1. Net3 Radio Focus Remote
- 2. Net3 Remote Video Interface
- 3. Net 3 Gateways
 - a. Net3/ETCNet2 to DMX/RDM Gateways (one to four ports)
 - b. MIDI/SMPTE Gateways
 - c. I/O Gateway with 12 analog inputs, 12 SPDT contact outputs, RD232 interface
- 4. Element Client Software Kit

G. Physical

- 1. All operator controls and console electronics for a standard system shall be housed in a single desktop console, not to exceed 32.9" wide, 17.9" deep, 5.1" high, weighing 30 pounds.
- 2. Console power shall be 95 – 240V AC at 50 or 60Hz, supplied via a detachable power cord.

Interfaces	2 DMX-512 ports (RDM ready) Ethernet (ETXNet2, Net3, Artnet, Avab UDP protocols) Contact closure triggers via D-Sub connector 2- DVI video for 2 (optional DVI displays up to 1280x1024 with optional touch-screen control) 1- VGA connector 5- USB ports Phone remote Net3 Focus Remote MIDI In/Out (Timecode, Show Control) Additional MIDI/SMPTE Timecode, Show Control through Net312- analog in, 12 SPDT out,RS-232 thru Net3 Gateway
Rating	100-240VAC 50/60Hz, 2A @ 120V, 1A @ 240V
Dimensions	5.1 x 32.9 x 17.9" (13 x 8.36 x 45.5cm) (HxWxD)
Weight	30 lbs (13.6kg)