

AN INTRODUCTION TO THE  
MEGA-CUE  
MEMORY LIGHTING CONTROL SYSTEM

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The MEGA-CUE memory switchboard has been developed to fulfill the physical needs and artistic requirements of the largest and most sophisticated houses while at the same time not be prohibitively expensive for the smaller theater.

The MEGA-CUE system is a self-contained microprocessor control board which is capable of controlling most types of electronic dimmers simultaneously. The board has a capacity of controlling one thousand channels or dimmers and has a memory capacity of up to one thousand cues. The actual storing of information is done on a flexible disc unit which on a single ten dollar "Floppy Disk" allows storage of over 250,000 dimmer readings (the equivalent of 1,000 cues for 250 dimmers). This feature makes library storage in a repertory situation very simple since it is possible to dedicate one "Floppy" to each show and by merely exchanging these Floppies the system is instantly and completely re-programmed.

The communication from the MEGA-CUE control board to a small interface unit located at the dimmers (or in the case of a temporary installation, the existing control board) uses only a single conductor coaxial cable. The digital commands to the dimmer are sent over this cable so that the dimmers get new information ten times every second. The point at which the tie-in occurs is the interface unit which interprets the digital signal from MEGA-CUE into the varied D.C. voltages that control the dimmers. This single cable replaces the multiconductor cables present in most control systems.

Other features of MEGA-CUE allow it to control four CRT or video displays simultaneously. A new function, CHANNEL TRACK, enables the viewing of a single dimmer's readings in all of the memories (similar to a track sheet). MEGA-CUE



can also be readily interfaced to a hard-copy printer.

Cues are constructed with MEGA-CUE by using a single channel controller (Fader Wheel) which can control a single channel or group of channels. The writing and recording of cues can be done by actually changing the light levels on stage or blind-plotted (written in memory without affecting the lighting on stage). At any time after a cue has been recorded, a single level or group of levels may be revised and re-recorded, once again this need not be done on stage.

With MEGA-CUE we have simplified the process of writing by memory. This is important as it allows the designer to set up his lighting in systems, record these systems in memories, and then recall each memory just as he would a single channel. An example might be as follows:

*In a simple light plot, dimmers 1-10 are warm fronts, dimmers 11-20 are cool fronts and dimmers 21-25 are backlight. Assume that to get a balance of warm fronts, the levels are:*

<u>Dimmer</u>	<u>Level</u>	
1	8	
2	10	
3	5	
4	7	
5	9	
6	3	= Memory 100
7	10	
8	6	
9	7	
10	9	

*These levels have been recorded in Memory 100. The same is done for the cool fronts (Memory 101) and the backlight (Memory 102):*

<u>Dimmer</u>	<u>Level</u>
11	9
12	8
13	7
14	8
15	10
16	9
17	8
18	6
19	8
20	10



<u>Dimmer</u>	<u>Level</u>	
21	10	
22	10	
23	9	= Memory 102
24	8	
25	10	

Now that these "working memories" have been recorded, cues can be constructed much as they would be by using submasters on a preset board. Any time that warm fronts are called for it is no longer necessary to ask for ten dimmers and balance the levels of each dimmer: it is necessary only to ask for Memory 100 to, say, a level of 8. This action would effectively raise all of the first ten dimmers to 80% of their original levels, retaining the originally set balance.

To build the rest of the cue, the designer would ask for Memory 101 (cool fronts) up to 7 and Memory 102 (backlight) to 6. Individual dimmer levels could be altered and then, when the designer is satisfied, the levels would be recorded in the chosen memory.

This is but one of the ways in which a cue may be constructed from MEGA-CUE. The next cue could be built from this one or constructed from scratch but this method is designed to simplify and speed up the process.

Once the cues are recorded, they may be played back or recalled on any of four timed faders or they can be transferred immediately to the stage using the "Cut" or "Plus" buttons. The timed faders are arranged in two UP FADE/DOWN FADE pairs with each fader having its own time scale with a range of one second to 90 minutes. At any time it is possible to stop, cancel or change the rate of a fade that is in progress in case of a mistake or a complex cueing request. It is also possible to initiate overlapping or "FADE WITHIN FADE" cues on the same fader allowing infinite "build" cues.

The MEGA-CUE system is the culmination of more than a year's work in applying the new technology of the electronics and computer industries to a full-scale memory lighting system. But the real strength of the board is that while it offers tremendous artistic flexibility to the designer it does not contain the myriad of confusing buttons, bizarre special cases, and large size common in some full scale systems.



## A Note on the MEGA-CUE System

A notebook accompanying this memorandum provides some preliminary information concerning our new *MEGA-CUE* memory system. It should be noted that the photographs and the text accompanying them refer to the first prototype, which we completed early in 1977. We are now in the final developmental stage of a production model in which - among others - the following additions and modifications are being incorporated:

- ...The addition of a second "Floppy Disk" drive unit to allow duplicating of programmed cues.
- ...The capacity to control four CRT displays. The CRT outputs are compatible with standard video monitors, making it possible to have remote viewing of dimmer and fade information at low cost. The CRTs are refreshed by the microprocessor, eliminating the delay in "optional CRT" systems.
- ...The panel will be simplified and reduced in size.
- ...There will be output to a standard 10 character/second teletype and the faster 30 character/second printers. This allows a hard-copy printer option and the association of a message with each memory.

The first production model is to be completed in early April 1977. The prototype has been tested extensively in actual productions, being used for two simulcast operas and in several demonstrations.

While the system has been developed primarily for theatre use, it has proven to be effective - without modification - for use in TV lighting sessions for the opera productions.

If you have further questions, please contact:

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