

# Film-Tech

The information contained in this Adobe Acrobat pdf file is provided at your own risk and good judgment.

These manuals are designed to facilitate the exchange of information related to cinema projection and film handling, with no warranties nor obligations from the authors, for qualified field service engineers.

If you are not a qualified technician, please make no adjustments to anything you may read about in these Adobe manual downloads

[www.film-tech.com](http://www.film-tech.com)

# INSTRUCTION MANUAL

## BCA-8

Bar Code Automation



**STRONG INTERNATIONAL, Inc.**  
4350 McKinley St. Omaha, NE 68112  
402/453-4444 FAX 402/453-7238 TELEX 484481

STRONG INTERNATIONAL  
BCA-8 Bar Code Automation Instruction Manual

TABLE OF CONTENTS

PRODUCT DESCRIPTION

INTRODUCTION .....	1
SYSTEM FEATURES .....	1
CONTROL PANEL .....	2

OPERATION

NORMAL OPERATION INSTRUCTIONS .....	2
REMOTE OUTPUTS .....	3
REMOTE INPUTS .....	4
DIP SWITCH SET UP .....	4
CHECK OUT .....	9
INTERLOCKED OPERATION .....	10

CUE FUNCTION/SHOW MAKE-UP

UNITED ARTISTS CUE FUNCTIONS/SEQUENCE OF EVENTS .....	11
WARNER BROTHERS CUE FUNCTIONS/SEQUENCE OF EVENTS .....	14
SHOW MAKE-UP AND CUE PLACEMENT .....	16

APPENDIX

TERMINATION SCHEDULE .....	20
BAR CODE CUE FUNCTION/SHOW MAKE-UP CHART .....	25
TECHNICAL SPECIFICATIONS .....	28

## PRODUCT DESCRIPTION

### Introduction

The BCA-8 Bar Code Automation is a microprocessor based theatre automation designed to control the booth and auditorium functions during film presentations. The BCA-8 was designed to fit in the X-90 and Super Highlight consoles, or to be wall mounted. The BCA-8 is used with the Symbol model LS-6320-E001A bar code scanner. Bar code information is read by the scanner, decoded, and sent to the RS-232C port on the BCA-8 automation for processing.

### System Features

#### Projection Booth Functions:

Projector Motor	on/off	Maintained
Xenon Lamp	on/off	Maintained
Auxiliary Projector	on/off	Maintained
Exciter Lamp	on/off	Maintained
Changeover	open/close	Pulsed
Film Sound	mono/stereo/SR/magnetic/special	Pulsed
Non-sync	on/off	Pulsed
Sound Mute	on/off	Pulsed
Sound Enable	on/off	Pulsed
Lens	flat/scope/special	Pulsed

#### Auditorium Functions:

Curtains	open/close	Pulsed
House Lights	up/half/down levels	Pulsed/Main
Stage Lights	up/down levels	Pulsed/Main
Masking	flat/scope/special	Pulsed

#### Other Features:

Remote station compatible: inputs -- start/stop; outputs = alarm/fault /show on/show end.

Interlocked operation: BCA-8 automations to be interlocked are wired together with four wires. There is no limit to the number of systems in an interlock loop. Units are "put on" or "dropped off" a loop with the sync switch on the front panel.

Clock/Timed start (optional): Clock autostart allows programmed automatic show starts; ten per day, seven schedules per week. Timed autostart allows time-delayed show starts.

Programmable timers: Four programmable timers for user configuration. Timer for delaying changeover dowsers open pulse at show start and restart; timer for controlling the time the changeover is closed during lens format change; timer to delay the dowsers from closing at the end of the show until the curtains are closed; and a timer to control the

time from an intermission cue to show shut down.

Manual overrides for all major functions.

### Control Panel

The BCA-8 control panel can be broken down into three basic sections:

1. Power switch with neon power indicator.
2. Operation input switches: Run/Resume, Stop, Sync, and Alarm cancel.
3. Manual overrides for booth and auditorium functions.

### OPERATION

#### Normal Operation Instructions

- 1.) POWER switch  
ON - This position turns the automation on. The pilot lamp lights when the power is on.  
OFF - This position turns the automation off.
- 2.) RUN/RESUME switch  
This switch starts the projector motor and xenon lamp, assuming there is no failsafe fault. LED lights when projector motor is running.
- 3.) STOP switch  
This switch stops the projector motor, xenon lamp, and exciter; brings the house and stage lights up; pulses non-sync output; and closes the changeover. This switch is generally used for emergency purposes. LED lights when show is in progress and switch is pressed.
- 4.) SYNC switch  
This switch puts the automation into the interlock loop. LED lights when automation is interlocked.
- 5.) ALARM CANCEL  
This switch will silence the remote alarm when a filmbreak is detected.
- 6.) LAMP switch  
AUTO - This position puts the lamp output in the automatic mode.  
ON - This position turns on the xenon lamp. For emergency use or lamphouse testing.
- 7.) MOTOR switch  
AUTO - This position puts the projector motor output in the automatic mode.  
ON - This position turns on the projector motor. For emergency use or as a motor jog switch.

- 8.) EXCITER switch
  - AUTO - This position puts the exciter lamp output into the automatic mode.
  - ON - This position turns on the exciter bulb. For emergency backup or testing.
- 9.) CHANGEOVER
  - OPEN - This position opens the changeover dower
  - CLOSE - This position closes the changeover dower
  - This is a momentary switch and rests in the automatic mode.
- 10.) LENS/MASK
  - FLAT - This position moves the lens turret to the flat lens position.
  - SCOPE - This position moves the lens turret to the scope lens position.
  - This is a momentary switch and rests in the automatic mode.
- 11.) LENS/MASK
  - SPECIAL - This position moves the lens turret to a special lens format.
  - MASK STOP - This position will stop the masking motor to allow custom mask positioning.
  - This is a momentary switch and rests in the automatic position.
- 12.) CURTAIN
  - OPEN - This position opens the curtain.
  - CLOSE - This position closes the curtain.
  - This is a momentary switch and rests in the automatic position.
- 13.) HOUSE LIGHTS
  - UP - This position will bring the house lights up.
  - DOWN - This position will take the house lights down.
  - This is a momentary switch and rests in the automatic position.
- 14.) STAGE LIGHTS
  - UP - This position will bring the stage lights up.
  - DOWN - This position will take the stage lights down.
  - This is a momentary switch and rests in the automatic position.

### Remote Outputs

1. FAULT
  - ON - Latched on when failsafe and show is running.
  - OFF - Off by Alarm Cancel or raising the Failsafe arms.
2. SHOW ON
  - ON - Blinking if between shows and "ready to run", (failsafe arms up)
    - Latched if projector motor is running, but not during shut down at end of the show
  - OFF - Off during Failsafe and show is running.

3. END OF SHOW  
 ON - Latched when at "end of show" cue.  
 OFF - Off when between shows.

Remote Inputs

1. START - Requires a momentary connection to "Remote Return" to start the projector motor/lamp. This functions as both a show "start" and "resume". Same as local RUN/RESUME.  
 2. STOP - Requires a momentary connection to "Remote Return" to stop the projector motor/lamp. Same as local STOP.

Dip Switch Set Up

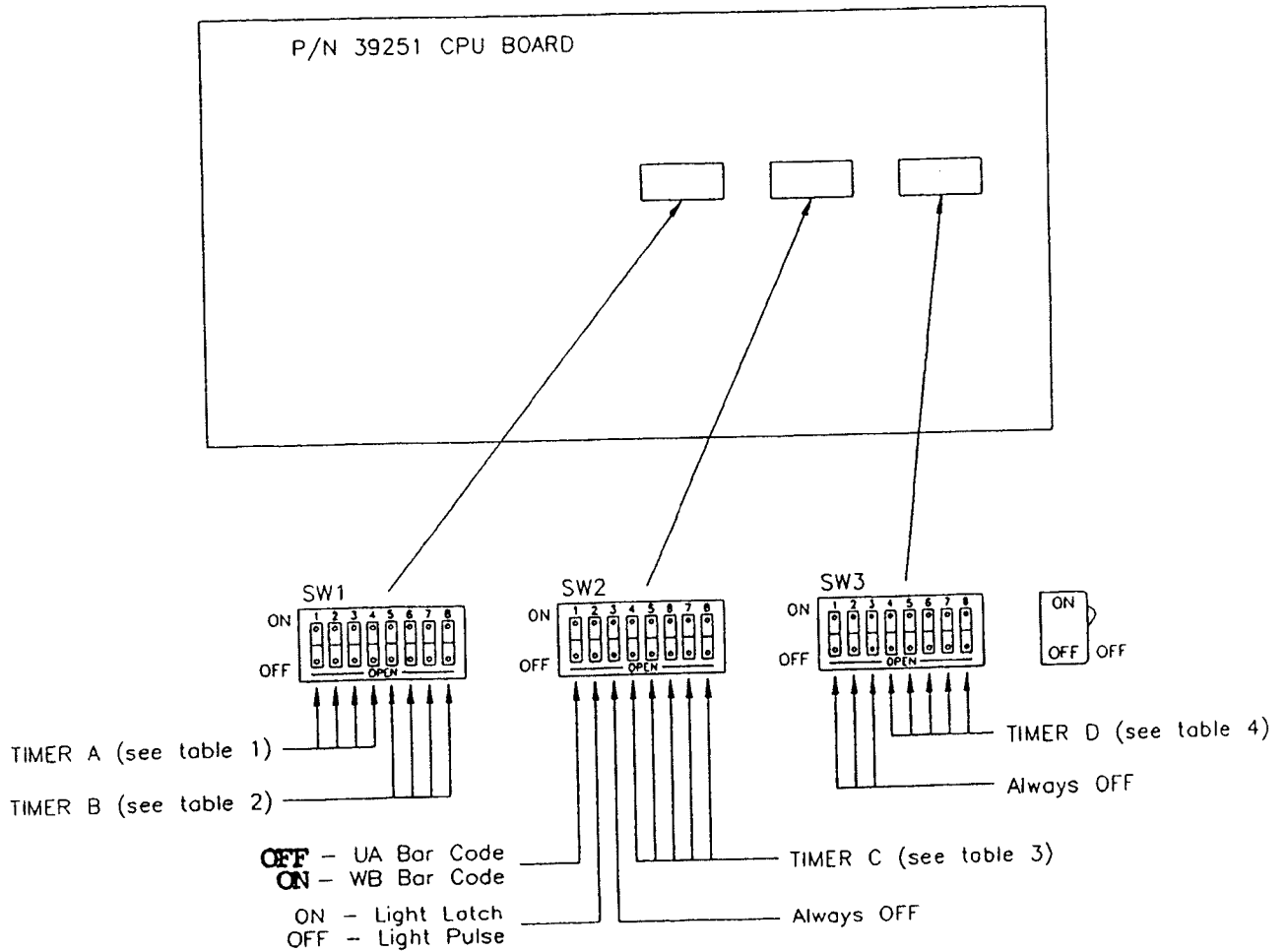


figure 1

Timer Set Up:

1. **TIMER A** - 0 to 15 seconds; 1 second resolution.  
Sets the time from restart to changeover open. Also used at the start of the show - timer starts when RUN is pressed, but nothing happens until a "start" cue is detected. This timer is used primarily to allow the projector motor to get to speed prior to allowing the Changeover Open and Sound to occur.

TIMER A Set Up Chart

Sec	Switch Selections			
	SW1-1	SW1-2	SW1-3	SW1-4
0	off	off	off	off
1	off	off	off	on
2	off	off	on	off
3	off	off	on	on
4	off	on	off	off
5	off	on	off	on
6	off	on	on	off
7	off	on	on	on
8	on	off	off	off
9	on	off	off	on
10	on	off	on	off
11	on	off	on	on
12	on	on	off	off
13	on	on	off	on
14	on	on	on	off
15	on	on	on	on

table 1



2. TIMER B - 0 to 15 seconds; 1 second resolution.  
 Sets time the changeover will be closed during a lens  
 format change. Normal form of changeover is:  
 Changeover = CLOSED  
 Sound Enable/Mute = MUTE  
 Exciter = OFF  
 Lens = (new state)  
 Timer B delay  
 Exciter = ON  
 Changeover = OPEN  
 Sound Enable/Mute = ENABLE  
 (A sound change may also occur during lens changeover.)

TIMER B Set Up Chart

Sec	Switch Selections			
	SW1-5	SW1-6	SW1-7	SW1-8
0	off	off	off	off
1	off	off	off	on
2	off	off	on	off
3	off	off	on	on
4	off	on	off	off
5	off	on	off	on
6	off	on	on	off
7	off	on	on	on
8	on	off	off	off
9	on	off	off	on
10	on	off	on	off
11	on	off	on	on
12	on	on	off	off
13	on	on	off	on
14	on	on	on	off
15	on	on	on	on

table 2

3. **TIMER C** - 0 to 31 seconds; 1 second resolution.  
 Sets the time from end of show cue shut down. This timer can be used to allow the film/leader to run out of the projector.

**TIMER C Set Up Chart**

Sec	SWITCH SELECTIONS				
	SW2-4	SW2-5	SW2-6	SW2-7	SW2-8
0	off	off	off	off	off
1	off	off	off	off	on
2	off	off	off	on	off
3	off	off	off	on	on
4	off	off	on	off	off
5	off	off	on	off	on
6	off	off	on	on	off
7	off	off	on	on	on
8	off	on	off	off	off
9	off	on	off	off	on
10	off	on	off	on	off
11	off	on	off	on	on
12	off	on	on	off	off
13	off	on	on	off	on
14	off	on	on	on	off
15	off	on	on	on	on
16	on	off	off	off	off
17	on	off	off	off	on
18	on	off	off	on	off
19	on	off	off	on	on
20	on	off	on	off	off
21	on	off	on	off	on
22	on	off	on	on	off
23	on	off	on	on	on
24	on	on	off	off	off
25	on	on	off	off	on
26	on	on	off	on	off
27	on	on	off	on	on
28	on	on	on	off	off
29	on	on	on	off	on
30	on	on	on	on	off
31	on	on	on	on	on

**table 3**

4. TIMER D - 0 to 31 seconds; 1 second resolution.  
 Normally set to the time it takes the curtains to fully close. This is used for the intermission cue.

TIMER D Set Up Chart

Sec	Switch Selections				
	SW3-4	SW3-5	SW3-6	SW3-7	SW3-8
0	off	off	off	off	off
1	off	off	off	off	on
2	off	off	off	on	off
3	off	off	off	on	on
4	off	off	on	off	off
5	off	off	on	off	on
6	off	off	on	on	off
7	off	off	on	on	on
8	off	on	off	off	off
9	off	on	off	off	on
10	off	on	off	on	off
11	off	on	off	on	on
12	off	on	on	off	off
13	off	on	on	off	on
14	off	on	on	on	off
15	off	on	on	on	on
16	on	off	off	off	off
17	on	off	off	off	on
18	on	off	off	on	off
19	on	off	off	on	on
20	on	off	on	off	off
21	on	off	on	off	on
22	on	off	on	on	off
23	on	off	on	on	on
24	on	on	off	off	off
25	on	on	off	off	on
26	on	on	off	on	off
27	on	on	off	on	on
28	on	on	on	off	off
29	on	on	on	off	on
30	on	on	on	on	off
31	on	on	on	on	on

table 4

Bar Code type selection:

SW2-1: ON to select United Artists Bar Code.  
OFF to select Warner Brothers Bar Code.

Light latch selection:

SW2-2: ON for house and stage lights latch.  
OFF for house and stage lights pulsed.

\* Dip switches SW2-3, SW3-1, SW3-2, and SW3-3 are always OFF.

### Check Out

Before power-up you must configure the BCA-8 by setting the appropriate dip switches as described above. The switches are located on the CPU board. Once the switches are set up, you are ready to power up the unit. This is done by pressing the power switch on the BCA-8 front panel. The neon power lamp will light to indicate the unit is powered up. A red LED on the barcode scanner will light, indicating power to the unit. Upon power-up, house and stage lights will be pulsed up, non-sync sound will be selected, and lens will go to flat.

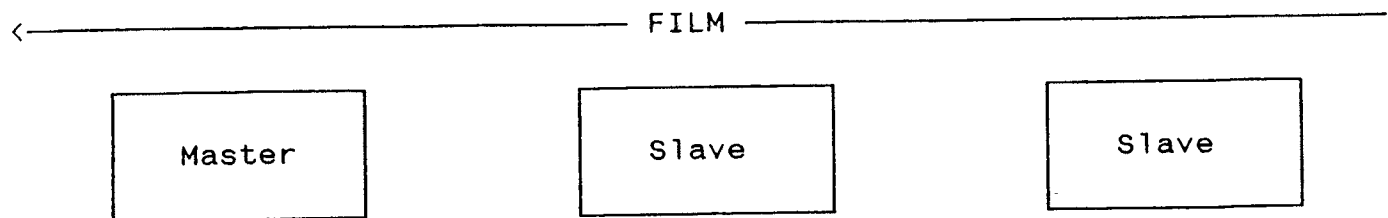
The unit is now ready for operation, assuming all the projection equipment has been thoroughly checked out. It's usually a good idea to make a test run to be sure everything operates properly. Pressing the RUN/RESUME switch will start the projector motor and xenon lamp.

To setup a film presentation refer to the 'CUE FUNCTION/SHOW MAKE-UP' section. Once the bar code cues are properly placed on the film and the film is threaded in place, it's time to start the show. Press the RUN/RESUME button. The bar code scanner continuously scans the film for the presence of a bar code. Once a bar code is read, the BCA-8 will activate the appropriate outputs. For example, when bar code #01 (UA) is detected, the house lights go to the mid or half level position, the curtain opens, the exciter turns on, lens and masking go to a flat format, mono sound is selected, and the changeover opens. Note: A "status" LED (designated LED1) on the CPU Board normally blinks at a 1/2 second rate. When a bar code is read by the scanner and the information sent to the BCA-8, the status LED "freezes" for 1 second, indicating the information was processed.

The BCA-8 can be started from the RUN/RESUME switch on the front panel, from a remote station, or with the CLOCK/TIMED START module (optional). The BCA-8 can also be stopped from the remote station. Remote outputs on the unit indicate a SHOW ON, FAULT, and SHOW END status.

When a film break is detected, the remote alarm sounds, the changeover closes, non-sync is pulsed, house and stage lights go up, and the projector motor, xenon and exciter lamp shut down. When the film is repaired and threaded, press the RUN/RESUME switch to restart the show.

## Interlocked Operation



Refer to installation section of this manual before implementing interlock operation.

Once interlock wiring is complete, the following conditions must be met to run in interlocked mode:

1. All machines to be interlocked must have their SYNC switch pressed. The red LED will be lit indicating machine is on line.
2. The Master machine must be the last machine to "see" the film.
3. All machines must be set up to read the same bar code type.
4. All Slave machines must be in the manual start mode and "ready to run". Note: the software assumes the machine that gives the "start" IS THE MASTER.
5. The Master, and only the Master, can be set up for clock or timed start.

To begin a show, be sure the first barcode cue is positioned above the bar code scanner on the first machine (slave). Start the show as indicated above. All projectors will start simultaneously. As the bar code cues pass across the scanners the show sequence will initiate. Once running in interlock, the Stop, Remote Stop, Run, Remote Run, and all Failsafes are logically connected. Thus, once the show is in progress, the show may be stopped or resumed from any control in loop.

At the end of the show each machine will shut down as the tail of the film runs out and the failsafe arms fall. On endless loop systems all projectors will continue to run until the master machine sees the end cue.

When a film break is detected or the STOP switch is pressed, all machines stop simultaneously, and the same chain of events will follow as with single machine operation. The show can be restarted from any machine.

Note: Slaves will stop (fault) if the Master signal is lost. Slaves that drop "off line" (lose power, etc..) are not detected by the Master.

## CUE FUNCTIONS/SEQUENCE OF EVENTS

### United Artists Cue Functions/Sequence of Events

\* Indicates function contains "show start" logic:

Stage Lights = DOWN  
Timer a delay (starts when motor on)  
Changeover = OPEN  
SHOW ON = 1 (Internal logic enabled)

01\*        SHOW OPEN - FLAT - MONO  
Lens = FLAT  
Sound = MONO  
Sound Enable = ENABLE  
House Lights = HALF  
Curtain = OPEN  
SHOW START LOGIC

02\*        SHOW OPEN - SCOPE - MONO  
Lens = SCOPE  
Sound = MONO  
Sound Enable = ENABLE  
House Lights = HALF  
Curtain = OPEN  
SHOW START LOGIC

03\*        SHOW OPEN - FLAT - STEREO  
Lens = FLAT  
Sound = STEREO  
Sound Enable = ENABLE  
House Lights = HALF  
Curtain = OPEN  
SHOW START LOGIC

04\*        SHOW OPEN - SCOPE - STEREO  
Lens = SCOPE  
Sound = STEREO  
Sound Enable = ENABLE  
House Lights = HALF  
Curtain = OPEN  
SHOW START LOGIC

05        SHOW END  
Sound = NONSYNC  
Sound Enable = ENABLE  
House Lights = BRIGHT  
Stage Lights = BRIGHT  
Curtain = CLOSE  
Time C delay  
Zipper = CLOSE  
Lens = FLAT  
"SHOW END" LOGIC (SYNC Shutdown, Motor delay, etc..)

- 06 INTERMISSION  
 Curtain = CLOSE  
 Time D delay then internal "STOP" KEY logic  
 Press RESUME to continue show
- 07 CURTAIN CLOSE (DELUXE)  
 Curtain = CLOSE  
 Time D delay  
 Curtain = OPEN
- 11\* HOUSE DOWN - FLAT - MONO  
 Lens = FLAT  
 Sound = MONO  
 Sound Enable = ENABLE  
 House Lights = DOWN  
 Curtain = OPEN  
 SHOW START LOGIC
- 12\* HOUSE DOWN - SCOPE - MONO  
 Lens = SCOPE  
 Sound = MONO  
 Sound Enable = ENABLE  
 House Lights = DOWN  
 Curtain = OPEN  
 SHOW START LOGIC
- 13\* HOUSE DOWN - FLAT - STEREO  
 Lens = FLAT  
 Sound = STEREO  
 Sound Enable = ENABLE  
 House Lights = DOWN  
 Curtain = OPEN  
 SHOW START LOGIC
- 14\* HOUSE DOWN - SCOPE - STEREO  
 Lens = SCOPE  
 Sound = STEREO  
 Sound Enable = ENABLE  
 House Lights = DOWN  
 Curtain = OPEN  
 SHOW START LOGIC
- 15\* HOUSE DOWN - FLAT - SR  
 Lens = FLAT  
 Sound = SR  
 Sound Enable = ENABLE  
 House Lights = DOWN  
 Curtain = OPEN  
 SHOW START LOGIC

16\* HOUSE DOWN - SCOPE - SR  
 Lens = SCOPE  
 Sound = SR  
 Sound Enable = ENABLE  
 House Lights = DOWN  
 Curtain = OPEN  
 SHOW START LOGIC

18 DIMMER HALF LEVEL  
 Same as cue 24

19 SHOW END  
 Same as cue 05

21\* CHANGEOVER OPEN  
 Zipper = OPEN  
 Stage Lights = DIM  
 SHOWON = 1 (Internal logic enabled)

22 CHANGEOVER CLOSE  
 Zipper = OPEN

23 LIGHTS DOWN  
 House Lights = DIM

24 LIGHTS HALF  
 House lights = HALF

25 FLAT FORMAT  
 Lens = FLAT

26 SCOPE FORMAT  
 Lens = SCOPE

27 CURTAIN CLOSE  
 Curtain = Close

28 LIGHTS BRIGHT  
 House Lights = BRIGHT

31 CURTAIN OPEN  
 Curtain = OPEN

32 MONO SOUND  
 Sound = MONO  
 Sound Enable = ENABLE

33 STEREO SOUND  
 Sound = STEREO  
 Sound Enable = ENABLE

34 SR SOUND  
 Sound = SR  
 Sound Enable = ENABLE



- 35 SPECIAL (SOUND)  
Sound = SPECIAL  
Sound Enable = ENABLE
- 99 FILM BREAK  
Same as Film Break Input

Warner Brothers Cue Functions/Sequence of Events

\* Indicates function contains "show start" logic:  
     Stage Lights = DIM  
     Timer A delay (starts when motor on)  
     Changeover = OPEN  
     SHOW ON = 1 (Internal logic enabled)

- 04\* SYNC SHOW START  
SHOW START LOGIC
- 05 SHOW END  
Same as UA cue 05
- 06 INTERMISSION  
Same as UA cue 06
- 07 CURTAIN CLOSE  
Same as UA cue 27
- 08 CURTAIN OPEN  
Same as UA cue 31
- 10 HOUSE LIGHTS DOWN - FLAT  
Lens = FLAT  
House Lights = DOWN  
SHOW START LOGIC
- 11 HOUSE LIGHTS HALF - FLAT  
Lens = FLAT  
House Lights = HALF  
SHOW START LOGIC
- 12 HOUSE LIGHTS BRIGHT - FLAT  
Lens = FLAT  
House Lights = BRIGHT  
SHOW START LOGIC
- 13 HOUSE LIGHTS DOWN - SCOPE  
Lens = SCOPE  
House Lights = DOWN  
SHOW START LOGIC

- 14 HOUSE LIGHTS HALF - SCOPE  
 Lens = SCOPE  
 House Lights = HALF  
 SHOW START LOGIC
- 15 HOUSE LIGHTS BRIGHT - SCOPE  
 Lens = SCOPE  
 House Lights = BRIGHT  
 SHOW START LOGIC
- 16 HOUSE LIGHTS DOWN - SPECIAL  
 Lens = SPECIAL  
 House Lights = DOWN  
 SHOW START LOGIC
- 17 HOUSE LIGHTS HALF - SPECIAL  
 Lens = SPECIAL  
 House Lights = HALF  
 SHOW START LOGIC
- 18 HOUSE LIGHTS BRIGHT - SPECIAL  
 Lens = SPECIAL  
 House Lights = BRIGHT  
 SHOW START LOGIC
- 21 SOUND FORMAT - SR  
 Same as UA cue 34
- 22 SOUND FORMAT - MONO  
 Same as UA cue 32
- 23 SOUND FORMAT - STEREO  
 Same as UA cue 33
- 24 SOUND FORMAT - MAGNETIC  
 Sound = MAG  
 Sound Enable = ENABLE
- 25 SOUND - ENABLE  
 Sound Enable = ENABLE
- 26 SOUND - MUTE  
 Sound Enable = MUTE
- 27 SOUND FORMAT - SPEC  
 Same as UA cue 35
- 28 SOUND FORMAT - NON-SYNC  
 Sound = NONSYNC  
 Sound Enable = ENABLE
- 99 FILM BREAK  
 Same as UA cue 99

## Show Make-Up and Cue Placement

Bar code cues are placed on the film during film make-up. The cues must be placed across a single frame with the bars perpendicular to the film path.

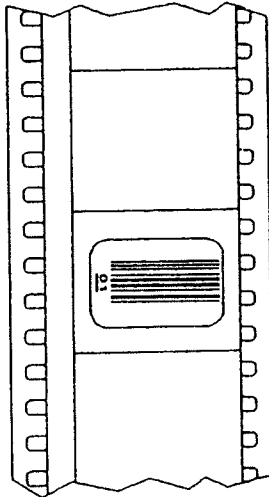
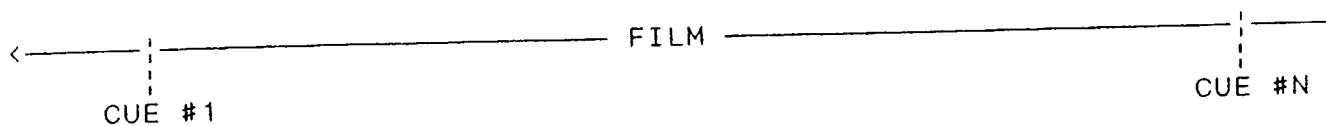


figure 2



CUE #1 is a show start cue. When a show start cue is seen, the "show start" logic is as follows:

- Stage lights = DOWN
- Timer A delay
- Changeover = OPEN
- Exciter = ON

When "SHOW ON" logic is enabled, various bar code functions may be used for a film presentation. A standard show might use the bar codes functions shown in table 5, or for further customization bar codes in table 6 can be used.

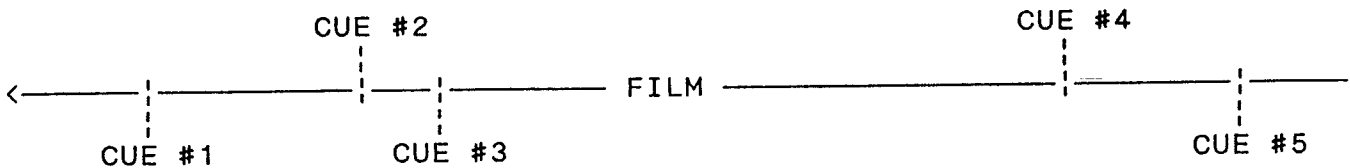
CUE #N is an "END OF SHOW" cue. The "show end" logic is as follows:

- Sound = NON SYNC
- Sound Enable = ENABLE
- House Lights = UP
- Stage Lights = UP
- Curtain = CLOSE

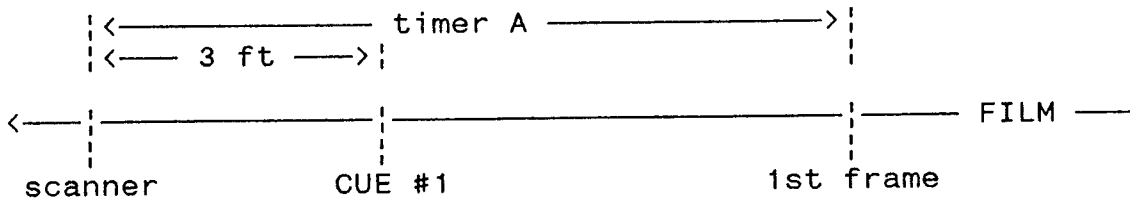
- timer C delay
- Changeover = CLOSE
- 2 second delay
- Exciter = OFF
- Motor/Lamp = OFF
- Lens = FLAT

Following is an example of a standard show describing cue placement and operation:

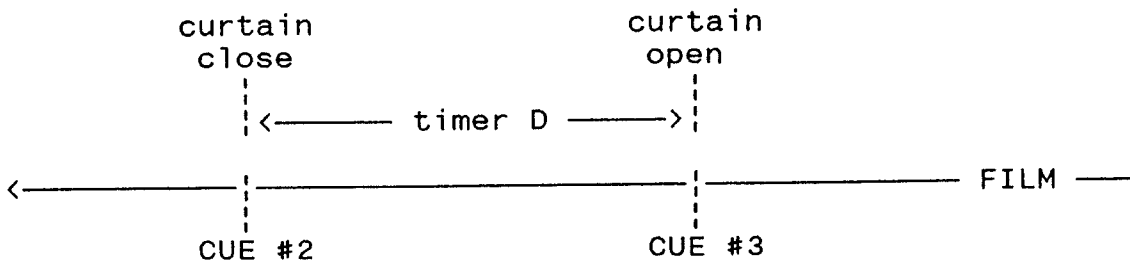
Cue placement:



CUE #1 - BAR CODE #01: This is the show start cue. Note: place show start cue a minimum of 3 feet from the bar code scanner. Place the show start cue at a distance determined by 'timer A' setting. For example, if timer A is set to 5 seconds, place the show start cue 90 inches or 7-1/2 feet (18in/sec X 5sec) prior to the first frame of the show.



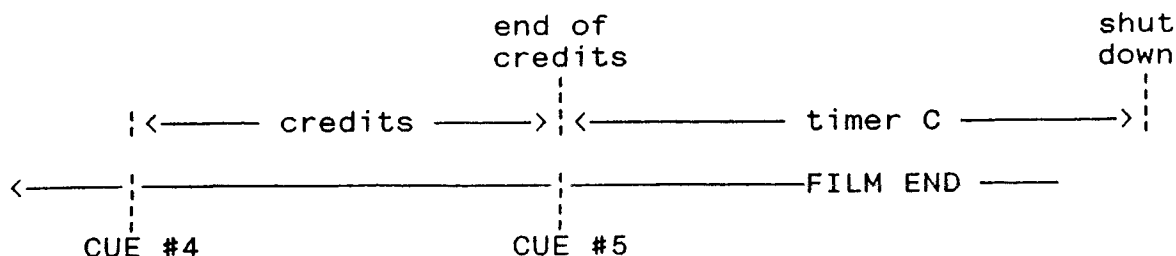
CUE #2 - BAR CODE #07: This is the Curtain close cue. Place this cue prior to the FEATURE CUE at a distance determined by 'timer D' setting (curtain close time).



CUE #3 - BAR CODE #14: This is the FEATURE CUE. Place this cue at the end of the trailer.

CUE #4 - BAR CODE #18: This is the Credit cue. Place this cue at the start of the credits.

CUE #5 - BAR CODE #19: This is the end of show cue. Place this cue at the last frame of the credits. Timer C is set to allow the film/leader to run out of the projector.



Operation:

The projector motor and xenon lamp are started by pushing the RUN/RESUME switch. Timer A starts. The BCA-8 is ready to accept a show start cue.

<u>Scanner Read</u>	<u>Event(s)</u>
CUE #1 (BAR CODE #01):	SHOW OPEN - FLAT - MONO Lens = FLAT House Lights = MID Stage Lights = DOWN Curtain = OPEN (timer A time out) Changeover = OPEN Exciter = ON Sound = MONO Sound Mute/Enable = ENABLE
CUE #2 (BAR CODE #07):	CURTAIN CLOSE (DELUXE) (start timer D) Curtain = CLOSE (timer D time out) Curtain = OPEN
CUE #3 (BAR CODE #14):	HOUSE DOWN - SCOPE - STEREO (start timer B) Exciter = OFF Changeover = CLOSE Lens = SCOPE Sound = STEREO Sound Mute/Enable = MUTE House Lights = DOWN Curtain = OPEN (timer B time out) Changeover = OPEN Exciter = ON Sound Mute/Enable = ENABLE

CUE #4 (BAR CODE #18)

DIMMER MID  
House lights = MID

CUE #5 (BAR CODE #19)

SHOW END  
(start timer C)  
Sound = NON SYNC  
Sound Enable = ENABLE  
House Lights = UP  
Stage Lights = UP  
Curtain = CLOSE  
(timer C time out)  
Changeover = CLOSE  
-2 seconds-  
Exciter = OFF  
Motor/Lamp = OFF  
Lens = FLAT

# TERMINATION SCHEDULE

## BCA-8 CPU Board 39251 Rev. 0

P1-1	Remote Show End	P2-1	+12VDC
P1-2	Remote Show On	P2-2	Ground
P1-3	Sync Start	P3-1	Start
P1-4	Remote Fault	P3-2	Stop
P1-5	Sync Failsafe	P3-3	Sync
P1-6	Sync Resume	P3-4	Alarm
P1-7	Remote Start	P3-5	Sync LED
P1-8	No Connection	P3-6	Stop LED
P1-9	Remote Stop	P3-7	Start LED
P1-10	No Connection	P3-8	+12VDC
P1-11	Mono	P3-9	Ground
P1-12	No Connection	P4-1	Transmit Data
P1-13	Non-sync	P4-2	Receive Data
P1-14	Failsafe In	P4-3	+5VDC
P1-15	Stereo	P4-4	Ground
P1-16	Spare Out		
P1-17	SR		
P1-18	Scanner Transmit Data		
P1-19	Special Sound		
P1-20	Scanner Receive Data		
P1-21	Magnetic		
P1-22	No Connection		
P1-23	Sound Mute		
P1-24	Scanner Enable		
P1-25	Sound Enable		
P1-26	Scanner Clock		
P1-27	Lens/Mask Flat		
P1-28	+12VDC Return		
P1-29	House Lights Down		
P1-30	+12VDC Return		
P1-31	Projector/Lamp		
P1-32	+12VDC Return		
P1-33	Exciter		
P1-34	+12VDC Return		
P1-35	Changeover Open		
P1-36	+12VDC Return		
P1-37	Changeover Close		
P1-38	+12VDC Return		
P1-39	+12VDC Return		
P1-40	+12VDC Return		
P1-41	Curtain Close		
P1-42	House Lights Up		
P1-43	House Lights Half		
P1-44	Lens/Mask Special		
P1-45	Stage Lights Down		
P1-46	Spare Output		
P1-47	Curtain Open		
P1-48	Stage Lights Up		
P1-49	Alarm		
P1-50	Lens/Mask Scope		

BCA-8 Relay Board 39253 Rev. 0

P1-1	16V HI	P5-7	Stereo
P2-2	16V LO	P5-8	Stereo Feed
P2-3	Ground	P5-9	Magnetic
		P5-10	Magnetic Feed
P2-1	Changeover Feed	P5-11	Special Sound
P2-2	Changeover Close	P5-12	Special Feed
P2-3	Changeover Open	P5-13	Sound Enable
P2-4	No Connection	P5-14	Sound Enable Feed
P2-5	No Connection	P5-15	Sound Mute
P2-6	Lamp Feed	P5-16	Sound Mute Feed
P2-7	Lamp		
P2-8	No Connection	P6-1	Power
P2-9	Projector Feed	P6-2	Ground
P2-10	Projector		
P2-11	Exciter	P7-1	Curtain Feed
P2-12	Exciter Feed	P7-2	Curtain Close
		P7-3	Curtain Open
P3-1	Changeover Feed	P7-4	Stage Lights Feed
P3-2	Exciter	P7-5	House Lights Up
P3-3	Exciter Feed	P7-6	Stage Lights Down
P3-4	Changeover Close	P7-7	Stage Lights Up
P3-5	No Connection	P7-8	House Lights Down
P3-6	Aux. Projector Feed	P7-9	House Lights Feed
P3-7	Projector	P7-10	Lens Feed
P3-8	No Connection	P7-11	Lens Flat
P3-9	Aux. Projector N.O.	P7-12	Lens Special
P3-10	Lamp	P7-13	Lens Scope
P3-11	No Connection	P7-14	Mask Flat
P3-12	Aux. Projector N.C.	P7-15	Mask Feed
P3-13	Changeover Open	P7-16	Mask Special
P3-14	Lamp Feed	P7-17	Mask Scope
P3-15	Projector Feed	P7-18	Mask Stop
P4-1	Alarm	P8-1	Mask Stop
P4-2	Alarm Feed	P8-2	Mask Scope
P4-3	House Lights Half	P8-3	Mask Special
P4-4	House Lights Feed	P8-4	Mask Feed
P4-5	House Lights Down	P8-5	Mask Flat
P4-6	Stage Lights Up	P8-6	Lens Scope
P4-7	Stage Lights Down	P8-7	Lens Special
P4-8	House Lights Up	P8-8	Lens Flat
P4-9	Stage Lights Feed	P8-9	Lens Feed
P4-10	Curtain Open	P8-10	No Connection
P4-11	Curtain Close		
P4-12	Curtain Feed		
		P9-1	Remote Start
P5-1	Non-sync Sound	P9-2	Remote Stop
P5-2	Non-sync Feed	P9-3	Sync Failsafe
P5-3	Mono	P9-4	Sync Start
P5-4	Mono Feed	P9-5	Sync Resume
P5-5	SR	P9-6	Remote Power
P5-6	SR Feed	P9-7	Failsafe In
		P9-8	Remote Return



P9-9 Sync Return  
 P9-10 Remote Show On  
 P9-11 Remote Show End  
 P9-12 Remote Fault  
  
 P10-1 Remote Show End  
 P10-2 Remote Show On  
 P10-3 Sync Start  
 P10-4 Remote Fault  
 P10-5 Sync Failsafe  
 P10-6 Sync Resume  
 P10-7 Remote Start  
 P10-8 No Connection  
 P10-9 Remote Stop  
 P10-10 No Connection  
 P10-11 Mono  
 P10-12 No Connection  
 P10-13 Non-sync  
 P10-14 Failsafe In  
 P10-15 Stereo  
 P10-16 Spare Out  
 P10-17 SR  
 P10-18 Scanner Transmit Data  
 P10-19 Special Sound  
 P10-20 Scanner Receive Data  
 P10-21 Magnetic  
 P10-22 No Connection  
 P10-23 Sound Mute  
 P10-24 Scanner Enable  
 P10-25 Sound Enable  
 P10-26 Scanner Clock  
 P10-27 Lens/Mask Flat  
 P10-28 +12VDC Return  
 P10-29 House Lights Down  
 P10-30 +12VDC Return  
 P10-31 Projector/Lamp  
 P10-32 +12VDC Return  
 P10-33 Exciter  
 P10-34 +12VDC Return  
 P10-35 Changeover Open  
 P10-36 +12VDC Return  
 P10-37 Changeover Close  
 P10-38 +12VDC Return  
 P10-39 +12VDC Return  
 P10-40 +12VDC Return  
 P10-41 Curtain Close  
 P10-42 House Lights Up  
 P10-43 House Lights Half  
 P10-44 Lens/Mask Special  
 P10-45 Stage Lights Down  
 P10-46 Spare Output  
 P10-47 Curtain Open  
 P10-48 Stage Lights Up  
 P10-49 Alarm

P10-50 Lens/Mask Scope  
  
 J1-1 Transmit Data  
 J1-2 Receive Data  
 J1-3 Mode Select  
 J1-4 Clock  
 J1-5 Scanner Enable  
 J1-6 No Connection  
 J1-7 Ground  
 J1-8 No Connection  
 J1-9 +12VDC

P1 Power Input. 3P  
P2 To Front Panel High Voltage Override Switches. 12P  
P3 To 39255 Termination Board. High Voltage Relay Contacts. 15P  
P4 To 39255 Termination Board. Low Voltage Relay Contacts. 14P  
P5 To 39255 Termination Board. Low Voltage Relay Contacts. 16P  
P6 To 39251 CPU Board. Power Output. 2P  
P7 To 39262 Override Switch Card. 18P  
P8 To 39255 Termination Board. Low Voltage Relay Contacts. 10P  
P9 To 39255 Termination Board. Sync/Remote. 12P  
P10 Signal to/from 39251 CPU Board. 50P Ribbon Cable.  
J1 Scanner. 9P DB

BCA-8 Termination Board 39255 Rev. 0

TB1-21	Projector Feed	TB2-9	House Lights Down
TB1-20	Projector	TB2-8	House Lights Up
TB1-19	Lamp Feed	TB2-7	Stage Lights Up
TB1-18	Lamp	TB2-6	Stage Lights Down
TB1-17	Changeover Open	TB2-5	Stage Lights Feed
TB1-16	Changeover Close	TB2-4	Lens Feed
TB1-15	Changeover Feed	TB2-3	Lens Flat
TB1-14	Exciter	TB2-2	Lens Special
TB1-13	Exciter Feed	TB2-1	Lens Scope
TB1-12	Aux. Projector Feed		
TB1-11	Aux. Projector N.O.	TB3-21	Remote Show End
TB1-10	Aux. Projector N.C.	TB3-20	Remote Show On
TB1-9	Mask Stop	TB3-19	Non-sync Sound
TB1-8	Mask Scope	TB3-18	Non-sync Feed
TB1-7	Mask Special	TB3-17	Mono
TB1-6	Mask Feed	TB3-16	Mono Feed
TB1-5	Mask Flat	TB3-15	SR
TB1-4	Curtain Open	TB3-14	SR Feed
TB1-3	Curtain Close	TB3-13	Stereo
TB1-2	Curtain Feed	TB3-12	Stereo Feed
TB1-1	Spare	TB3-11	Magnetic
		TB3-10	Magnetic Feed
TB2-21	Remote +12VDC	TB3-9	Special Sound
TB2-20	Remote Stop	TB3-8	Special Feed
TB2-19	Remote Fault	TB3-7	Sound Enable
TB2-18	Remote Start	TB3-6	Sound Enable Feed
TB2-17	Remote Return	TB3-5	Sound Mute
TB2-16	Failsafe In	TB3-4	Sound Mute Feed
TB2-15	Sync Return	TB3-3	Alarm
TB2-14	Sync Start	TB3-2	Alarm Feed
TB2-13	Sync Resume	TB3-1	Spare
TB2-12	Sync Failsafe		
TB2-11	House Lights Half		
TB2-10	House Lights Feed		

BAR CODE CUE FUNCTION SHOW MAKE-UP CHART

United Artists

CUE #	BARCODE #	FUNCTIONS
Select one of the following SHOW START CUES:		
1	01	C.O. OPEN, Dimmer MID, Curtain OPEN, Format FLAT, Sound MONO
1	02	C.O. OPEN, Dimmer MID, Curtain OPEN, Format SCOPE, Sound MONO
1	03	C.O. OPEN, Dimmer MID, Curtain OPEN, Format FLAT, Sound STEREO
1	04	C.O. OPEN, Dimmer MID, Curtain OPEN, Format SCOPE, Sound STEREO
2	07	Curtain CLOSE (Deluxe Curtain)
Select one of the following FEATURE CUES:		
3	11	Dimmer DOWN, Format FLAT, Sound MONO, Curtain OPEN
3	12	Dimmer DOWN, Format SCOPE, Sound MONO, Curtain OPEN
3	13	Dimmer DOWN, Format FLAT, Sound STEREO, Curtain OPEN
3	14	Dimmer DOWN, Format SCOPE, Sound STEREO, Curtain OPEN
3	15	Dimmer DOWN, Format FLAT, Sound STEREO SR, Curtain OPEN
3	16	Dimmer DOWN, Format SCOPE, Sound STEREO SR, Curtain OPEN
4	18	Dimmer MID
5	19	Dimmer UP, Curtain CLOSE Delay... C.O. CLOSE, Sound NON-SYNC (SHOW END)

## Special Functions

BARCODE #	FUNCTION
05	SHOW END
06	INTERMISSION
21	SHOW START (C.O. OPEN)
22	SHOW END (C.O. CLOSE)
23	HOUSE LIGHTS DOWN
24	HOUSE LIGHTS MID
25	FORMAT FLAT
26	FORMAT SCOPE
27	CURTAIN CLOSE
28	HOUSE AND STAGE LIGHTS UP
31	CURTAIN OPEN
32	SOUND MONO
33	SOUND STEREO
34	SOUND STEREO SR
35	SOUND SPECIAL
99	FILM BREAK

Warner Brothers

BARCODE #	FUNCTION
04	SYNCHRONIZED SHOW START
05	END SHOW
06	END SHOW WITH TIMED START
07	CURTAINS CLOSE
08	CURTAINS OPEN
10	HOUSE LIGHTS DOWN, FLAT FORMAT
11	HOUSE LIGHTS MID, FLAT FORMAT
12	HOUSE LIGHTS UP, FLAT FORMAT
13	HOUSE LIGHTS DOWN, SCOPE FORMAT
14	HOUSE LIGHTS MID, SCOPE FORMAT
15	HOUSE LIGHTS UP, SCOPE FORMAT
16	HOUSE LIGHTS DOWN, SPECIAL FORMAT
17	HOUSE LIGHTS MID, SPECIAL FORMAT
18	HOUSE LIGHTS UP, SPECIAL FORMAT
21	SOUND FORMAT #1 SR
22	SOUND FORMAT #2 MONO
23	SOUND FORMAT #3 STEREO
24	SOUND FORMAT #4 70MM
25	SOUND ENABLE
26	SOUND MUTE
27	SOUND FORMAT - SPECIAL ****
28	SOUND NON-SYNC
99	FILM BREAK

## TECHNICAL SPECIFICATIONS

### INPUT/OUTPUT SECTION

Remote power

+12V DC

fuse - 1/4 amp normal blo

Projector motor fuse

10 amp slo blo

High power outputs - maximum rating  
K1-K3, K98

1/3 HP @ 120V AC  
1/2 HP @ 240V AC  
10 amps @ 28V DC  
10 amps @ 240V AC

Low power outputs - maximum rating  
K4-K21, K99

2 amps @ 28V DC, resistive  
.5 amp @ 48V AC, resistive

Remote outputs - maximum rating  
show on, show end, fault

open collector output  
40V DC @ 0.600 amps

Remote inputs  
start, stop

input to ground  
0.01 amps

Scanner interface

9 pin male D-connector  
RS-232

### CONTROL SECTION

6809 8-bit microprocessor running at 1Mz  
8K RAM  
32K operating program EPROM  
RS-232 serial port for bar code scanner  
Dip switch selectable timer setpoints.

### GENERAL

Power Requirements

25 watts maximum

Dimensions

W - 17.5 inches  
H - 7 inches  
D - 14.5 inches

Weight