

**KELMAR**

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SERIES VII Automation

INSTALLATION INSTRUCTIONS

GENERAL - The Series VII may be wall mounted in a 19" wide x 21" high x 6" deep enclosure. The enclosure is designed with a backbox that can be mounted; conduits installed and wire pulled in prior to the installation of the control panel and chassis.

The Series VII has a standard 5.25" High x 19.000" wide rack mountable control panel and a separate chassis for console mounting. Some consoles have a shelf that the chassis can be fastened to. Other consoles may require special support channels or mounts to accommodate installation in the console.

CONDUITS - Connect the cabinet to the wireduct with 4 - 1" conduits.

WIRING - All wire should be stranded, copper with 600 volt insulation. Allow sufficient slack to reach all of the terminal strips that are located at the bottom of the chassis and the printed circuit board.

CUE DETECTION - Several options are available for use with this system. A 2-3 is standard and provides the necessary 3 cue functions to operate the Series VII automation. The 3-7 Cue system may be used to provide an additional 4 control functions, as well as, the 3 cue functions required by the Series VII. Please verify system components prior to pulling wires to insure that the correct gauge and quantity of wires are provided. It is suggested that

multiconductor cable is used for control of Audio System, Lighting, Stage Motors, etc. so that continuity of wire colors can be assigned throughout the complex. This insures a simple uniform installation, simple trouble shooting and service in the future. By using a common denominator cable, installation will be simplified for all trades. For example if 5 conductor and 7 conductor are required, use all 7 conductor, and have 2 spares.

PHASE NOTE - The Series VII contains a built in Sync Interlock System, and outputs for a remote Status System. It is a requirement that;

ALL AUTOMATION SYSTEMS IN THE COMPLEX BE POWERED FROM THE SAME A.C. PHASE.

To accomplish this, it is suggested that one phase; "A" for example is selected for all A.C. panels in the Projection Room and use a common circuit number for Automation System power. Large complexes may have panels that are powered from several different sources within the complex. Verify with the Electrical Contractor that the Panels are all in phase with each other. To verify automation system phase, use an A.C. Voltmeter, 30 Volt scale. Turn on Automation System power, take readings between the various automation systems at terminal TB1-22. This can be accomplished at a common device such as a status panel, sync selector or similar where there are available wires to each automation. Meter should read 0 volts if the units are in phase and 24 +- if they are out of phase. Determine why there is a phase mismatch and correct.

POWER NOTE - The Kelmar Series VII Automation provides DRY CONTACT closure for all controlled devices. **CAUTION:** The Series VII is designed to accommodate the Line Voltage circuits of the Projector Drive Motor, Lamphouse, Picture Changeover Dowser, and Exciter Lamp. These connect to terminal strip TB1. All circuits that connect to the printed circuit board "BP" terminals are intended for low voltage, low current control circuits only. These circuits are limited to 24V at 500MA. Please verify the control voltage prior to connection. It is the responsibility of the user to comply with these requirements and to provide additional external relays or contactors to control high current devices.

MOTOR CONTROL CIRCUIT - The Series VII incorporates a solid state relay for the motor advance circuit. The manual switch on the control panel controls this relay. For Automation operation, the motor is controlled by the K28 Power relay.

LAMP CONTROL CIRCUIT - For installations where the Xenon lamp is controlled by an extremely low current, low voltage circuit, the 10 amp contacts of the power relay cannot be relied upon for proper performance. A 12vac output is provided at TB1-20 for attachment of a control relay. Connect coil of control relay (12VAC) to terminals TB1-20 and TB1-21. Add a bridge rectifier for use with a DC relay. *Please note that this relay WILL NOT be controlled with the Manual Lamp switch.*

TERMINATIONS refer to the termination schedule for terminal functions. The following is a quick reference guide to where the various devices are terminated.

DEVICE	TERMINALS
Motor	TB1-5,6
Xenon Lamp	TB1-7,8
Changeover Dowser	TB1-9,10,11,12
Exciter Lamp	TB1-13,14
Curtain	BP4-1,2,3
Lens Turret	BP5-5,6,7
Masking	BP5-8,9,10
Bulb Focus	BP5-11,12,13
Format Option	BPS-14,15,16
House Light Dimmer	BP3-1,2,3,4,5
Stage Light Dimmer	BP3-6,7,8

Audio Processor

BP3-9,10, 11,12,13,14

OPTION 1 CIRCUIT - This circuit is intended to control a Slide Projector.

DO NOT ATTEMPT TO CONNECT A SLIDE PROJECTOR DIRECTLY TO THESE TERMINALS

The relay terminals and switch cannot handle the load. This circuit is operated opposite of the Exciter Lamp. TB1-15 and TB1-16 is the switch leg for the Option 1 circuit. Connect the coil of the Slide Projector Contactor thru these contacts. Manual switch S-10 controls this circuit for ON-OFF-AUTO. operation. ON = On at all times, OFF = Off at all times, AUTO = On during intermission, Off during show. A line voltage control circuit may be used with this circuit.

OPTION 2 CIRCUIT - This circuit is User Assigned and provides a 2 position momentary manual switch connected to terminals of TB1. TB1-17= Feed, TB1-18 = A, TB1-19 = B. Connect and use as desired. Line voltage may be used with this circuit.

INTERLOCK INTERFACE -The built-in Sync Interlock connects between the interlocked Automation Systems with 2 wires. They are connected to BP4-4 (Interlock Start Bus) and BP4-5 (Failsafe Bus). For Interlock between 2 Automation systems connect BP4-4 to BP4-4, and BP5-5 to BP5-5. If it is desired to provide a flexible interlock system, ADD an Optional Kelmar Sync Select Module which permits up to 4 interlock combinations at once.

CUE DETECTOR/FAILSAFE - The Series VII uses the reliable proximity cue detection system. A separate cue decoder p.c. board is furnished as part of the cue detection system. A 2-3 system provides 3 cues to operate the Series VII and a 3-7 system provides an additional 4 program functions, as well as, the required 3 Series VII cues. Refer to instructions included with the Cue Detection system for requirements, outputs, etc.

The Series VII has an Automatic Alarm Cancel system. This allows the duration of the alarm output to be adjusted so that the alarm does not have to be cancelled manually. Chassis mounted time delay relay K32 can be adjusted between 5 seconds and 1 minute to provide this alarm on period. Settings between 15 and 45 seconds should suit most applications. The Series VII contains a built-in alarm buzzer.

For assistance with terminations, Contact:

Kelmar Systems Inc.
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AUTOMATION OPERATING INSTRUCTIONS

CONTROL PANEL - The following is a list of the switches, buttons, and the Show Start/Intermission timer on the control panel and their function/operation.

AUTOMATION CONTROL: TOP ROW

S1 POWER ON-OFF - Turns power to Automation ON or OFF. Manual switches* still function with power off. *Manual Format control does not function with power OFF. Power switch may be used as a reset function to reset circuits during testing, etc.

FI MAIN FUSE - Main fuse protection for transformer, timers. Refer to caution on front panel for fuse replacement.

MANUAL CONTROL SWITCHES:

S2 MOTOR - Turns Projector Drive Motor ON and OFF manually and provides a momentary Advance feature. UP ON, center AUTO, Down ADVANCE, used to run down leader to start position.

S3 LAMP - Turns Xenon Lamp ON and OFF manually. Leave in Auto. position for normal operation. Refer to note in installation instructions for low voltage/current xenon lamp control circuits.

S4 CHANGEOVER DOWSER - Opens and Closes 2 coil type changeover dowsers manually. For 1 coil maintained type this switch will open but will NOT close changeover but Automation section will open and close properly. For 1 coil types, provide a NC pushbutton.

S5 EXCITER - Turns Exciter Lamp ON and OFF manually. Leave in Auto. position for normal operation.

S6 HOUSE LIGHT DIMMER - Provides manual Bright and Dim commands to house light dimmer.

S7 STAGE LIGHT DIMMER - same as S6 for Stage Light Dimmer.

S8 CURTAIN - Opens or Closes Curtain manually.

S9 FORMAT - Manually activates FLAT or SCOPE commands to format relays. Requires Automation power to be ON for operation. Please note that ALL connected items: Masking, Lens, Bulb Focus will be activated.

S10 OPTION 1 - Generally used for slide projector. Provides manual override of device. 3 position ON at all times, OFF at all times, AUTO, ON during intermission OFF during show. Leave in Auto position for normal operation.

S11 OPTION 2 - User assigned momentary contact switch may be used as Masking only or other function. Refer to installation instructions.

AUTOMATION CONTROL: BOTTOM ROW

PB-1 START BUTTON - Used to Start the show at the Automation. Contains 2 status indicator lights. The TOP light indicates that the Projector and Lamp are running on Automation and the BOTTOM light indicates that the TM1 Timer is in cycle. Please note that the Automation Will NOT Start if the FAULT light in PB—2 is on. Refer to PB—2.

PB-2 STOP BUTTON - Used to STOP the show if desired. Contains 2 status indicator lights. The TOP Light indicates that the Projector and Lamp are NOT running on Automation. This lights opposite of the RUN light in PB-1. The BOTTOM FAULT Light indicates that the Failsafe arms are down. The Projector is not READY and Start button PB-1 WILL NOT Start the show.

SHOW START PRE-SELECTS:

S12 FORMAT PRE-SELECT - Selects Format for start of Presentation, set for either Flat or Scope.

S14 AUDIO SELECT - For Stereo or Stereo SR, set to desired audio mode. If AUX modes are to be used, set this switch in center OFF position.

S16 AUDIO SELECT - For AUX 1 or AUX 2 audio mode at show start. For Stereo or Stereo SR modes, set this switch in center OFF position.

FEATURE PRE-SELECTS:

S13 FORMAT PRE-SELECT - Selects Format for Feature presentation. Cross Cue provides feature command.

S15 AUDIO SELECT - For Stereo or Stereo SR, set to desired Audio Mode. If AUX modes are to be used, set this switch in center OFF position.

S17 AUDIO SELECT - For AUX 1 or AUX 2, set to desired Audio Mode. If Stereo or Stereo SR is used, set this switch in center OFF position.

PL-1 FEATURE ON LED - indicates that the Cross Cue has been decoded and all items are set to pre-selected Feature Mode. Stays on until end of show.

TM2 SHOW START/INTERMISSION TIMER - The Digital Timer is used to Start the show after a pre-selected delay or to time an intermission. The timer is controlled by S18 TM2 MODE switch and S19 SHOW END MODE SWITCH. The TM2 Timer has 6 control pushbuttons used for operation. As shipped the TM2 timer has been set to the "d"Int function, minutes and seconds. There are 2 lines of display; the TOP display indicates the countdown to Start the Bottom display indicates the Pre-selected delay setting. To set the Delay use buttons 4 3 2 1. Press until the desired setting is reached. For example: 12 minutes would be 1200. Activate the count down cycle by switching S18 to the ON mode (Down) The TM2 will start to count down. As it reaches 0 the Automation will start. To STOP the countdown during cycle Press the "E" and "P" buttons at the same time. The timer has a built in memory and will wake-up in the proper mode at the previous setting.

S18 TM2 MODE - Selects TM2 Mode for INTER., OFF or ON (Activate). For Normal operation, S18 should be set to the center OFF position.

S19 SHOW END MODE SELECT - Selects Mode at Show End. In Normal Mode, Failsafe turns off Projector and Lamp as tail runs through. In INTER. mode Projector and Lamp turns off as Changeover Dowser closes. For Pre-Set INTERMISSION, set both S18 and S19 up to Intermission, set TM2 to desired Intermission length. Show will Stop and Re-Start after setting.

MANUAL CUE SWITCHES:

S20 MID LIGHTS/FEATURE - Permits manual activation of Cue function. Used for Test or special purposes. Up provides Mid lights command, Down provides Feature command. (Lights Down, Feature Pre-Selects).

S21 SHOW END/RE-START - Provides manual activation for Outboard Show End Cue and Sync I/L Re-Start after break. Re-Start active only when Sync I/L is activated during start up function.

PB-3 SYNC INTERLOK ON-OFF - Controls Sync I/L function of Series VII. Press PB-3 to Activate Sync I/L, Press again to turn off. Contains 2 indicator lights. Top indicates that the Sync I/L circuit is ON the bottom indicates that the Failsafe of this unit is connected to the Failsafe Bus. Refer to Operation section for operation of Sync I/L system.

OPERATION

For Normal operation, refer to the Show Make-up section of these instructions. Once the print has been properly cued and loaded onto the platter, Thread the film through the Projector, Soundhead, Cue Detector/Failsafe back to the platter. Set the switch on the platter to Take-Up and remove the slack from the take-up by rotating that platter by hand until the take-up platter starts to rotate and then stops when proper tension has been achieved.

Observe that the FAULT light in the STOP button of the Series VII is OFF. The system should be threaded so that the 8 foot mark of the leader is at the aperture. Set the Show Start and Feature Pre-Select switches making certain that the unused Audio switches are in the center OFF position. Set the Show End Mode to Normal. Press the START button, the following will happen:

1. The Changeover Dowser will CLOSE.
2. The CYCLE light will come ON.

3. Motor and Lamp will come ON.
4. House Lights to MID.

After 7 seconds

5. The Changeover Dowser will OPEN
6. Curtain will OPEN
7. Stage Lights OFF
8. Format to Pre-Select
9. Audio to Pre-Select

PRE-SHOW/ TRAILERS RUNNING - LIGHTS AT MID

As the CROSS CUE is Decoded:

1. Format to Feature Pre-Select
2. Audio to Feature Pre-Select
3. House Lights to DOWN
4. PL-1 Feature LED ON

FEATURE RUNNING

As INBOARD CUE is decoded:

1. House Lights to MID CREDITS RUNNING

As OUTBOARD CUE is decoded:

1. Curtain will CLOSE
2. House lights to BRIGHT
3. Stage lights to BRIGHT
4. Changeover Dowser CLOSE, Exciter OFF
5. Audio to NON-SYNC
6. Film runs through - Motor & Lamp OFF

END OF SHOW INTERMISSION

SYNC I/L OPERATION

The Series VII Automation contains a built-in Sync I/L control circuit. This is used to run the same show in 2 or more Auditoriums at the same time. The show is made up as called for previously plus a long leader is added to permit threading from Platter to Projector to Projector back to a platter. An ADDITIONAL OUTBOARD CUE is placed on the leader 10.5 feet prior to the first frame of the show. This cue provides the Show Start sequence.

OPERATION:

1. Thread the system; use loop accumulators to maintain constant tension between the Projectors and to keep the failsafe arms up.
2. Set the Show Start and Feature Pre-Selects on both Series VII Automations.
3. Turn on the SYNC I/L at each Automation; verify that both FAULT lights are OFF. Show is ready to Start.
4. Press a START button on either Automation, both Motors and Lamps will come on, after 5 seconds (Set by relay K31 I/L) the Failsafe Parallel indicator lights will come ON indicating that the Failsafe Bus is active. As the OUTBOARD Cue is decoded, that Automation will cycle a SHOW START sequence. The Cue will travel to the second Automation and cycle a SHOW START sequence.

SHOW IS RUNNING IN 2 AUDITORIUMS WITH FAILSAFES PARALLEL

5. The CROSS CUE will pass through and activate the FEATURE Mode.
6. The INBOARD CUE will pass through and activate MID lights.

7. The OUTBOARD CUE will pass through the first system and activate a SHOW END sequence. As the Changeover Closes, the Failsafe ON light will go out, indicating that the failsafe is no longer connected to the Bus. As the tail runs through, the first machine can stop while the tail runs through the second system.

END OF SHOW - INTERMISSION

Please note that if it is decided to run the Show in only 1 Auditorium after it has been cued for Interlock Operation, simply thread down the leader so that the OUTBOARD Cue is after the Cue Detector. Turn OFF the Sync I/L and run normally.

INTERLOCK FILM BREAK - If there is a break during the show, both automations will stop and go through Show End cycle. Fix the break, Re-Thread; press either start button, wait 5 seconds then press the Manual Cue Re-Start button on each Automation initiating Show Start cycle, then if required press the Manual Cue switch for Feature if needed. Normal interlock has been reestablished.

CUE PLACEMENT - SHOW MAKE-UP

GENERAL - The Series VII Automation Utilizes 3 Cues:

1. CROSS CUE - FEATURE
2. INBOARD CUE - LIGHTS MID
3. OUTBOARD CUE - SHOW END & INTERLOK START
REFER TO INSTRUCTIONS PROVIDED WITH CUE SYSTEM

FOR PRESENTATION WITH SHOW START TRAILERS AND FEATURE

1. Place CROSS CUE between the trailers and Feature. Locate this cue 30" BEFORE feature
2. Place an INBOARD CUE at the start of the credits.
3. Place an OUTBOARD CUE 10.5 feet BEFORE the last frame of the show

FOR PRESENTATIONS WITH 2 FEATURES (NO INTERMISSION BETWEEN)

1. Place CROSS CUE between trailers and feature as above.
2. Place an INBOARD CUE at start of Feature 1 Credits.
3. Place a CROSS CUE at start of Feature 2.
4. Place an INBOARD CUE at start of Feature 2 Credits.
5. Place an OUTBOARD CUE 10.5 feet BEFORE the last frame of Feature 2.

While Feature 1 is running, re-set Feature Pre-Selects for Feature 2.

FOR 2 FEATURES ON 1 PLATTER WITH AN INTERMISSION, CUE THE FILM AS THOUGH THERE WERE 2 SEPARATE SHOWS. CROSS CUE, INBOARD CUE, OUTBOARD CUE, CROSS CUE, INBOARD CUE, OUTBOARD CUE

Questions? Talk to a real person!

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*****ENJOY THE SHOW*****

TERMINATION SCHEDULE

TB1 CHASSIS TERMINAL STRIP - FIELD TERMINATIONS

TB1-1	120 VAC FEED - LINE AUTOMATION **	
TB1-2	120 VAC FEED - NEUTRAL AUTOMATION & MOTOR	
TB1-3	GROUND	
TB1-4	PROJECTOR MOTOR FEED - 120 VAC	[DRY CIRCUIT]
TB1-5	PROJECTOR MOTOR OUT	
TB1-6	PROJECTOR MOTOR NEUTRAL TIE POINT	
TB1-7	LAMP CONTROL IN	[DRY CIRCUIT]
TB1-8	LAMP CONTROL OUT	
TB1-9	C.O. DOWSER FEED	[DRY CIRCUIT]
TB1-10	C.O. DOWSER OPEN	
TB1-11	C.O. DOWSER CLOSE	
TB1-12	C.O. DOWSER N.C.	[SPECIAL]
TB1-13	EXCITER LAMP IN	
TB1-14	EXCITER LAMP OUT	
TB1-15	OPTION 1 INPUT (SLIDE PROJECTOR CONTROL CIRCUIT)	[DRY CIRCUIT]
TB1-16	OPTION 1 OUTPUT	
TB1-17	OPTION 2 FEED - SWITCH S11 -SPDT CENTER OFF MOMENTARY	[DRY CIRCUIT]
TB1-18	OPTION 2 A OUT	
TB1-19	OPTION 2 B OUT	
TB1-20	PROJ. RUN LIGHT <i>(FOR LOW CURRENT LAMP CONTROL RELAY AS USED IN STRONG CONSOLES)</i>	
TB1-21	GROUND - SWITCHING COMMON	
TB1-22	12 VAC CONSTANT	

***** PLEASE NOTE - FOR PROPER OPERATION OF INTERLOCK AND STATUS SYSTEMS, ALL AUTOMATIONS IN THE COMPLEX MUST BE POWERED FROM THE SAME PHASE. REFER TO INSTALLATION INSTRUCTIONS*****

TERMINATION SCHEDULE

BP2 P.C. BOARD - FIELD TERMINATIONS

BP2-1	OUTBOARD CUE INPUT	
BP2-2	INBOARD CUE INPUT	
BP2-3	FEATURE CUE INPUT (CROSS CUE)	
BP2-4	FAILSAFE INPUT	
BP2-5	12 VAC CONSTANT	
BP2-6	GROUND - SWITCHING COMMON	
BP2-7	REMOTE START	
BP2-8	REMOTE STOP	
BP2-9	REMOTE RUN LIGHT	12 VAC
BP2-10	REMOTE STOP LIGHT	12 VAC
BP2-11	REMOTE FAULT LIGHT	12 VAC
BP2-12	REMOTE RUN/FAULT +/-	12 VAC
BP2-13	REMOTE ALARM	12 VAC
BP2-14	HOLD FOR OPTIONAL INTERLOCK	
BP2-15	ALARM RESET LOOP OUT	FOR 2 PROJECTOR INTERGRATOR
BP2-16	ALARM RESET LOOP IN	FOR 2 PROJECTOR INTERGRATOR

BP3 P.C. BOARD - FIELD TERMINATIONS

BP3-1	HOUSE LIGHT DIMMER FEED	[DRY CIRCUIT]
BP3-2	HOUSE LIGHT DIMMER SHOW START OUTPUT	[MID]
BP3-3	HOUSE LIGHT DIMMER FEATURE	[DOWN]
BP3-4	HOUSE LIGHT DIMMER INBOARD CUE	[MID]
BP3-5	HOUSE LIGHT DIMMER SHOW END	[UP]
BP3-6	STAGE LIGHT DIMMER FEED	
BP3-7	STAGE LIGHT DIMMER DOWN	
BP3-8	STAGE LIGHT DIMMER UP	
BP3-9	AUDIO SWITCHING FEED	
BP3-10	AUDIO - NON-SYNC	
BP3-11	AUDIO - STEREO	
BP3-12	AUDIO - STEREO SR	
BP3-13	AUDIO - AUX. 1	
BP3-14	AUDIO - AUX. 2	
BP3-15	NON-SYNC LOOP IN	
BP3-16	NON-SYNC LOOP OUT	

TERMINATION SCHEDULE

BP4 P.C. BOARD - FIELD TERMINATIONS

BP4-1	CURTIAN FEED	[DRY CIRCUIT]
BP4-2	CURTIAN OPEN	
BP4-3	CURTIAN CLOSE	
BP4-4	SYNC I/L START BUSS INTERFACE	
BP4-5	SYNC I/L FAILSAFE BUS INTERFACE	
BP4-6	GROUND - SWITCHING COMMON	
BP4-7	PANIC CONTROL	
BP4-8	PANIC CIRCUIT IN	
BP4-9	PANIC CIRCUIT OUT	
BP4-10	12 VAC CONSTANT	
BP4-11	STATUS SYSTEM FEED	[DRY CIRCUIT]
BP4-12	STATUS SYSTEM RUN	[DRY CIRCUIT]
BP4-13	STATUS SYSTEM FAULT	[DRY CIRCUIT]
BP4-14	STATUS SYSTEM ALARM	[DRY CIRCUIT]
BP4-15		
BP4-16		

BP5 P.C. BOARD - FIELD TERMINATIONS

BP5-1	GROUND - SWITCHING COMMON	┌
BP5-2	GROUND - SWITCHING COMMON	
BP5-3	FORMAT CONTROL FLAT	
BP5-4	FORMAT CONTROL SCOPE	
BP5-5	FORMAT 1 FEED	[DRY CIRCUIT]
BP5-6	FORMAT 1 FLAT	
BP5-7	FORMAT 1 SCOPE	
BP5-8	FORMAT 2 FEED	[DRY CIRCUIT]
BP5-9	FORMAT 2 FLAT	
BP5-10	FORMAT 2 SCOPE	
BP5-11	FORMAT 3 FEED	[DRY CIRCUIT]
BP5-12	FORMAT 3 FLAT	
BP5-13	FORMAT 3 SCOPE	
BP5-14	FORMAT 4 FEED	[DRY CIRCUIT]
BP5-15	FORMAT 4 FLAT	
BP5-16	FORMAT 4 SCOPE	

TERMINATION SCHEDULE

BP6 P.C. BOARD - CONTROL PANEL INTERFACE

BP6-1	GROUND - SWITCHING COMMON	}
BP6-2	GROUND - SWITCHING COMMON	
BP6-3	GROUND - SWITCHING COMMON	
BP6-4	12 VAC FEED	}
BP6-5	12 VAC FEED	
BP6-6	12 VAC FEED	
BP6-7	START BUTTON INPUT	}
BP6-8	START FROM TIMER	
BP6-9	STOP BUTTON INPUT	
BP6-10	RUN LIGHT	
BP6-11	STOP LIGHT	
BP6-12	FAULT LIGHT	
BP6-13	TIMER CYCLE	}
BP6-14	TIMER CYCLE	
BP6-15		
BP6-16		

BP7 P.C. BOARD - CONTROL PANEL INTERFACE

BP7-1	AUDIO SELECT PULSE - SHOW START
BP7-2	AUDIO SELECT PULSE - FEATURE
BP7-3	AUDIO - STEREO
BP7-4	AUDIO - STEREO S.R.
BP7-5	AUDIO - AUX.1
BP7-6	AUDIO - AUX.2
BP7-7	
BP7-8	FORMAT PULSE - OPITONAL - C.O. OPEN
BP7-9	FORMAT PULSE - SHOW START
BP7-10	FORMAT PULSE - FEATURE
BP7-11	FORMAT FLAT
BP7-12	FORMAT SCOPE
BP7-13	
BP7-14	CUE OUTPUT TO MODE SWITCH
BP7-15	CUE RETURN FROM MODE SWITCH - SHOW END NORMAL
BP7-16	CUE RETURN FROM MODE SWITCH - AUTO STOP

TERMINATION SCHEDULE

BP8 P.C. BOARD - CONTROL PANEL INTERFACE

BP8-1	HOUSE LIGHT DIMMER SWITCH - FEED
BP8-2	HOUSE LIGHT DIMMER SWITCH - UP
BP8-3	HOUSE LIGHT DIMMER SWITCH - DOWN
BP8-4	STAGE LIGHT DIMMER SWITCH - FEED
BP8-5	STAGE LIGHT DIMMER SWITCH - UP
BP8-6	STAGE LIGHT DIMMER SWITCH - DOWN
BP8-7	
BP8-8	
BP8-9	CURTAIN CONTROL SWITCH - FEED
BP8-10	CURTAIN CONTROL SWITCH - OPEN
BP8-11	CURTAIN CONTROL SWITCH - CLOSE
BP8-12	
BP8-13	MANUAL CUE SWITCH - INBOARD FUNCTION
BP8-14	MANUAL CUE SWITCH - FEATURE FUNCTION (CROSS CUE)
BP8-15	MANUAL CUE SWITCH - OUTBOARD FUNCTION
BP8-16	

BP9 P.C. BOARD - CONTROL PANEL INTERFACE

BP9-1	SYNC I/L ON - OFF
BP9-2	SYNC I/L ON P.L.
BP9-3	SYNC I/L FAILSAFE ON P.L.
BP9-4	SYNC I/L OUTPUT TO TIME DELAY RELAY
BP9-5	SYNC I/L RETURN FROM TIME DELAY RELAY
BP9-6	SYNC I/L FEED TO RE-START SWITCH
BP9-7	
BP9-8	OUTPUT TO POWER RELAY (RUN LIGHT)
BP9-9	OUTPUT TO C.O. OPEN RELAY
BP9-10	OUTPUT TO C.O. CLOSE RELAY
BP9-11	HOLD FOR EXCITER RELAY
BP9-12	OUTPUT TO START TIMER RELAY
BP9-13	FEATURE ON LED
BP9-14	OUTPUT TO ALARM RESET TIME DELAY RELAY
BP9-15	RETURN FROM ALARM RESET TIME DELAY RELAY
BP9-16	

BP10 P.C. BOARD - CAM TIMER INTERFACE PLUG

BP10-1	12 VAC FEED TO TM-1	
BP10-2	TM-1 RETURN - CYCLE.	
BP10-3	GROUND SWITCHING COMMON TM-2,3,5	
BP10-4	HOLD #1 TM-2	
BP10-5	HOLD #2 TM-3	
BP10-6	FEED TO TM-4	(C.O. CLOSE - SHOW START)
BP10-7	RETURN FROM TM-4	
BP10-8	RETURN FROM TM-5	(C.O. CLOSE)
BP10-9	FEED TO TM-6	(HOUSE LIGHTS PULSE)
BP10-10	RETURN FROM TM-6	
BP10-11	FEED TO TM-7	(STAGE LIGHTS PULSE)
BP10-12	RETURN FROM TM-7	

RELAY SCHEDULE***P.C. BOARD RELAYS - 4PDT - 12VAC***

I.D.	FUNCTION
K1	START
K2	START LATCH
K3	SHOW START
K4	SHOW END
K5	HOLD
K6	FAILSAFE
K7	ALARM
K8	AUTO-STOP
K9	CROSS CUE - FEATURE
K10	INBOARD CUE- LIGHTS UP
K11	OUTBOARD CUE - SHOW END/INTERMISSION
K12	C.O. CLOSE LOGIC
K13	CURTIAN OPEN
K14	FEATURE LATCH
K15	PANIC INTERFACE
K16	SYNC I/L ON-OFF
K17	SYNC I/L START
K18	SYNC I/L LATCH
K19	SYNC I/L TRANSFER
K20	SYNC I/L FAILSAFE TRANSFER
K21	ALARM LATCH
K22	FORMAT - FLAT
K23	FORMAT - SCOPE
B1	SONALERT PIEZO ALARM BUZZER

CHASSIS MOUNTED RELAYS

I.D.	FUNCTION	TYPE
K24	SHOW START TIMER	4PDT
K25	TIMER CYCLE	4PDT
K26	EXCITER/OPTION	3PDT
K27	C.O. OPEN	3PDT
K28	POWER	3PDT
K29	C.O. CLOSE	3PDT
K30	PROJ. MOTOR ADVANCE	SOLID STATE
K31	SYNC I/L TIME DELAY	12ANO.1-60
K32	ALARM RESET TIME DELAY	12AC.1-60C

TM-1 CAM TIMER

I.D.	FUNCTION	CAM FOLLOWER SETTINGS	
TM-1	CYCLE	DROP @ 100	LIFT @ 5
TM-2	HOLD #1	DROP @ 20	LIFT @ 56
TM-3	HOLD#2	DROP @ 56	LIFT @ 85
TM-4	C.O. CLOSE @ SHOW START	DROP @ 98	LIFT @ 2
TM-5	CHANGEOVER PULSE	DROP @ 25	LIFT @ 27
TM-6	HOUSE LIGHTS PULSE	DROP @ 10	LIFT @ 15
TM-7	STAGE LIGHTS PULSE	DROP @ 10	LIFT @ 15

SWITCH SCHEDULE

AUTOMATION CONTROLS - SWITCHES

TM	SHOW START/INTERMISSION TIMER	
PB-1	START BUTTON	1 POLE, 2 LIGHT
PB-2	STOP BUTTON	1 POLE, 2 LIGHT
S12	SHOW START - FORMAT - PRE-SELECT	SPDT
S13	FEATURE - FORMAT - PRE-SELECT	SPDT
S14	SHOW START AUDIO PRE-SELECT	
S15	FEATURE - AUDIO - PRE-SELECT	SPDTCO
S16	SHOW START AUDIO PRE-SELECT AUX 1-2	SPDTCO
S17	FEATURE AUDIO PRE-SELECT AUX 1-2	SPDTCO
S18	SHOW START TIMER	SPDTCOM1
S19	SHOW END MODE - NORMAL/AUTO.STOP	SPST
S20	MANUAL CUE - FEATURE/LIGHTS UP	SPDT*
S21	MANUAL CUE - OUTBOARD/RE-START	SPDT*
PB-3	SYNC I/L ON - OFF	1 POLE A.A., 2 LT.
F1	MAIN FUSE	3 AG, 3 AMP
PL-1	FEATURE ON LED	GREEN

MANUAL CONTROL SWITCHES

S1	POWER ON - OFF	SPST
S2	MOTOR	SPST
S3	LAMP	SPST
S4	CHANGEOVER	SPDT*
S5	EXCITER	SPST
S6	HOUSE LIGHT DIMMER	SPDT*
S7	STAGE LIGHT DIMMER	SPDT*
S8	CURTAIN	SPDT*
S9	FORMAT	SPDT*
S10	OPTION (SLIDE PROJECTOR)	SPDT
S11	OPTION 2 (SLIDE PROJECTOR)	SPDT*

*DENOTES MOMENTARY SWITCH