Strong CNA / eCNA Automation Systems

CINENET™

Installation Manual

STRONG
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Strong CNA/ eCNA Automation
Installation Manual

PR001   Revision 2.01

This manual has been created to assist with the installation and setup of the CNA/ eCNA automation.

Optional CineNet and related equipment is covered in the following product reference manuals:

- PR001 CNA Installation Manual
- PR002 CNA-200 Setup and Operation Manual
- PR003 CNA-150 Setup and Operation Manual
- PR004 CNA-100 Setup and Operation Manual
- PR005 QDC-400 Setup and Operation Manual
- PR006 ACP-50 Installation and Setup Manual
- PR007 RVC-5 Installation and Setup Manual
- PR008 PCI-64 Gateway Interface Installation
- PR009 CineNet Host Software
- PR010 RCM-10/RSM-10/RSM-20 Installation and Operation Manual
- PR011 Strong Dimmer Installation, Setup, and Operation Manual
- PR012 eCNA-100 Automation Manual
- PR013 eCNA-150 Automation Manual
- PR014 eCNA-200 Automation Manual
- PR016 Strong FP350 Installation and Operation Manual
- PR017 Eprad FP350 Installation and Operation Manual
- PR018 Paging system Setup and Installation Manual
- PR019 VNC Setup and Operation Manual
- PR020 CineSuite Installation and Operation Manual

Warranty

CineNet automation products, sold by STRONG INTERNATIONAL, are warranted against defects in materials and workmanship for one year from the date of purchase. There are no other express or implied warranties and no warranty of merchantability or fitness for a particular purpose.

During the warranty period, STRONG INTERNATIONAL will repair or, at its option, replace components that prove to be defective, provided the unit is shipped prepaid to the manufacturer directly or via and authorized distributor. Not covered by this warranty are defects caused by modification, misuse or accidents and any further damage caused by inadequate packing for service return.

STRONG INTERNATIONAL's obligation is restricted to the repair or replacement of defective parts and under no circumstances will STRONG INTERNATIONAL be liable for any other damage, either direct or consequential.

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System Overview

Introduction

The CNA Cinema Network Automation is a CINENET™ compatible automation system specifically designed for the Motion Picture Theatre industry. The system is modular in design, consisting of the operator interface and system I/O devices. The Main Computer and each I/O device is defined by its function and location within the projection booth. All CNA automation systems and remote stations both in the projection booth and distributed throughout the multiplex are accessible remotely through a serial link. It's daisy chain topology is both simple and efficient in design.

A CINENET™ Gateway PC card and host software is available to facilitate a broader level of control over the CNA's functions. This product will provide a PC interface to the CNA automations allowing management more flexibility in the areas of programming, real-time data and diagnostic information, and the monitoring of all systems connected to the network.

Installers of the CNA are encouraged to read all sections of this manual and the *Set-up and Operation* manuals and to become familiar with the system and its capabilities. This automation was designed to be easy to setup and operate. It is highly recommended that users also familiarize themselves with the system's attributes and understand it's overall function. With a solid understanding of how the CNA operates you can take full advantage of all its capabilities. The Installation section of the manual provides detailed wiring diagrams to aid in the installation process. A special section entitled *Installation Guidelines* is included to provide the installer with a set of important rules to follow that will help insure a reliable and successful installation.

If while installing or operating the CNA automation you find any part of the manual to be unclear or incorrect, please bring it to our attention.
It is our desire to provide our customers with both helpful and accurate information . Please contact Strong International at (800)-424-1215 or visit http://www.strong-cinema.com for further information.

Product Description

The CNA Cinema Network Automation System is a microprocessor based computer automation designed to control all aspects of the theatre presentation. The major features of the CNA are described in the following sections.

Local I/O Network (LIN)

Each system component is connected to the network and communicates via a five wire (data+, data-, power, ground, and shield) cable. This cable provides serial communication as well as power to the termination panels. This is called the "Local I/O Network". The standard devices that make up the system are the:

1. Control Panel
2. Termination Panel(s)

The Control Panel contains the main microprocessor control board which functions as the 'master' of the system. The termination panel handles the I/O function and is connected to the control panel by the serial communications link. The devices are connected via a daisy-chain topology and geographically distributed according to your facility's requirements.

CNA-200
Local I/O Network (LIN)
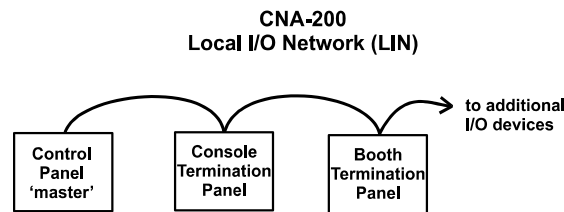
Local Synchronous Network (LSN)

The "Local Synchronous Network" is a three-wire (data+, data-, and shield) data link that will support CNA Automations, remote stations, synchronous communications for interlock, network copy functions and a Host PC. The automation systems are also interconnected with a daisy-chain configuration whereby the communications line continues from one unit to the next.

Local Synchronous Network (LSN)
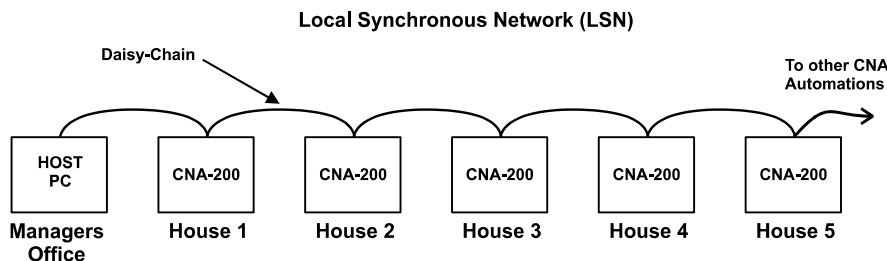
System Components

The standard components that make up the automation system LIN are described in the following sections.

Termination Panels

The CNA Control Panel currently supports two types of termination systems. The type used depends on the specific requirements of the projection booth designers.

The Dual termination system consists of two panels that support all standard console and booth equipment control I/O. The functions are logically divided between the two boards according to the location of the projection booth equipment. The *Console* termination panel controls the equipment that is normally associated with the console system such as the projector, lamp, film monitoring, etc. The *Booth* termination panel controls other functions such as masking, curtains and lights. The Dual termination system's versatility lies in that it allows the Booth termination panel to be located in a place other than the console.

The Single termination system combines most of the functions of the Console and Booth units into a single panel. This panel provides the option of a single, lower-cost alternative for installations that do not require all of the options that separate units provide.

Dual Termination Panels

Console Termination Panel

This panel supports the input and output termination interface and provides connections for standard booth functions as listed below:

Outputs:

- Projector Motor; On/Off
- Xenon Lamp; On/Off
- Changeover; Open/Close
- Lens Turret; Flat/Scope/Special
- Slide Projector; On/Off

Inputs:

- Film Presence
- Film Motion
- Film Tension
- Cue Input
- Xenon Fault

Features:

- High current *dry(unpowered)* relay contact outputs.
- High current override connector for plug-in cable to override switches.
- Projector motor and Changeover fuse.
- Plug-in I/O CPU Control Board to handle I/O and serial interface.
- Terminal Blocks for connection to the console equipment.

The I/O Control Board simply plugs onto the relay board to provide I/O and the network interface.

Booth Termination Panel

This panel supports the input and output termination interface and provides connections for standard booth functions as listed below:

Outputs:

- Top Masking; Flat/Scope/Special
- Side Masking; Flat/Scope/Special
- Curtains; Open/Close
- House Lights; Up, Down, Mid 1, Mid 2
- Stage Lights; Up, Down
- Environment; On/Off
- Slide Projector; On/Off
- Sound Processor; Mono, SVA, SR, Digital 1, Digital 2, Aux 1, Aux 2, Nonsync, Mute, preamp 1, preamp2,

Inputs:

- Remote Start
- Remote Stop/Fire Stop

Features:

- Low current dry relay contact outputs.
- High current dry relay contact outputs for Slide Projector and Environmental Control
- A plug-in I/O CPU Control Board to handle I/O and serial interface.
- Override connector for plug-in cable to override switches.
- Override connector for optional override switches.
- Large terminal blocks for user interface.

This Panel (PC board) will connect to the to the Local I/O Network (LIN). The outputs are then configured at the PC Host.

The relays and plug-in I/O CPU Control Board get their power from the LIN cable. This board will generally be mounted in a cabinet on the booth wall, but can also be mounted in the console next to the Booth Termination Panel.

Single Termination Panel

This panel combines most of the functions of both the Console and Booth Termination Panels. The connections and functions are listed below:

Outputs:

- Projector Motor; On/Off
- Xenon Lamp; On/Off
- Changeover; Open/Close
- Lens Turret; Flat/Scope/Special

- Slide Projector; On/Off
- Masking; Flat/Scope/Special
- Curtains; Open/Close
- House Lights; Up, Down, Mid 1, Mid 2
- Stage Lights; Up, Down
- Sound Processor; Mono, SVA, SR, Digital, Aux, Non-sync, Mute

Inputs:

- Film Presence
- Film Motion
- Film Tension/Remote Stop
- Cue Input
- Xenon Fault

Features:

- Low current *dry* relay contact outputs.
- High current *dry* relay contact outputs.
- Override connectors for plug-in cable to override switches.
- Projector motor fuse.
- Changeover fuse.
- Plug-in I/O CPU Control Board to handle I/O and serial interface.
- Terminal Blocks for connection to the console and booth equipment.

The relays and I/O CPU Control Board get their power from the LIN cable. The Control Board plugs into the relay board and facilitates I/O and network interface.

Communications

Communications to the termination boards and other remote CNA systems is accomplished via three main serial ports on the Main CPU:

-The Local I/O Network Com Port - This is the interface for the Local I/O Network (LIN) that will support the Main I/O Interface, the Termination Panels, and other auxiliary devices.

-The Local Synchronous Network Com port - This is the interface for the Interlock and Copy function between CNA systems, Programming, Remote Monitoring and PC Host networking.

-The Ethernet Port - This is standard on eCNA automations only. It enables your automation to communicate over TCP/IP. Using the CineSuite software package, a wide variety of functions can be controlled, monitored, and changed remotely over the internet.

-The P8 Setup port - Available only on the eCNA, this RS-232 port is used to configure the eCNA's Ethernet settings including IP address, Subnet Mask, Default Gateway, and MAC address. A special cable and a "Dumb-Terminal" are required.

-The RS-232 Port- This port available only on the eCNA has not been implemented as of the writing of this manual.

Control Panel (Operator Interface)

The automation controller and front panel unit was designed to be mounted in a standard 19" rack. The unit houses the main CPU, the front panel interface and the power supply for local and network power. Alternately a wall mounted version is available which can be mounted on the booth wall and can contain a single or dual termination board setup. Both packages can also house the QDC-400 quad dimmer controller.

The control panel is used to setup, program and run the shows. It also locally displays error and status messages to the user. The control panel can incorporate up to nine optional override switches used for emergency manual control. These are front panel rocker switches and the operator should be familiar with their purpose and use. All manual controls circumvent the electronic circuitry giving the operator the ability to control the major functions of the booth in the event of an automation failure.

The manual control functions are listed below:

1. PROJECTOR - Maintained ON/AUTO
2. LAMP - Maintained ON/AUTO
3. CHANGEOVER - Momentary OPEN/CLOSE
4. LENS (*LENS & MASKING) - Momentary FLAT/SCOPE
5. LENS (*LENS & MASKING) - Momentary SPECIAL
6. CURTAIN - Momentary OPEN/CLOSE
7. HOUSE LIGHTS - Momentary UP/DOWN
8. STAGE LIGHTS - Momentary UP/DOWN
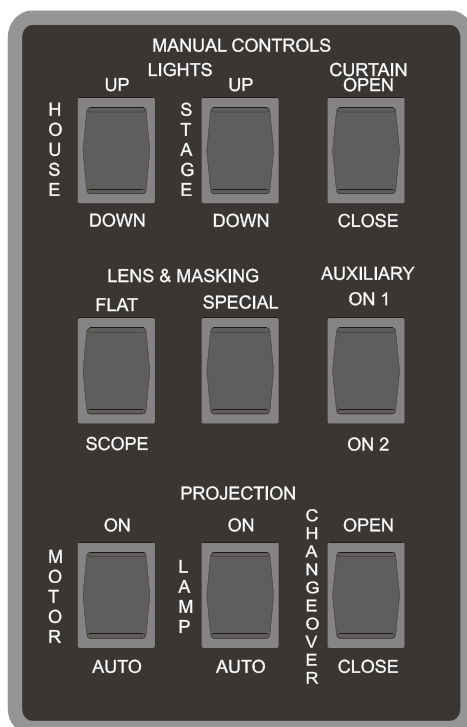9. AUXILIARY - Momentary ON1/ON2

    *Front panel with DPDT switches.

Figure 1

Installation

The Installation section of this manual provides detailed wiring diagrams to aid in the installation process. A special section entitled *Installation Guidelines* is included to provide the installer with a set of important rules to follow. These will help facilitate a successful and trouble free installation.

Equipment Required

The CNA should be installed only by an electrician, engineer or other qualified personnel. No special equipment or tools are required for installation. Typically the CNA main controller and termination panels will be mounted in the Strong console and factory pre-wired.

Equipment Inspection

The equipment should be carefully inspected for signs of visible damage resulting from transportation or mis- handling. Please notify the freight carrier immediately if damage is found. Do not attempt installation of a damaged unit, further damage or personal injury could result.

Wiring the CNA System

The CNA automation system is a microprocessor based theatre automation. Observed field installations over the past several years have indicated that common wiring practices vary by region and by installation. For this reason, a set of guidelines which will assist with the successful installation of the CNA system is listed below.

Microcomputers by their very nature, are susceptible to noise and power supply fluctuations. While the CNA system was designed to function in an electrically noisy environment and will perform well in most cases, it is to the benefit of the end user that these guidelines be followed.

The items listed below are the results of over 25 years of experience and are common, accepted practice for the installation of industrial microcomputers. The cost of implementation is minimal while their benefit is immeasurable.

1. Observe all national and local electrical codes during installation. Run *clean* power (dedicated to the CNA systems only) to all automations from the service entrance panel or the closest branch panel. The line, neutral and ground wires should all run back to the main service panel (separate from all other loads). It is recommended that all automation should be run from a single distribution point.

   IMPORTANT NOTE: Do not connect the projector motors, changeovers, xenon rectifiers or other heavy or electrically noisy loads to this circuit.

2. It is imperative that the automation have a good ground. This is important in terms of safety and performance. The automation has an interference filter for the AC inputs. The specific intent of the filter is to reduce the effect of interference (noise) on the AC line that provides power to the unit, by providing a "leakage" path to ground from the power lines.

Important note: Unless an adequate earth ground is provided this leakage can pose an electrical shock hazard.

In new installations use a copper conductor (not the conduit) from the automation back to the service entrance ground. Connect all automations in the booth to this ground point. This arrangement is best and most reliable. If this is not practical, (such as a retrofit for example), provide the best "earth" ground possible.

A second best setup would be to run copper wire back to the ground lug in a branch panel.

The minimum acceptable grounding method is conduit ground back to the branch box. In some installations satisfactory operation with this ground may not be possible.

3. Do not run the line voltage power wires in the same raceways as the low voltage signal wires. This is important from both a safety standpoint and a system reliability standpoint. It is best to keep the failsafe, cue detector, LIN, LSN, sound format and dimmer control wires separate from projector motor, changeover, xenon lamp, and other power carrying wires. If it is essential that they be run in the same duct, keep them separated in the duct.

CNA/ eCNA Mounting

The CNA is available packaged in either a console mount or a wall mount cabinet. The wall mount cabinet may contain any combination of 39330, 39331, or 39332 termination boards. The most common configuration being a single 39332. The wall mount CNA/ eCNA may also contain a QDC-400 Dimmer Controller.

The console mounted CNA, due to size limitations cannot contain a termination board, but may feature a QDC-400 Dimmer Controller.

Mounting is accomplished by securing the console mounted (or rack mounted) automation in its proper location with four screws of the appropriate size (Usually 8-32 x 1/4 inch). All CNA and eCNA models (100, 150, and 200) have the same dimensions. The wall-mounted cabinet is most often secured to a booth wall using the appropriate hardware for the type of wall construction encountered. Four keyed mounting holes are provided, the unit can then be hung in place and the fasteners tightened. It will be necessary to remove the wall mount chassis' front cover to access these holes from the inside. Use care to avoid damaging the front cover's grounding wire.
See the following dimensional drawings for mounting space and hardware size requirements. The wall mounted CNA weighs approximately 34 lbs.

Dimensions

The following illustrations show the two different cabinet styles and their associated dimensions required for proper mounting.
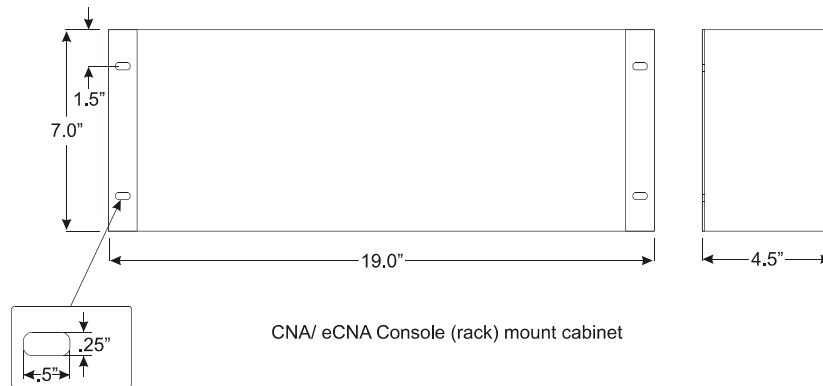

CNA/ eCNA Console (rack) mount cabinet

Figure 2

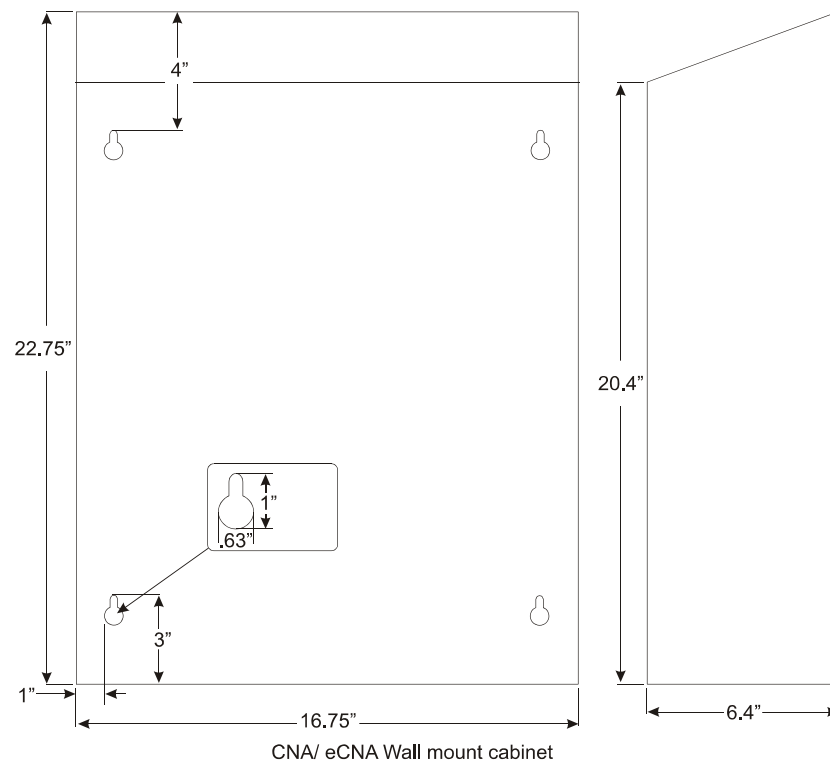
CNA/ eCNA Wall mount cabinet

Figure 3

Power Supply (P/N 39328)

Before applying power, verify that the power supply inside the unit is set to the same voltage (120V or 230V) that will be powering the unit. If it is not, move the switch S1 to the appropriate position. To access the power supply, open the front panel by removing the three screws along the top-front of the unit. The power supply board is mounted to the back wall. The switch S1 can be set with a small *flat-blade* screwdriver.
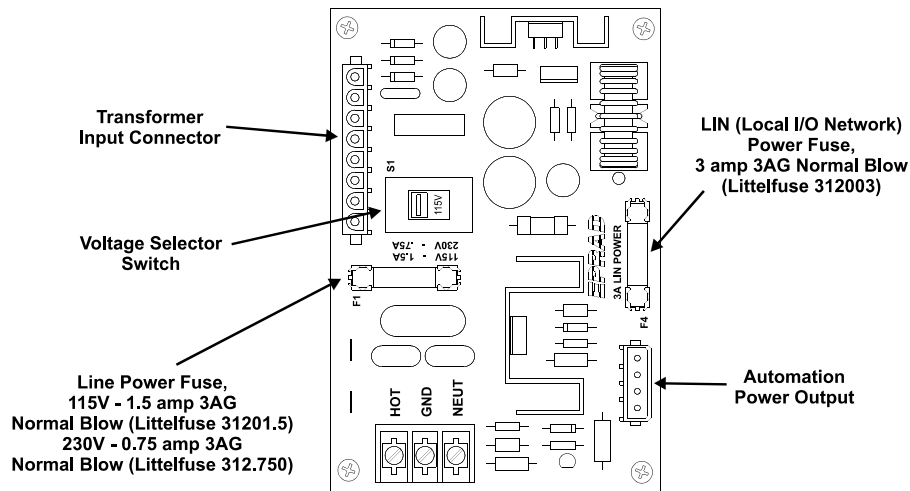
Rack Mount Power Supply Configuration
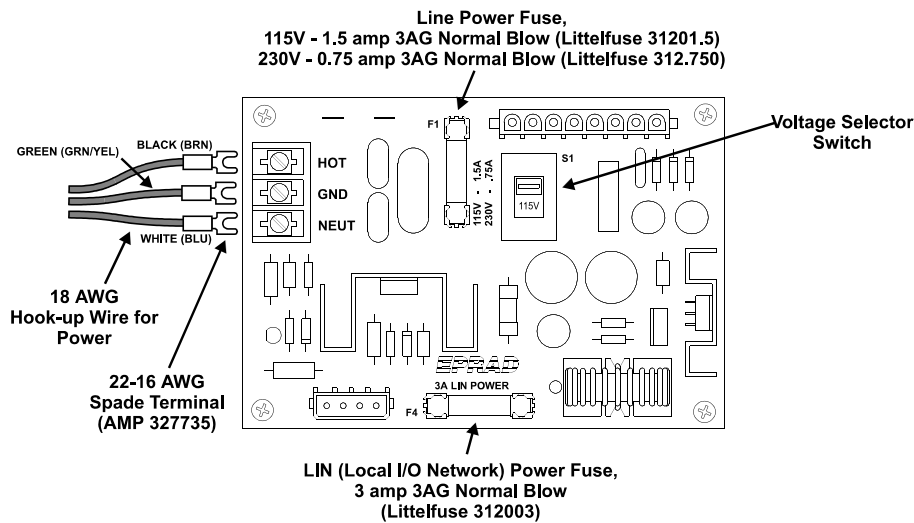
Wall Mount Power Supply Configuration

Figure 4

There are also two fuses on the power supply board. F1 is the line power fuse and F4 is the LIN (Local I/O Network) power fuse. All units are shipped from the factory with a 1.5 amp line fuse (F1). If 230 volt ac operation is required, it is the responsibility of the installer to change this to a 0.75 amp fuse. (Littelfuse #312.750). Remember, before servicing these fuses, be sure power is removed from the unit.
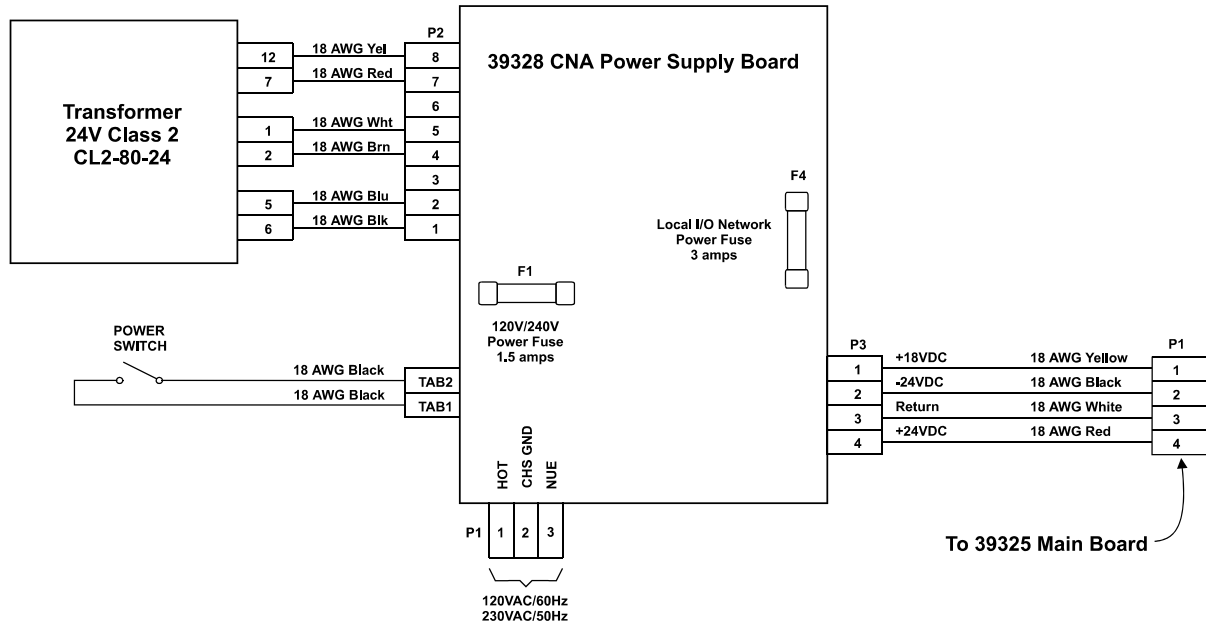

Figure 5

The CNA power supply provides three voltages to the automation via the 39325/ 39425 Main Board. The +24 and -24 volts are used for the computer and display. The +18 volts is used to power the LIN devices.

LSN and LIN Communications Wiring

Wiring between the CNA automations and the Termination boards are shown below. The wiring is accomplished with two communication networks. These are the LIN and LSN.

Wiring to the 39332 Single Termination Panel
and between CNA-200 Automations

Wiring to the 39330 Console and 39331 Booth Termination Panels
and between CNA-200 Automations
Figure 6

The CNA main controller is connected to the termination boards via the LIN (Local I/O Network). This is a five wire cable (four wire + shield) that provides the serial data communications as well as power to the termination panels. The termination boards are connected in a *daisy-chain* method and are mounted in the booth according to their logical location. For example, the Console termination board would typically be mounted in the console, and the Booth termination board could be mounted in the console *or* on the booth wall (see BTC-10 manual).

Data communications between CNA systems is accomplished via the LSN (Local Sync Network). The LSN provides a communications path between the CNAs, Remote Monitors and a PC host. The network supports synchronous communications for interlock, copy functions and remote status and control.

The wiring diagram shows the LSN cable wired between the main controller and termination boards. The LSN connections on the termination boards are tie points only that provide a path to the main controller. It will typically be more convenient for the installer to connect CNA systems together at the Booth termination board.

The cable is 3 conductor, twisted pair with a shield. Wire gage is dependent on the length of wire needed. In general, 24 AWG is sufficient. Many cable manufacturers offer a broad range of 120-ohm cables designed for RS-485 applications.

When planning the communications wiring, keep the cable away from equipment that generates electrical noise, such as power conduits, fluorescent lighting fixtures, air conditioners, etc. Choose cable routing paths in such a way to prevent damage to the cable.

The required method for communication wiring of the LSN and LIN is the daisy-chain configuration, a system in which the transmission line continues from one unit to the next. See the figure below for an example of the daisy chain connection topology. The bus must form a continuous path. Devices must not be branched or spoked.

LIN cable specifications	2 twisted pair,18 AWG with overall shield and drain wire	Alpha #5132C or equivalent
LSN cable specifications	Twisted pair, 24 AWG with overall shield and drain wire	Alpha #6412, Belden #9841 or equivalent

Correct Wiring Technique
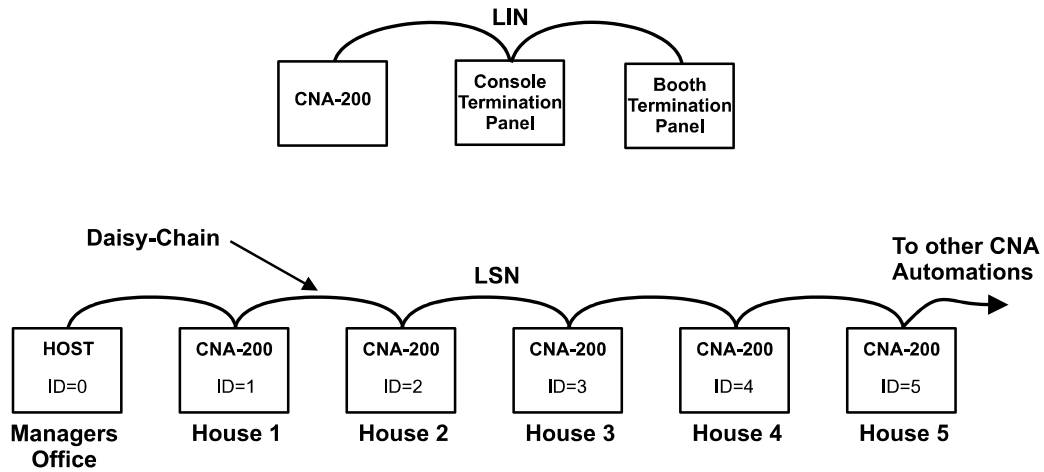
(a) Correct - The optimal configuration for the RS-485 bus is the daisy-chain connection.
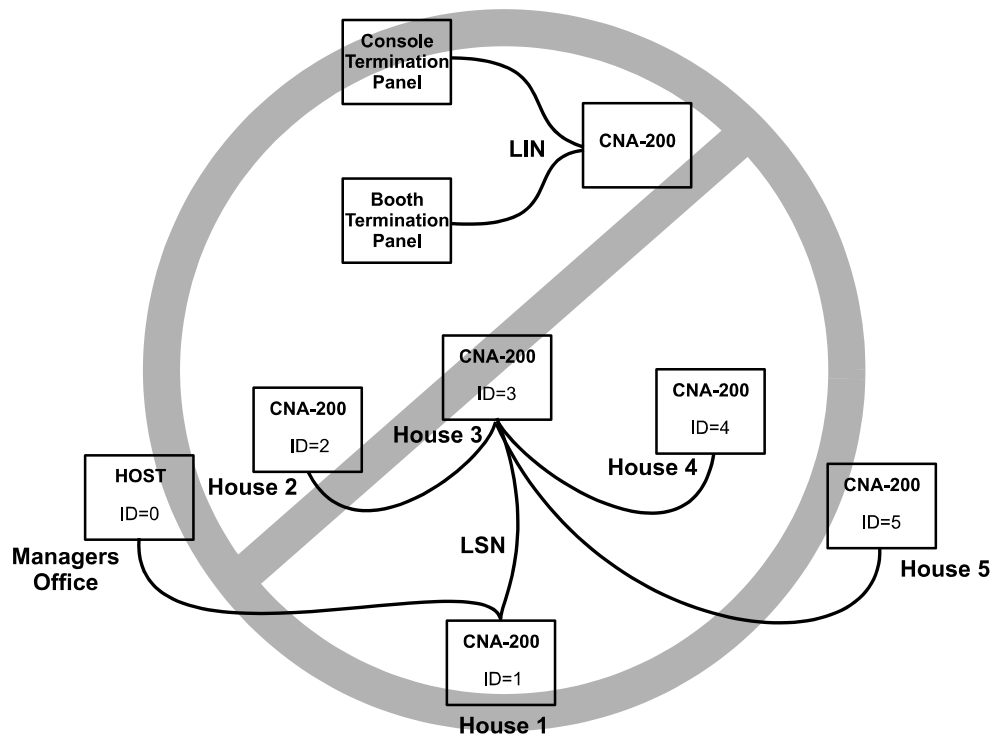
(b) Incorrect - This may create transmission line problems. Must be Daisy-Chained, not branched or home run.

Figure 7

Ethernet Connection Hardware

The eCNA's ethernet port is of the 10BaseT variety, this means that it communicates at a maximum of 10MB/s. This makes it a natural requirement that the hardware path support this speed. The cable should be of the standard Cat5 type and terminate in RJ45 connections. Twisted pair wiring is used and should follow standard conventions for ethernet hardware. Below is a diagram representing the wiring terminations that should be used.

Cable is standard 1-1 twisted pair:

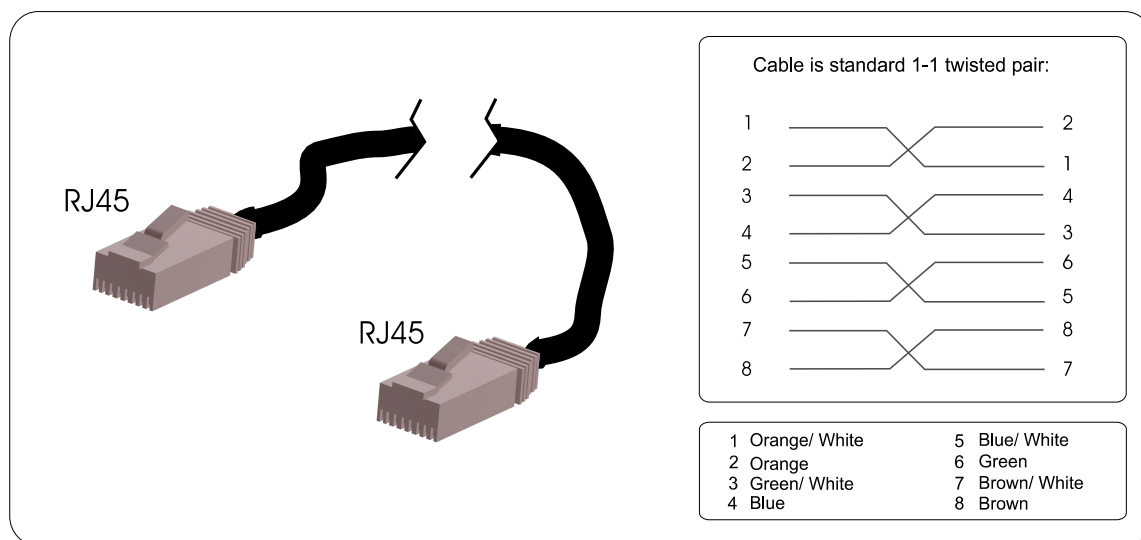| 1 Orange/ White	5 Blue/ White
2 Orange	6 Green
3 Green/ White	7 Brown/ White
4 Blue	8 Brown

Figure 8

The hub, switch or router used with your network must also be configured to accept 10MB/s network traffic. Most hardware manufactured today accepts, and in many cases automatically configures itself to either 10, 100, or 1000 MB/s. Some older hardware requires a switch to be manually set to the proper network speed. The maximum cable length for 10 BaseT is 100 Meters or about 330 Feet. This range can be extended with the addition of an active hub or switch.

Minimum Cable Requirement

The above cable is a standard store bought ethernet cable, it may be desirable to wire only the minimum necessary contacts when terminating your own connections. The critical connections are shown in the diagram to the right.

Active Connections:

Positions Defined on RJ Connector

| 1	Tx+
2	Tx-
3	Rx+
6	Rx-
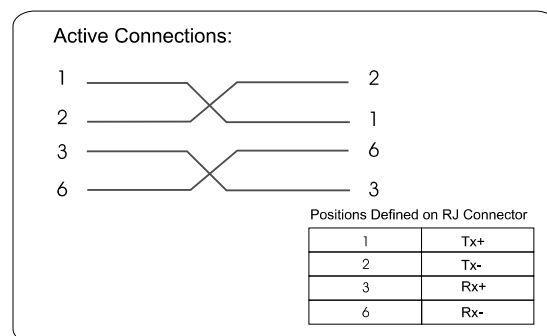
Crossover Cable

Some users may find it desirable to connect their eCNA directly to the host computer using the ethernet port. In this case a special cable known as a crossover cable must be used. Most hubs and switches have automatic crossover in them eliminating the need for such a cable, however in the case of a direct eCNA to PC connection the crossover must be hard-wired. The diagram to the right shows the crossover connection.

CrossOver Cable:
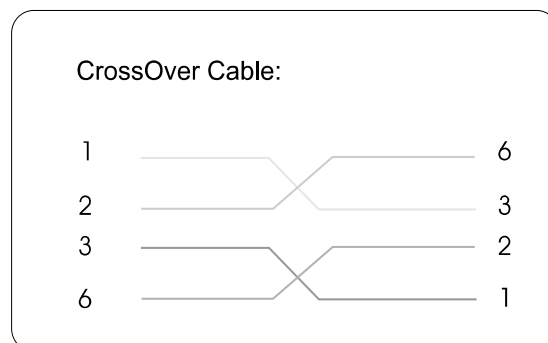
Termination Boards

All booth and auditorium devices (xenon lamp, projector motor, lights, etc.) are wired to the Dual Termination Panels (39330 Console and 39331 Booth) or the Single Terminal Panel (39332).

Console Termination Board
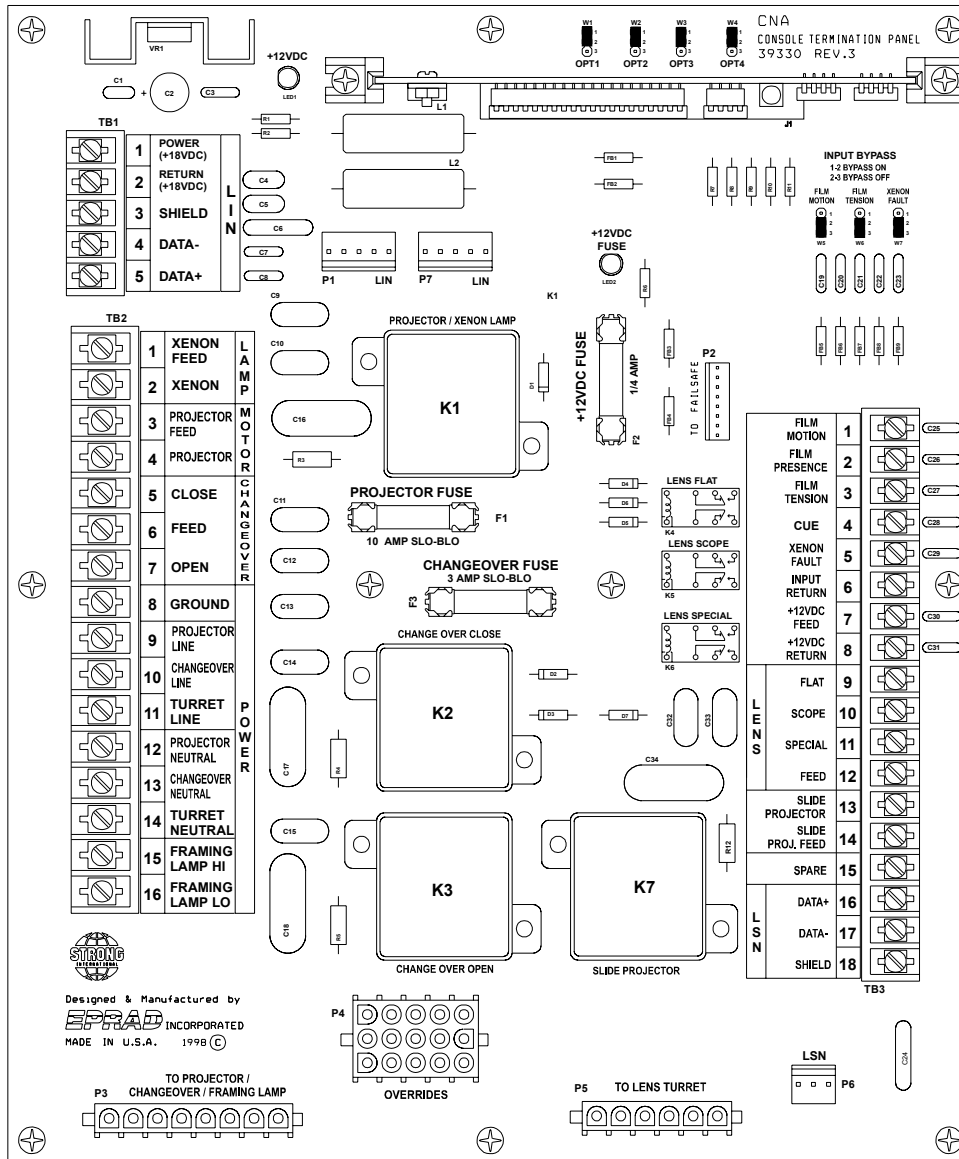
39330 Rev. 3 Console Termination Panel
Figure 9

This is a functional block diagram of the 39330 Rev. 3 termination panel. All relevant signal paths are shown. This diagram can be useful for installation and troubleshooting.
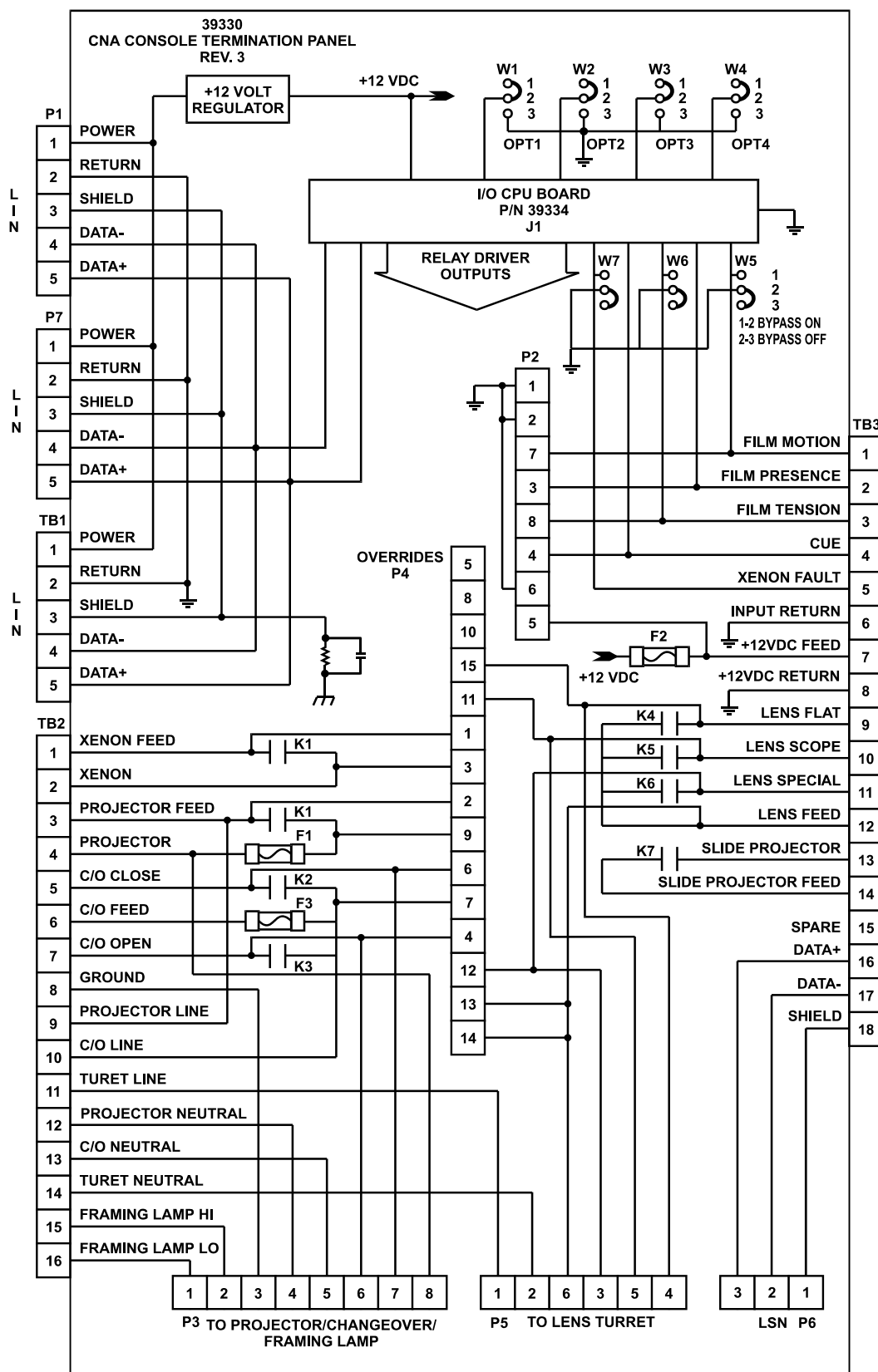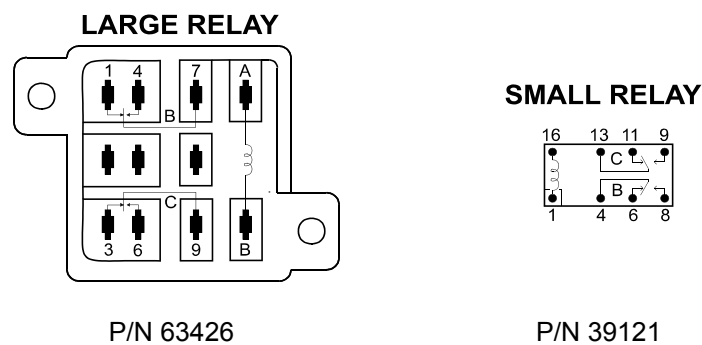

Figure 10

LARGE RELAY

P/N 63426

SMALL RELAY

P/N 39121

Figure 11

Termination Schedule for the 39330 Termination Board:

TB1   These are the LIN connections. TB1-1 through TB1-5 are used to terminate the LIN wiring from the CNA Automation to the 39330 board and to any other LIN devices such as the RVC-10 and ACP-50.

TB1	DESCRIPTION	COMMENT
1	POWER (+18VDC)	
2	RETURN (+18VDC)	
3	SHIELD	
4	DATA-	
5	DATA+	

P1 & P7   LIN connector. Used for factory cable P/N 39347.

P1, P7	DESCRIPTION	COMMENT
1	POWER (+18VDC)	
2	RETURN (+18VDC)	
3	SHIELD	
4	DATA-	
5	DATA+	

LIN CABLE ASSEMBLY
P/N 39347

SCHEMATIC REPRESENTATION
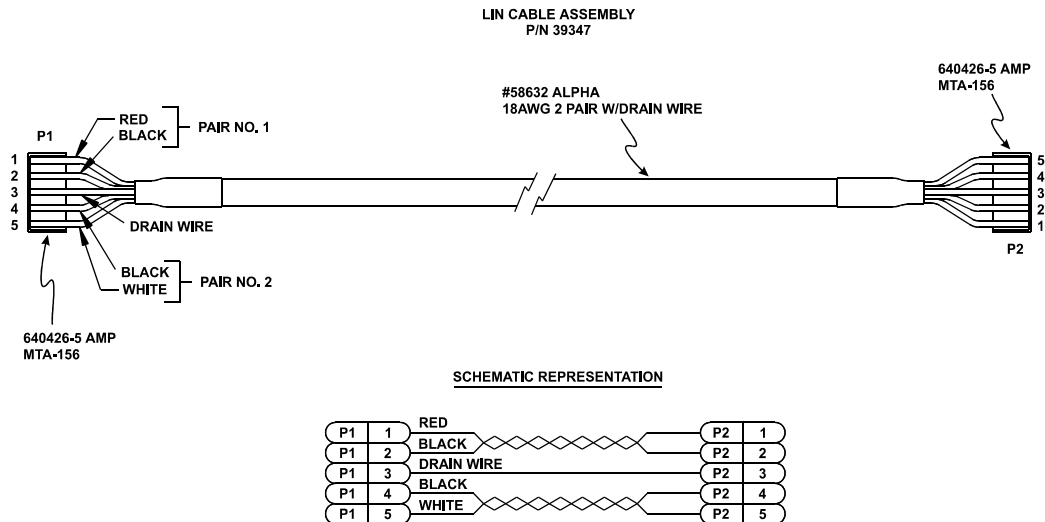
Figure 12

P2   Film failsafe and cue detector connector. Factory cable**.**

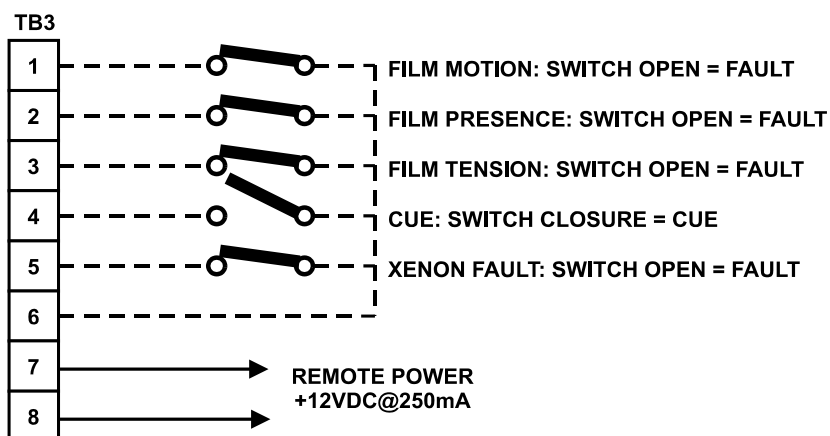| P2	DESCRIPTION	COMMENT
1	+12VDC RETURN	
2	+12VDC RETURN	
3	FILM PRESENCE	
4	CUE	
5	+12VDC FEED	
6	+12VDC RETURN	
7	FILM MOTION	
8	FILM TENSION	

TB2   These are high power connections. TB2-1 through TB2-7 are connected to the high power relay contacts. All relay contacts are 'dry' (no voltage) and require a feed voltage. TB2-8 through TB2-16 are reserved for factory wiring only and should not be used.

TB2	DESCRIPTION	COMMENT
1	XENON FEED	RELAY K1C-9
2	XENON	RELAY K1C-6
3	PROJECTOR FEED	RELAY K1B-7
4	PROJECTOR	RELAY K1B-4
5	CHANGEOVER CLOSE	RELAY K2B-7
6	CHANGEOVER FEED	RELAY K2B-4 AND K3B-4
7	CHANGEOVER OPEN	RELAY K3B-7
8	GROUND	FACTORY USE ONLY
9	PROJECTOR LINE	FACTORY USE ONLY
10	CHANGEOVER LINE	FACTORY USE ONLY
11	TURRET LINE	FACTORY USE ONLY
12	PROJECTOR NEUTRAL	FACTORY USE ONLY
13	CHANGEOVER NEUTRAL	FACTORY USE ONLY
14	TURRET NEUTRAL	FACTORY USE ONLY
15	FRAMING LAMP HI	FACTORY USE ONLY
16	FRAMING LAMP LO	FACTORY USE ONLY

K1, K2 and K3 contacts are rated for 10 Amps @ 250VAC and 10 Amps @ 30VDC. Both the projector and changeover outputs are protected with fuses. This protects the termination board as well as your equipment. The projector fuse (F1) is a 10 amp (3AG Slo-Blo Littelfuse #326010) and the changeover fuse (F3) is a 3 amp (3AG Slo-Blo Littelfuse #313003).

The projector, changeover and slide projector outputs have an RC network across their contacts. The purpose of the RC network is to protect the relay contacts. The capacitor C acts to suppress the discharge the moment the contacts open. Resistor R acts to limit the current when the power is turned on the next time. If the impedance of the load is not sufficiently smaller than the impedance of the RC circuit it may continue to operate even when the contacts are open. This is not a problem with the projector motor or changeover solenoid, but may be with the slide projector. If it is a problem, it will be necessary to remove R12 from the termination board. *Caution: There is enough leakage current through the RC circuit to present a potential electrical hazzard to the installer, never work with the equipment "live" unless proper precautions are taken.*

Note: Currently produced units will not have R12 populated thus eliminating the potential need for modification.

TB3

TB3		
1		FILM MOTION: SWITCH OPEN = FAULT
2		FILM PRESENCE: SWITCH OPEN = FAULT
3		FILM TENSION: SWITCH OPEN = FAULT
4		CUE: SWITCH CLOSURE = CUE
5		XENON FAULT: SWITCH OPEN = FAULT
6		
7		REMOTE POWER +12VDC@250mA
8		

TB3   These are the failsafe inputs, lens and slide projector outputs. TB3-1 through TB3-8 are dedicated to failsafe operation. TB3-9 through TB3-12 are low power dry relay contacts, TB3-13 and TB3-14 are high power dry relay contacts, and TB3-15 and TB3-16 are a tie point for the LSN.

TB3	DESCRIPTION	COMMENT
1	FILM MOTION	THIS INPUT IS USED WITH A FILM MOTION DEVICE. IF THIS INPUT IS NOT USED, JUMPER W5 MUST BE IN THE BYPASS POSITION.
2	FILM PRESENCE	
3	FILM TENSION	IF THIS INPUT IS NOT USED, JUMPER W6 MUST BE IN THE BYPASS POSITION.
4	CUE	
5	XENON FAULT	IF THIS INPUT IS NOT USED, JUMPER W7 MUST BE IN THE BYPASS POSITION.
6	INPUT RETURN	CURRENT RETURN PATH FOR ALL INPUTS.
7	+12VDC FEED	FUSED AT 1/4 AMPS. (F2)
8	+12VDC RETURN	

TB3-7 and TB3-8 are used to power the film failsafe and cue detector. This power supply is fused at 1/4 amps. (Fuse F3 Littelfuse #312.250**).**

LENS:

TB3	DESCRIPTION	COMMENT
9	LENS FLAT	RELAY K4B-4
10	LENS SCOPE	RELAY K5B-4
11	LENS SPECIAL	RELAY K6B-4
12	LENS FEED	RELAY K4B-8, K5B-8, K6B-8

SLIDE PROJECTOR :

TB3	DESCRIPTION	COMMENT
13	SLIDE PROJECTOR	RELAY K7B-4
14	SLIDE PROJECTOR FEED	RELAY

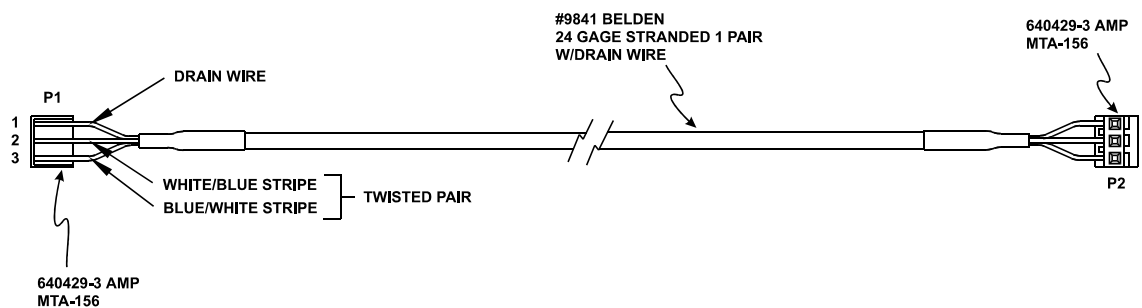K7 contacts are rated for 10 Amps @ 250VAC and 10 Amps @ 30VDC.

LSN:

TB3	DESCRIPTION	COMMENT
16	DATA+	
17	DATA-	
18	SHIELD	

This is a convenient tie point only. The Termination panels do not require the LSN for operation**.**

P6   LSN connector. Used for factory cable P/N 39348.

P6	DESCRIPTION
1	DATA+
2	DATA-
3	SHIELD
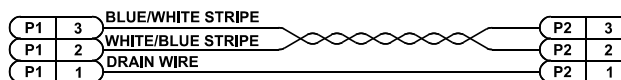
Figure 13

W1 - W7 are optional and bypass jumpers for the 39330 termination panel. If necessary, move the jumpers to the appropriate positions.

JUMPER	DESCRIPTION	COMMENT
W1	OPT 1	☐ **1-2 CONSOLE TERMINATION PANEL #1** ☐ **2-3 CONSOLE TERMINATION PANEL #2**
W2	OPT 2	☐ **1-2 UNDEFINED** ☐ **2-3 UNDEFINED**
W3	OPT 3	☐ **1-2 UNDEFINED** ☐ **2-3 UNDEFINED**
W4	OPT 4	☐ **1-2 UNDEFINED** ☐ **2-3 UNDEFINED**
W5	FILM MOTION	☐ **1-2 BYPASS ON (NOT USING INPUT)** ☐ **2-3 BYPASS OFF**
W6	FILM TENSION	☐ **1-2 BYPASS ON (NOT USING INPUT)** ☐ **2-3 BYPASS OFF**
W7	XENON FAULT	☐ **1-2 BYPASS ON (NOT USING INPUT)** ☐ **2-3 BYPASS OFF**
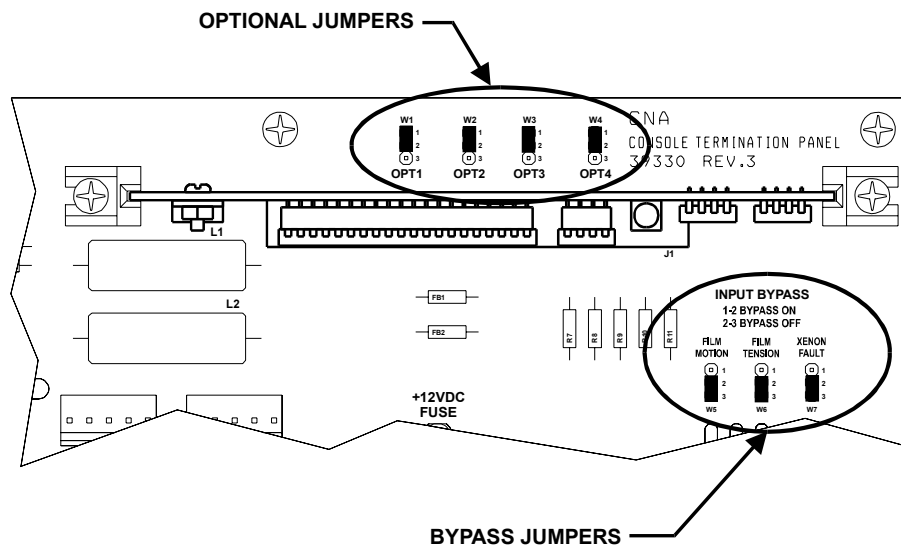
39330 Jumper Settings
Figure 14

P4 Manual Controls: Xenon, Projector, Changeover and Lens. The console override cable 39349 plugs into P4.

P4	DESCRIPTION
1	XENON FEED
2	PROJECTOR FEED
3	XENON
4	CHANGEOVER
5	N/C
6	CHANGEOVER CLOSE
7	CHANGEOVER FEED
8	N/C
9	PROJECTOR
10	N/C
11	LENS SCOPE
12	LENS SPECIAL
13	LENS FEED
14	LENS FEED
15	LENS FLAT
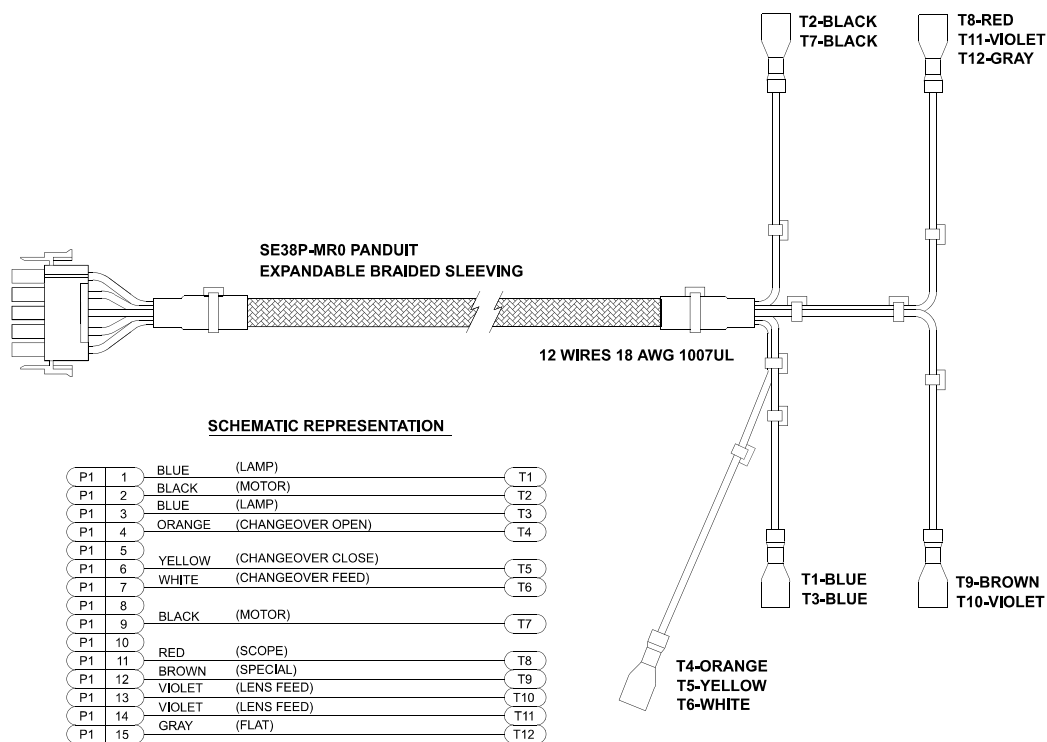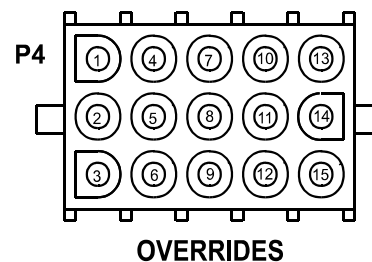
Console Override Cable assembly. P/N 39349.
Figure 15

P3   To projector motor, changeover and framing lamp**.**

P3	DESCRIPTION
1	FRAMING LAMP LO
2	FRAMING LAMP HI
3	GROUND
4	PROJECTOR NEUTRAL
5	CHANGEOVER NEUTRAL
6	CHANGEOVER OPEN
7	CHANGEOVER CLOSE
8	PROJECTOR

TO PROJECTOR /
P3   CHANGEOVER / FRAMING LAMP
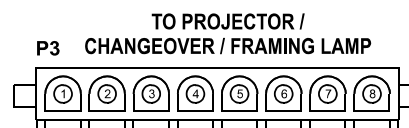
P5   To lens turret**.**

P5	DESCRIPTION
1	TURRET LINE
2	TURRET NEUTRAL
3	SPECIAL
4	FLAT
5	SCOPE
6	LENS FEED

P5   TO LENS TURRET
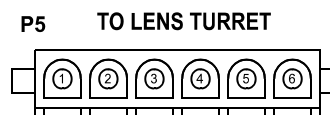
Booth Termination Board
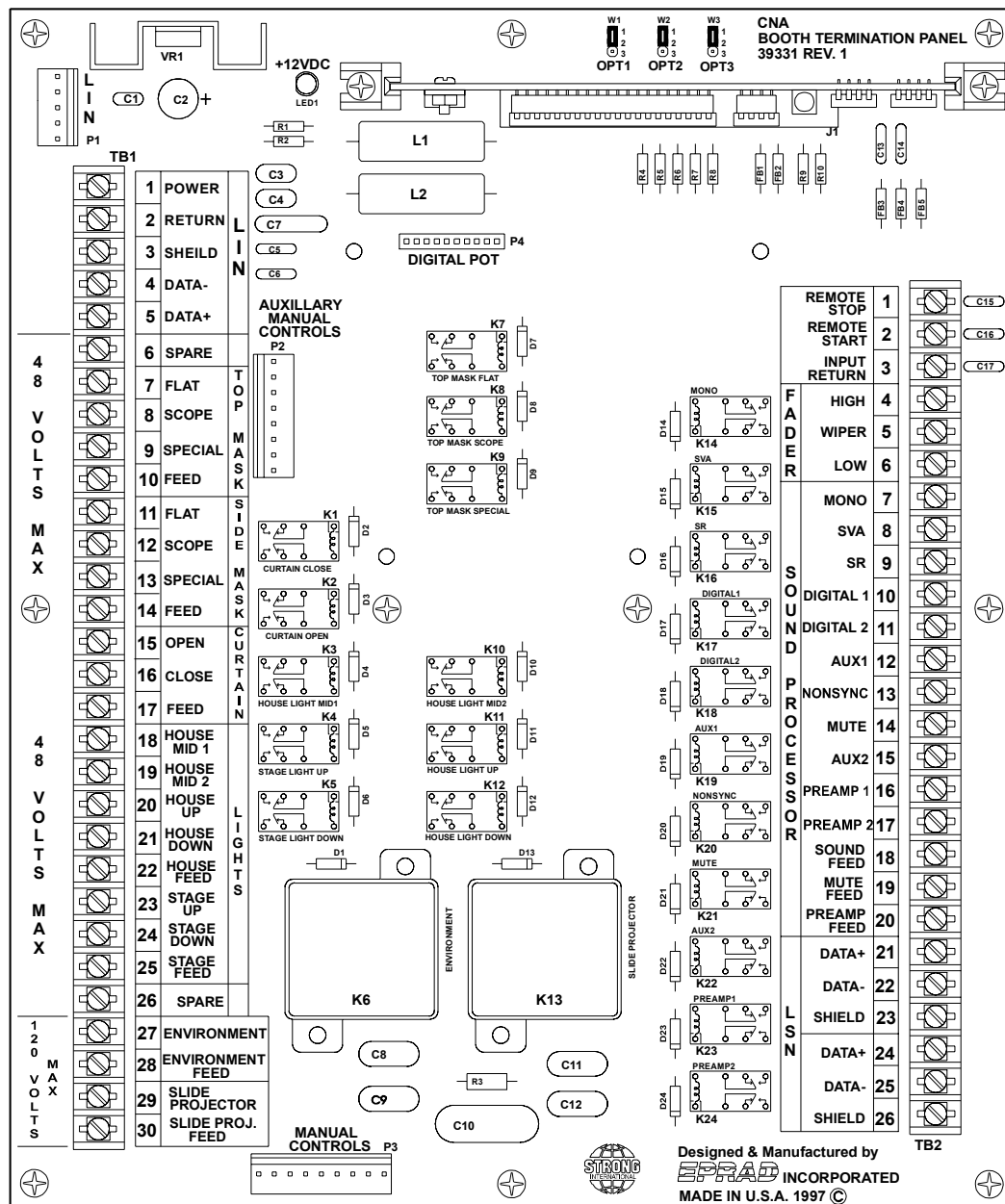
39331 Rev. 1 Booth Termination Panel
Figure 16

This is a functional block diagram of the 39331 Rev. 1 termination panel. All relevant signal paths are shown.
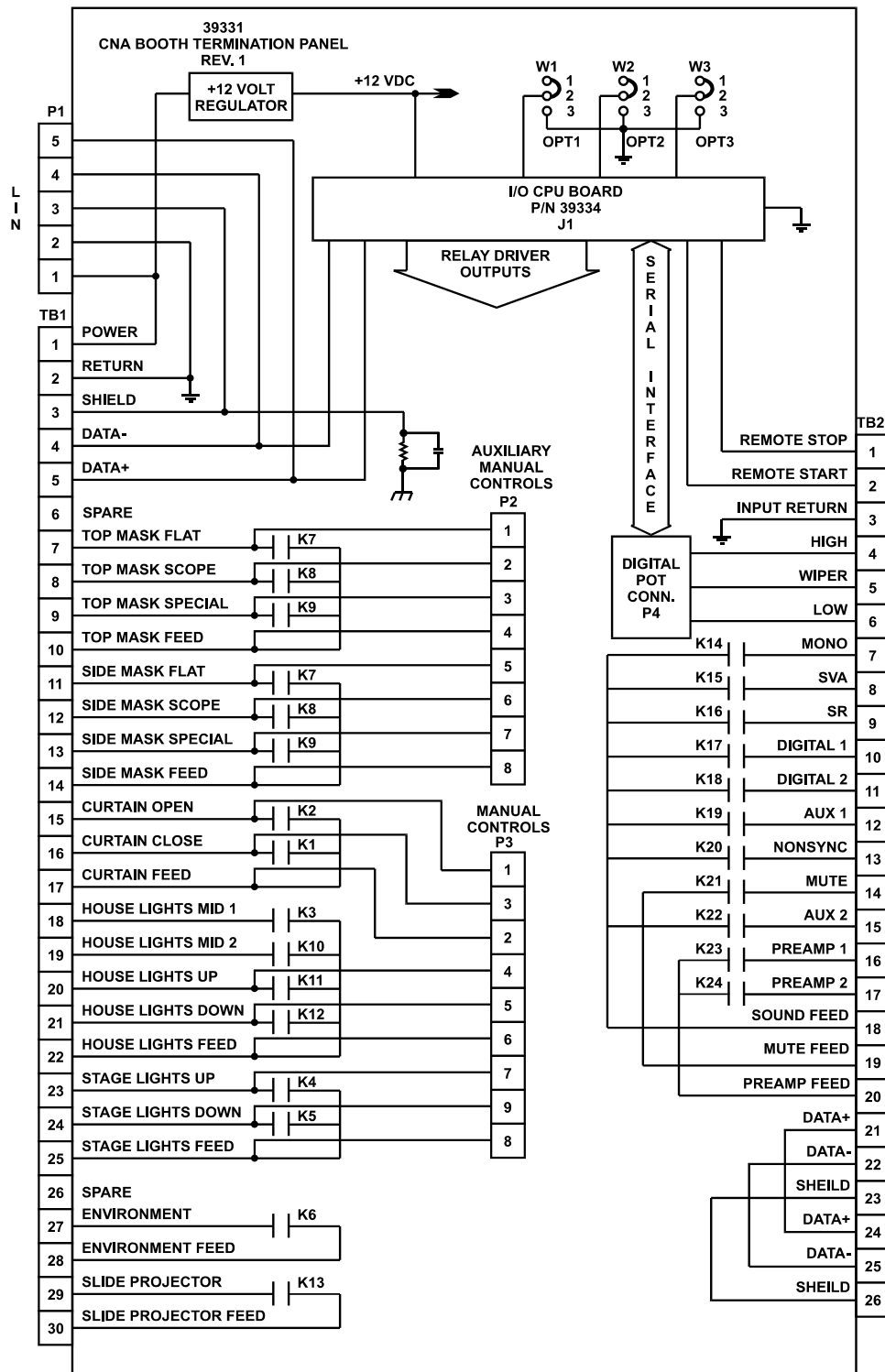

Figure 17

Termination Schedule for the 39331 Rev. 1 Termination Board:

TB1   These are the connections for the LSN, LIN, masking, curtains, lights and slide projector.

TB1-1 through TB1-5 are used to terminate the LIN wiring *from* the CNA Automation to the 39331 board and to any other LIN devices such as the RVC-10 and ACP-50.

The contact ratings for K1 - K5 and K6 - K12 are: 2 amps@15VDC or 30VAC, 1 amp@30VDC or 48VAC, .5 amps@48VDC. The contact ratings for K6 and K13 are: 1/3HP@120VAC, 10 amps@120VAC, 10 amps@28VDC.

TB1	DESCRIPTION	COMMENT
1	POWER (+18VDC)	
2	RETURN (+18VDC)	
3	SHIELD	
4	DATA-	
5	DATA+	
6	SPARE	
7	TOP MASK FLAT	RELAY K7B-4
8	TOP MASK SCOPE	RELAY K8B-4
9	TOP MASK SPECIAL	RELAY K9B-4
10	TOP MASK FEED	RELAY K7B-8, K8B-8, K9B-8
11	SIDE MASK FLAT	RELAY K7C-13
12	SIDE MASK SCOPE	RELAY K8C-13
13	SIDE MASK SPECIAL	RELAY K9C-13
14	SIDE MASK FEED	RELAY K7C-9, K8C-9, K9C-9
15	CURTAIN OPEN	RELAY K2B-4
16	CURTAIN CLOSE	RELAY K1C-9
17	CURTAIN FEED	RELAY K2B-8, K1C-13
18	HOUSE LIGHTS MID 1	RELAY K3C-13
19	HOUSE LIGHTS MID 2	RELAY K10C-13
20	HOUSE LIGHTS UP	RELAY K11C-13
21	HOUSE LIGHTS DOWN	RELAY K12B-4
22	HOUSE LIGHTS FEED	RELAY K3C-9, K10C-9, K11C-9, K12B-8
23	STAGE LIGHTS UP	RELAY K4C-9
24	STAGE LIGHTS DOWN	RELAY K5B-4
25	STAGE LIGHTS FEED	RELAY K4C-13, K5B-8
26	SPARE	
27	ENVIRONMENT	RELAY K6B-4
28	ENVIRONMENT FEED	RELAY K6B-7
29	SLIDE PROJECTOR	RELAY K13B-4
30	SLIDE PROJECTOR FEED	RELAY K13B-7

TB2   These are the connections for remote inputs, sound and LSN. All relay contacts are 'dry' (no voltage) and require a feed voltage.

The contact ratings for K14 - K24 are: 2 amps@15VDC or 30VAC, 1 amp@30VDC or 48VAC, .5 amps@48VDC.

TB2	DESCRIPTION	COMMENT
1	REMOTE STOP/FIRE STOP	CONFIGURED AT CNA MAIN BOARD. FIRE STOP OPTION.
2	REMOTE START	
3	INPUT RETURN	CURRENT RETURN PATH FOR BOTH INPUTS.
4	FADER - HIGH	OBSOLETE - DON'T USE
5	FADER - WIPER	OBSOLETE - DON'T USE
6	FADER - LOW	OBSOLETE - DON'T USE
7	SOUND - MONO	RELAY K14
8	SOUND - SVA	RELAY K15
9	SOUND - SR	RELAY K16
10	SOUND - DIGITAL 1	RELAY K17
11	SOUND - DIGITAL 2	RELAY K18
12	SOUND - AUX 1	RELAY K19
13	SOUND - NON-SYNC	RELAY K20
14	SOUND - MUTE	RELAY K21
15	SOUND - AUX 2	RELAY K22
16	SOUND - PREAMP 1	RELAY K23
17	SOUND - PREAMP 2	RELAY K24
18	SOUND - SOUND FEED	RELAY
19	SOUND - MUTE FEED	RELAY
20	SOUND - PREAMP FEED	RELAY
21	LSN - DATA+	TIE POINT ONLY - NOT REQUIRED
22	LSN - DATA-	TIE POINT ONLY - NOT REQUIRED
23	LSN - SHIELD	TIE POINT ONLY - NOT REQUIRED
24	LSN - DATA+	TIE POINT ONLY - NOT REQUIRED
25	LSN - DATA-	TIE POINT ONLY - NOT REQUIRED
26	LSN - SHIELD	TIE POINT ONLY - NOT REQUIRED

Remote Stop / Fire Stop Option:

TB2-1: Remote Stop: Remote Stop becomes a Fire Stop input when that option is enabled at the CNA Automation (See DIP SWITCH SETTINGS). Fire Stop is activated when it is shorted to the Input Return terminal.

TB2-1	CONFIGURATION
REMOTE STOP	S2-4 = OFF (ON 39325/ 39425 MAIN BOARD)
FIRE STOP	S2-4 = ON (ON 39325/ 39425 MAIN BOARD)

Remote Stop: This is used to manually stop a show from a remote location. Momentarily shorting TB2-1 to Input Return TB2-3 will activate the show stop logic turning off the projector, xenon lamp and other programmed outputs. Remote Stop functions just like the local stop on the CNA front panel.

Fire Stop: This functions very much like a Remote Stop with the following exceptions:

- The sound is muted.
- The slide projector relay on the 39330 *Console Termination* board is turned or held off.
- The K13 relay on the *Booth Termination* board is turned on.

When Fire Stop is enabled, the slide projector relay (K13) on the Booth is a Fire Stop output. The slide projector must be wired to the Console Termination board.
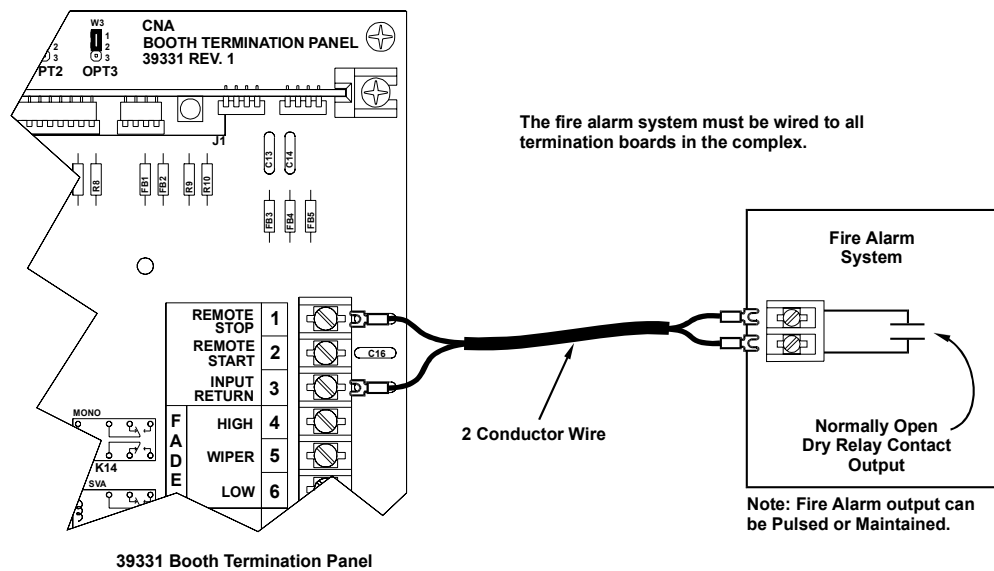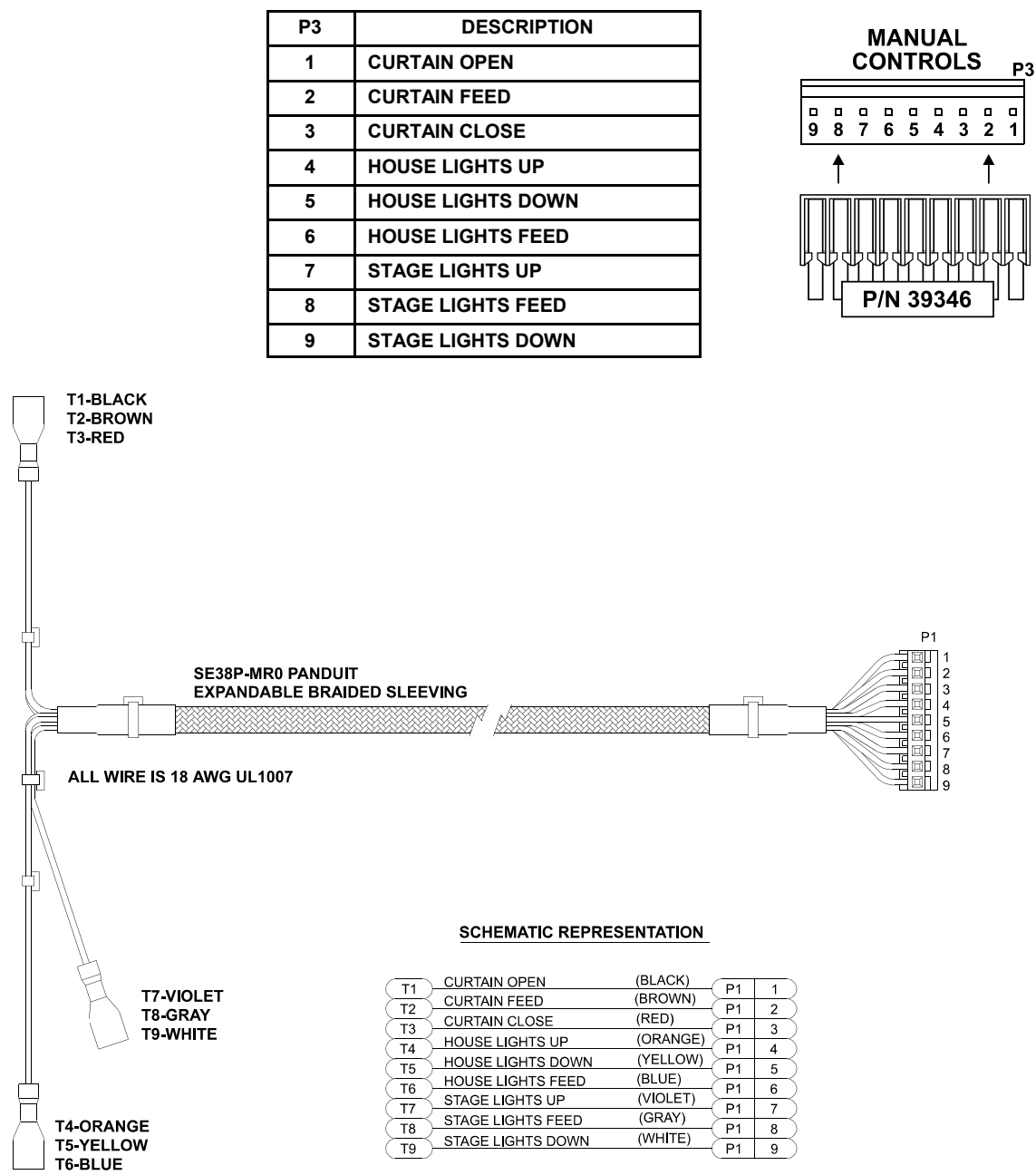

39331 Fire Stop Wiring
Figure 18

Note: Not all software versions support the Fire Stop option. See Main Board DIP switch settings.
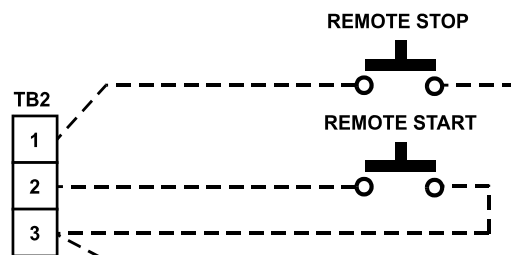
TB2-21 through TB2-26 are used to terminate the LSN wiring from the CNA Automation. These are used as a tie point for the network connection to other CNA Automations. This is a courtesy tie point only provided for the installer's convenience. The Termination panels do not require the LSN for operation.

Manual control connectors:

P3 Manual Controls: Curtain and Lights. (Use 39346 or 39444 cable assembly.)
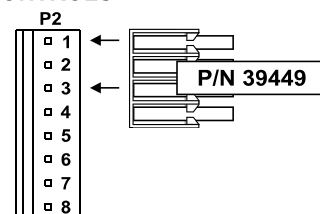
P3	DESCRIPTION
1	CURTAIN OPEN
2	CURTAIN FEED
3	CURTAIN CLOSE
4	HOUSE LIGHTS UP
5	HOUSE LIGHTS DOWN
6	HOUSE LIGHTS FEED
7	STAGE LIGHTS UP
8	STAGE LIGHTS FEED
9	STAGE LIGHTS DOWN

MANUAL CONTROLS P3

9 8 7 6 5 4 3 2 1

P/N 39346

T1-BLACK
T2-BROWN
T3-RED

SE38P-MR0 PANDUIT
EXPANDABLE BRAIDED SLEEVING

ALL WIRE IS 18 AWG UL1007

P1
1
2
3
4
5
6
7
8
9

T7-VIOLET
T8-GRAY
T9-WHITE

T4-ORANGE
T5-YELLOW
T6-BLUE

SCHEMATIC REPRESENTATION

T1	CURTAIN OPEN	(BLACK)	P1	1
T2	CURTAIN FEED	(BROWN)	P1	2
T3	CURTAIN CLOSE	(RED)	P1	3
T4	HOUSE LIGHTS UP	(ORANGE)	P1	4
T5	HOUSE LIGHTS DOWN	(YELLOW)	P1	5
T6	HOUSE LIGHTS FEED	(BLUE)	P1	6
T7	STAGE LIGHTS UP	(VIOLET)	P1	7
T8	STAGE LIGHTS FEED	(GRAY)	P1	8
T9	STAGE LIGHTS DOWN	(WHITE)	P1	9

Booth Override Cable assembly. P/N 39346.
Figure 19

T1-BLACK

T2-BROWN

T3-RED

SE38P-MR0 PANDUIT
EXPANDABLE BRAIDED SLEEVING

ALL WIRE IS 18 AWG UL1007

P1

1
2
3

SCHEMATIC REPRESENTATION

T1	CURTAIN OPEN	(BLACK)	P1	1
T2	CURTAIN FEED	(BROWN)	P1	2
T3	CURTAIN CLOSE	(RED)	P1	3

Curtain Override Cable assembly. P/N 39444
Figure 20

MANUAL CONTROLS   P3

9	8	7	6	5	4	3	2	1

P/N 39444
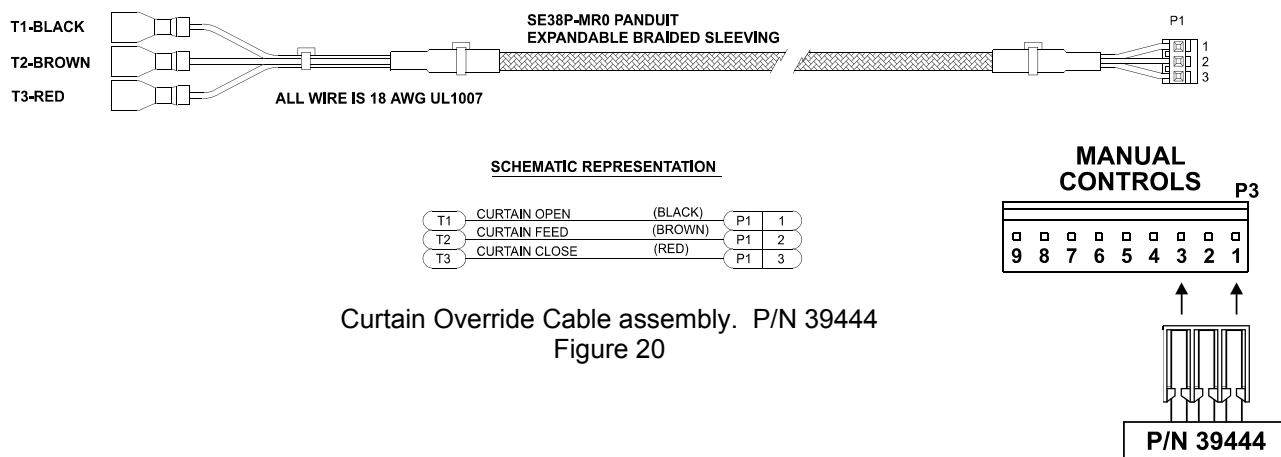
P2   Auxiliary Manual Controls: Masking. (Use 39449 cable assembly if panel is not mounted in BTC-10 cabinet.)

P2	DESCRIPTION
1	TOP MASK FLAT
2	TOP MASK SCOPE
3	TOP MASK SPECIAL
4	TOP MASK FEED
5	SIDE MASK FLAT
6	SIDE MASK SCOPE
7	SIDE MASK SPECIAL
8	SIDE MASK FEED

AUXILIARY MANUAL CONTROLS
P2

1
2
3
4
5
6
7
8

P/N 39449

T1-BLACK
T2-BROWN
T4-ORG

SE38P-MR0 PANDUIT
EXPANDABLE BRAIDED SLEEVING

ALL WIRE IS 18 AWG UL1007

P1

1
2
3
4

SCHEMATIC REPRESENTATION

T1	MASK FLAT	(BLACK)	P1	1
T2	MASK SCOPE	(BROWN)	P1	2
T3	MASK SPECIAL	(RED)	P1	3
T4	MASK FEED	(ORANGE)	P1	4
T5		(ORANGE)		

T5-ORG
T3-RED
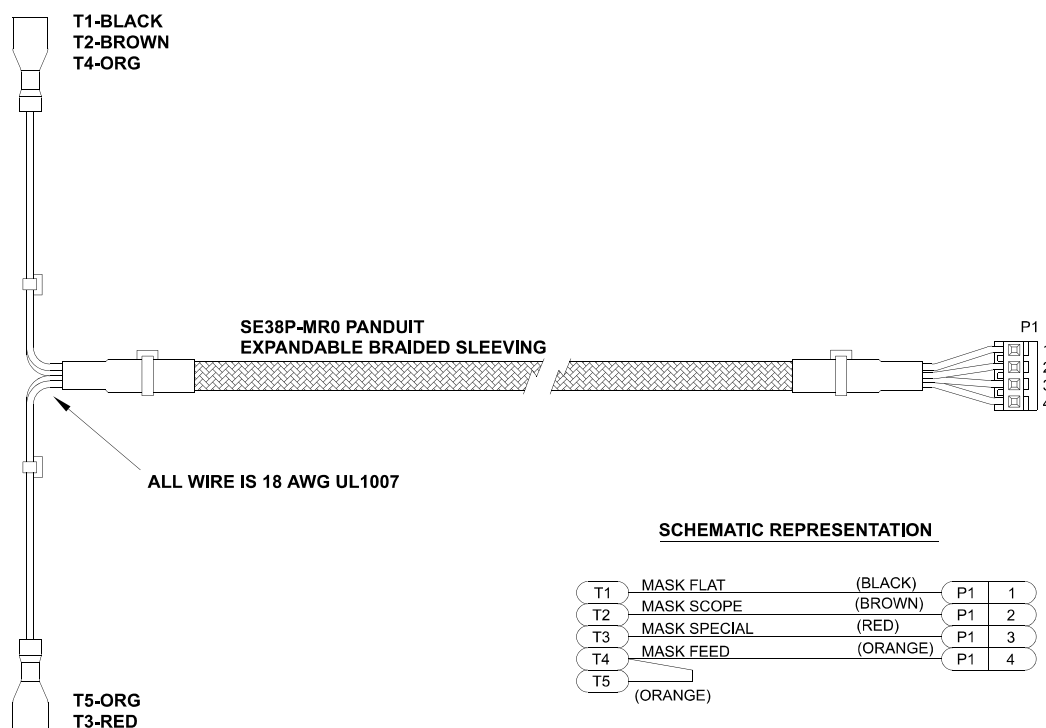
Masking Override Cable assembly. P/N 39449.
Figure 21

Optional jumpers for the 39331 Termination Panel:

JUMPER	DESCRIPTION	COMMENT
W1	OPT 1	1-2 UNDEFINED 2-3 UNDEFINED
W2	OPT 2	1-2 UNDEFINED 2-3 UNDEFINED
W3	OPT 3	1-2 UNDEFINED 2-3 UNDEFINED
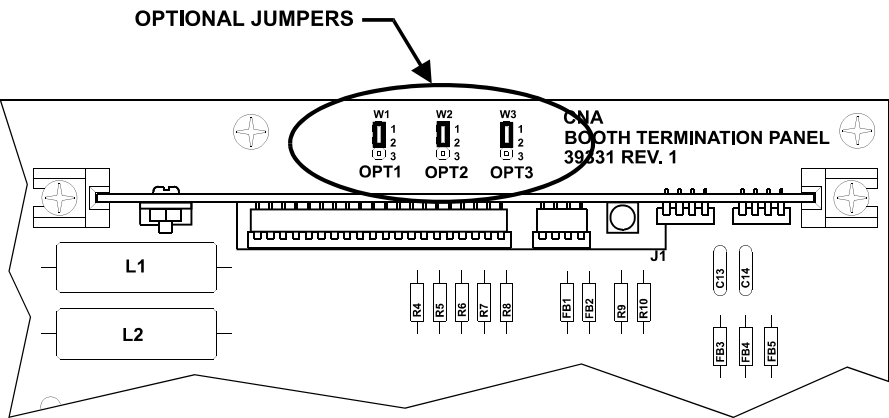
Figure 22

Single Termination Board

The 39332 'Single Termination' board combines many of the functions of the 39330 and 39331 boards. If the 39332 board is used, the 39330 and 39331 boards are not. The 39334 I/O CPU board plugs into the J1 connector.

39332 Rev. 1 Single termination panel.
Figure 23
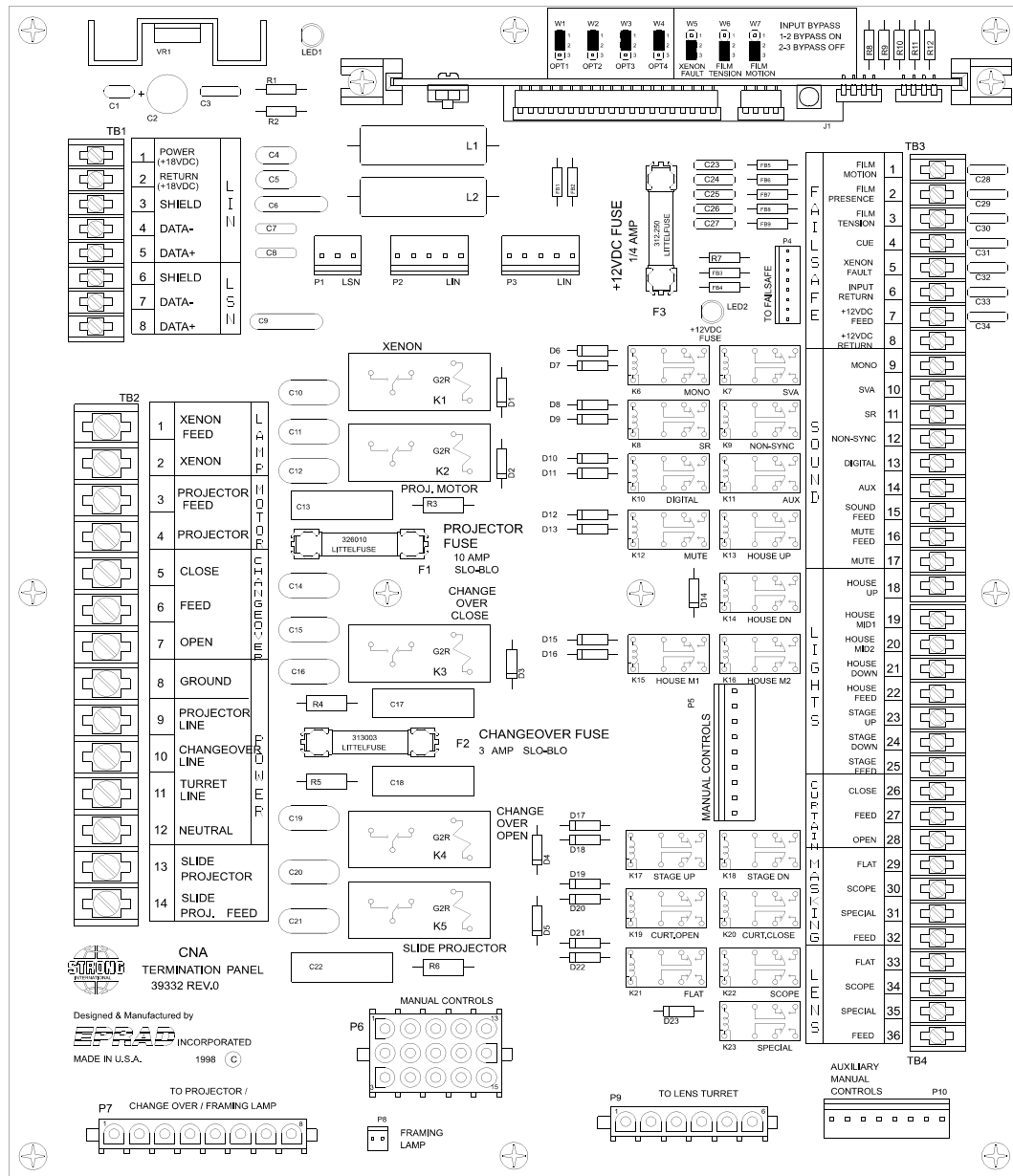
This is a functional block diagram of the 39332 termination panel. All relevant signal paths are shown.

Figure 24

LARGE RELAY   **SMALL RELAY**

P/N 64055   P/N 39121
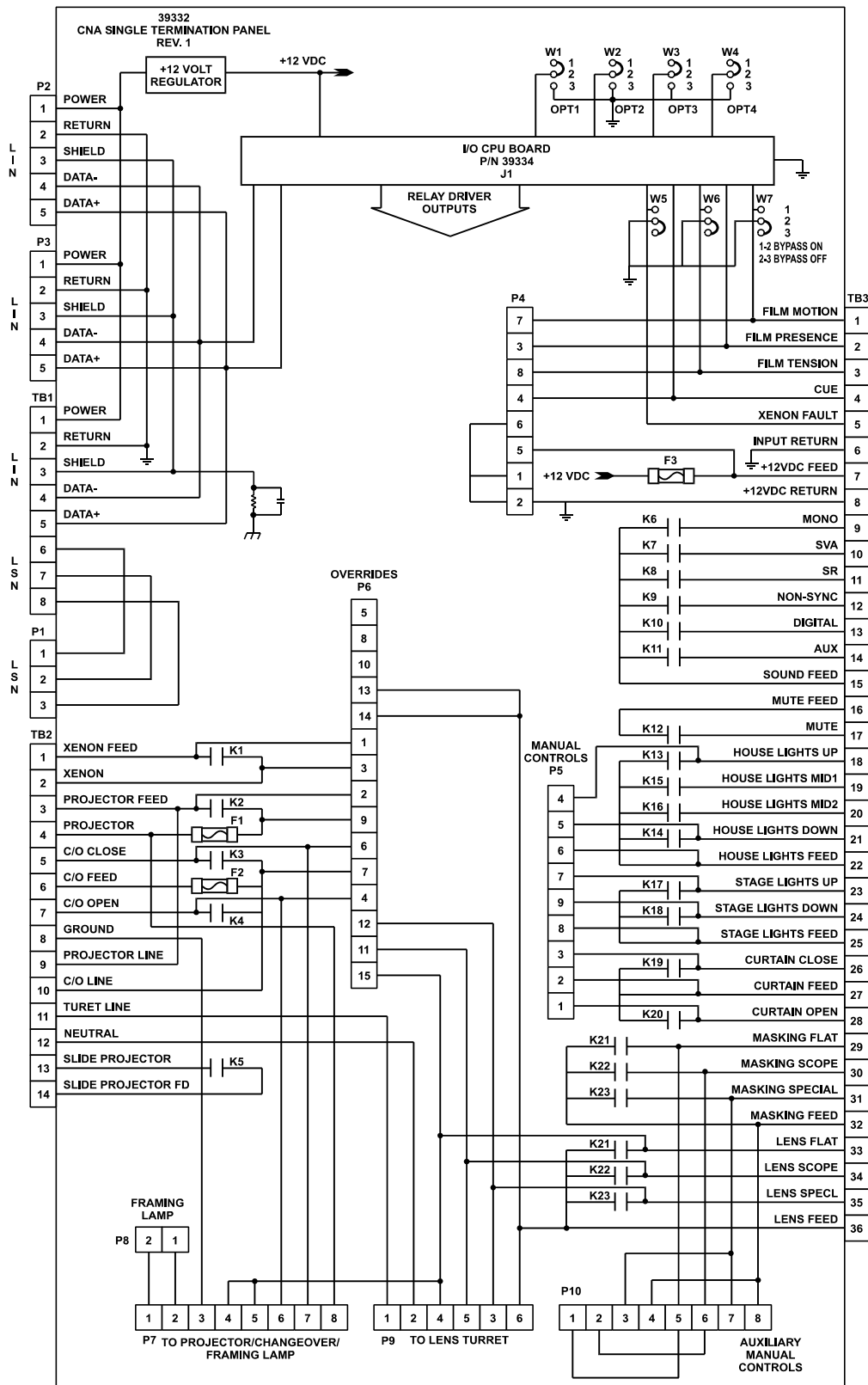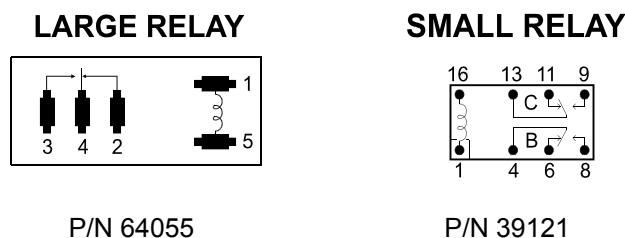
Figure 25

Termination Schedule for the 39332 Termination Board:

TB1   These are the LSN and LIN connections. TB1-1 through TB1-5 are used to terminate the LIN wiring *from* the CNA Automation to the 39332 board and to any other LIN devices such as the RVC-10 and ACP-50. TB1-6 through TB1-8 are used to terminate the LSN wiring from the CNA Automation. These are used as a tie point for the network connection to other CNA Automations**.**

TB1	DESCRIPTION
1	LIN - POWER (+18VDC)
2	LIN - RETURN (+18VDC)
3	LIN - SHIELD
4	LIN - DATA-
5	LIN - DATA+
6	LSN - SHIELD
7	LSN - DATA-
8	LSN - DATA+

TB2   These are the high power connections. TB2-1 through TB2-7 and TB2-13 and TB2-14 are connected to the high power relay contacts. All relay contacts are 'dry' (no voltage) and require a feed voltage. TB2-8 through TB2-12 are special and are for factory wiring only**.**

TB2	DESCRIPTION	COMMENT
1	XENON FEED	RELAY K1-3
2	XENON	RELAY K1-4
3	PROJECTOR FEED	RELAY K2-3
4	PROJECTOR	RELAY K2-4
5	CHANGEOVER CLOSE	RELAY K3-3
6	CHANGEOVER FEED	RELAY K3-4, K4-3
7	CHANGEOVER OPEN	RELAY K4-4
8	GROUND	FACTORY USE ONLY
9	PROJECTOR LINE	FACTORY USE ONLY
10	CHANGEOVER LINE	FACTORY USE ONLY
11	TURRET LINE	FACTORY USE ONLY
12	NEUTRAL	FACTORY USE ONLY
13	SLIDE PROJECTOR	RELAY K5-4
14	SLIDE PROJECTOR FEED	RELAY K5-3

K1, K2, K3, K4 and K5 contacts are rated for 10 Amps @ 250VAC and 10 Amps @ 30VDC. Both the projector and changeover outputs are protected with fuses. This protects the termination board as well as your equipment. The projector fuse (F1) is a 10 amp (3AG Slo-Blo Littelfuse #326010) and the changeover fuse (F2) is a 3 amp (3AG Slo-Blo Littelfuse #313003).

The projector, changeover and slide projector outputs have an RC network across their contacts. The purpose of the RC network is to protect the relay contacts. The capacitor C acts to suppress the discharge the moment the contacts open. Resistor R acts to limit the current when the power is turned on the next time. If the impedance of the load is not sufficiently smaller than the impedance of the RC circuit it may continue to operate even when the contacts are open. This is not a problem with the projector motor or changeover solenoid, but may be with the slide projector. If it is a problem, it will be necessary to remove R6 from the termination board. *Caution: There is enough leakage current through the RC circuit to present a potential electrical hazzard to the installer, never work with the equipment "live" unless proper precautions are taken.*

Note: Currently produced units do not have R6 populated thus eliminating the need for modification.

TB3   These are the failsafe inputs and low power outputs for sound, lights, curtains, masking and lens. TB3-1 through TB3-8 are dedicated to failsafe operation. TB3-9 through TB3-36 are all low power dry relay contacts.

TB3	DESCRIPTION	COMMENT
1	FILM MOTION	THIS INPUT IS USED WITH A FILM MOTION DEVICE. IF THIS INPUT IS NOT USED, JUMPER W7 MUST BE IN THE BYPASS POSITION.
2	FILM PRESENCE	
3	FILM TENSION or REMOTE STOP or FIRE STOP	THIS IS A FILM TENSION INPUT WHEN JUMPER W1 IS ACROSS PINS 1 AND 2 AND A REMOTE STOP INPUT WHEN JUMPER W1 IS ACROSS PINS 2 AND 3. REMOTE STOP BECOMES A FIRE STOP WHEN CONFIGURED AT THE CNA MAIN BOARD. IF THIS INPUT IS NOT USED, JUMPER W6 MUST BE IN THE BYPASS POSITION.
4	CUE	
5	XENON FAULT	IF THIS INPUT IS NOT USED, JUMPER W5 MUST BE IN THE BYPASS POSITION.
6	INPUT RETURN	CURRENT RETURN PATH FOR ALL INPUTS.
7	+12VDC FEED	FUSED AT 1/4 AMPS. (F3)
8	+12VDC RETURN	

TB3

1 — FILM MOTION: SWITCH OPEN = FAULT
2 — FILM PRESENCE: SWITCH OPEN = FAULT
3 — FILM TENSION: SWITCH OPEN = FAULT
4 — CUE: SWITCH CLOSURE = CUE
5 — XENON FAULT: SWITCH OPEN = FAULT
6
7 — REMOTE POWER +12VDC@250mA
8
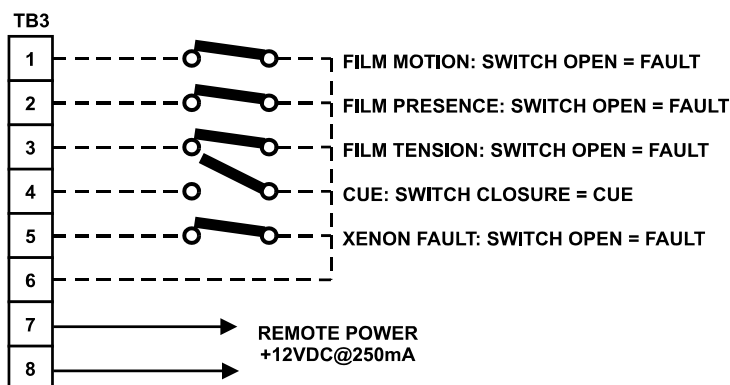
Fire Stop Option

Terminal TB3-3 is labeled as a Film Tension input, but can be configured to perform 3 different functions: Film Tension, Remote Stop or Fire Stop. The table below describes how to configure this input.

TB3-3	CONFIGURATION
FILM TENSION	**W1: 1-2 (ON 39332 TERMINATION BOARD)** **S2-4 = OFF (ON 39325/ 39425 MAIN BOARD)**
REMOTE STOP	**W1: 2-3 (ON 39332 TERMINATION BOARD)** **S2-4 = OFF (ON 39325/ 39425 MAIN BOARD)**
FIRE STOP	**W1: 2-3 (ON 39332 TERMINATION BOARD)** **S2-4 = ON (ON 39325/ 39425 MAIN BOARD)**

Film Tension: Internally this is the same as Film Presence. The film tension device containing a normally open contact (switch, relay, etc.) is connected between TB3-3 and Input Return TB3-6. The contact must be closed (shorted) to start the automation. An open contact will fault the automation. Just as with the Film Presence fault, a Tension fault is delayed by the "Failsafe Delay" time programmed in Supervisory.

Remote Stop: This is used to manually stop a show from a remote location. Momentarily shorting TB3-3 to Input Return TB3-6 will activated the show stop logic turning off the projector, xenon lamp and other programmed outputs. Remote Stop functions just like the local stop on the CNA front panel.
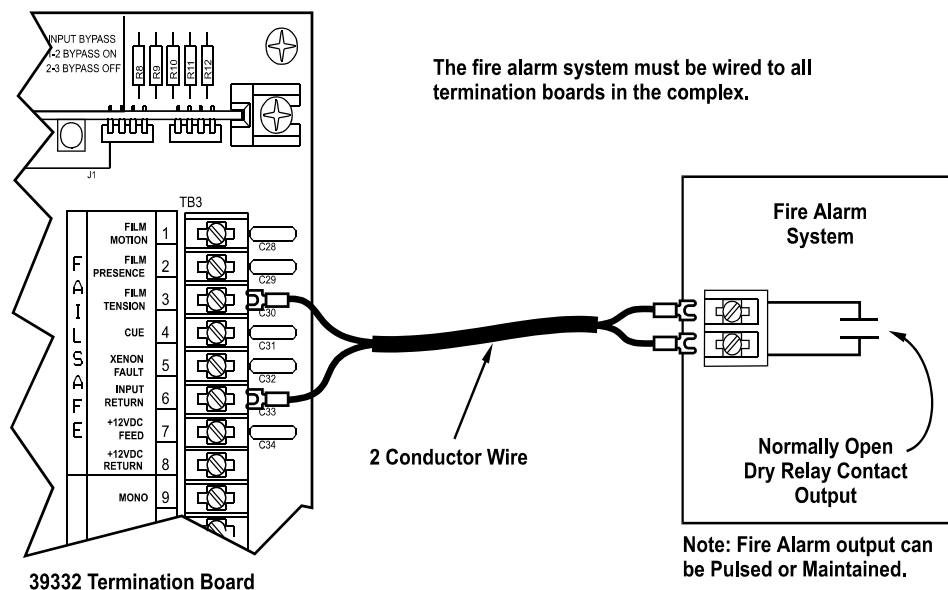
Fire Stop Input Wiring
Figure 26

Fire Stop: This functions very much like a Remote Stop with the following exceptions: The sound is muted and the slide projector is turned off (or held off).

Note: Not all software versions support the Fire Stop option. See Main Board DIP switch settings.

TB3-7 and TB3-8 are used to power the film failsafe and cue detector. This power supply is fused at 1/4 amps. (Fuse F3 Littelfuse #312.250).

SOUND:

TB3	DESCRIPTION	COMMENT
9	SOUND - MONO	RELAY K6-8
10	SOUND - SVA	RELAY K7-8
11	SOUND - SR	RELAY K8-8
12	SOUND - NON-SYNC	RELAY K9-8
13	SOUND - DIGITAL	RELAY K10-8
14	SOUND - AUX	RELAY K11-8
15	SOUND - SOUND FEED	RELAY K6-4, K7-4, K8-4, K9-4, K10-4, K11-4
16	SOUND - MUTE FEED	RELAY K12-8
17	SOUND - MUTE	RELAY K12-4

LIGHTS:

TB3	DESCRIPTION	COMMENT
18	LIGHTS - HOUSE UP	RELAY K13-8
19	LIGHTS - HOUSE MID 1	RELAY K15-8
20	LIGHTS - HOUSE MID 2	RELAY K16-8
21	LIGHTS - HOUSE DOWN	RELAY K14-8
22	LIGHTS - HOUSE FEED	RELAY K13-4, K14-4, K15-4, K16-4
23	LIGHTS - STAGE UP	RELAY K17-8
24	LIGHTS - STAGE DOWN	RELAY K18-8
25	LIGHTS - STAGE FEED	RELAY K17-4, K18-4

CURTAIN:

TB3	DESCRIPTION	COMMENT
26	CURTAIN CLOSE	RELAY K20-8
27	CURTAIN FEED	RELAY K19-4, K20-4
28	CURTAIN OPEN	RELAY K19-8

MASKING:

TB3	DESCRIPTION	COMMENT
29	MASKING FLAT	RELAY K21-9
30	MASKING SCOPE	RELAY K22-9
31	MASKING SPECIAL	RELAY K23-9
32	MASKING FEED	RELAY K21-13, K22-13, K23-13

LENS:

TB3	DESCRIPTION	COMMENT
33	LENS FLAT	RELAY K21-8
34	LENS SCOPE	RELAY K22-8
35	LENS SPECIAL	RELAY K23-8
36	LENS FEED	RELAY K21-4, K22-4, K23-4

These are the *optional* and *bypass* jumpers for the 39332 Termination Board. If necessary, move the jumpers to the appropriate positions**.**

JUMPER	DESCRIPTION	COMMENT
W1	OPT 1	□ **1-2 TB3-3 IS A FILM TENSION INPUT** □ **2-3 TB3-3 IS A REMOTE STOP INPUT**
W2	OPT 2	□ **1-2 UNDEFINED** □ **2-3 UNDEFINED**
W3	OPT 3	□ **1-2 UNDEFINED** □ **2-3 UNDEFINED**
W4	OPT 4	□ **1-2 UNDEFINED** □ **2-3 UNDEFINED**
W5	XENON FAULT	□ **1-2 BYPASS ON (NOT USING INPUT)** □ **2-3 BYPASS OFF**
W6	FILM TENSION	□ **1-2 BYPASS ON (NOT USING INPUT)** □ **2-3 BYPASS OFF**
W7	FILM MOTION	□ **1-2 BYPASS ON (NOT USING INPUT)** □ **2-3 BYPASS OFF**
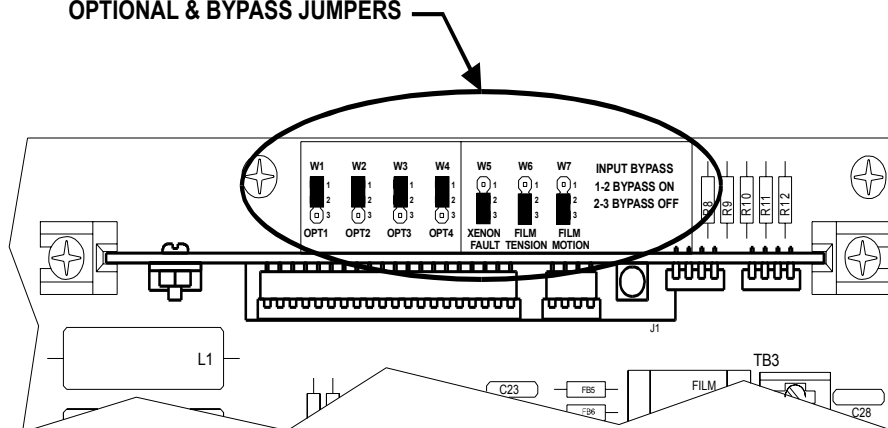
39332 Jumper Settings
Figure 27

There are three connectors on the 39332 panel for the manual control cables:

P6   Manual Controls: Xenon, Projector, Changeover and Lens. The override cable 39349 plugs into P6.

P6	DESCRIPTION
1	XENON FEED
2	PROJECTOR FEED
3	XENON
4	CHANGEOVER
5	N/C
6	CHANGEOVER CLOSE
7	CHANGEOVER FEED
8	N/C
9	PROJECTOR
10	N/C
11	LENS SCOPE
12	LENS SPECIAL
13	LENS FEED
14	LENS FEED
15	LENS FLAT

MANUAL CONTROLS

P6

T2-BLACK
T7-BLACK

T8-RED
T11-VIOLET
T12-GRAY

SE38P-MR0 PANDUIT
EXPANDABLE BRAIDED SLEEVING

12 WIRES 18 AWG 1007UL

T1-BLUE
T3-BLUE

T9-BROWN
T10-VIOLET

T4-ORANGE
T5-YELLOW
T6-WHITE

SCHEMATIC REPRESENTATION

P1	1	BLUE	(LAMP)	T1
P1	2	BLACK	(MOTOR)	T2
P1	3	BLUE	(LAMP)	T3
P1	4	ORANGE	(CHANGEOVER OPEN)	T4
P1	5			
P1	6	YELLOW	(CHANGEOVER CLOSE)	T5
P1	7	WHITE	(CHANGEOVER FEED)	T6
P1	8			
P1	9	BLACK	(MOTOR)	T7
P1	10			
P1	11	RED	(SCOPE)	T8
P1	12	BROWN	(SPECIAL)	T9
P1	13	VIOLET	(LENS FEED)	T10
P1	14	VIOLET	(LENS FEED)	T11
P1	15	GRAY	(FLAT)	T12

Override Cable assembly. P/N 39349.
Figure 28

P7   To projector motor, changeover and framing lamp**.**

P7	DESCRIPTION
1	FRAMING LAMP LO
2	FRAMING LAMP HI
3	GROUND
4	PROJECTOR NEUTRAL
5	CHANGEOVER NEUTRAL
6	CHANGEOVER OPEN
7	CHANGEOVER CLOSE
8	PROJECTOR

P7   TO PROJECTOR /
CHANGEOVER / FRAMING LAMP
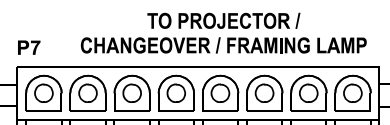
P9   To lens turret**.**

P9	DESCRIPTION
1	TURRET LINE
2	TURRET NEUTRAL
3	SPECIAL
4	FLAT
5	SCOPE
6	LENS FEED

P9   TO LENS TURRET
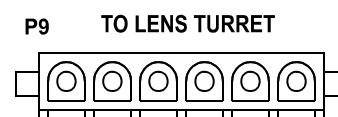
P5   Manual Controls: Curtain and Lights. (Use 39346 or 39444 cable assembly.)

P5	DESCRIPTION
1	CURTAIN OPEN
2	CURTAIN FEED
3	CURTAIN CLOSE
4	HOUSE LIGHTS UP
5	HOUSE LIGHTS DOWN
6	HOUSE LIGHTS FEED
7	STAGE LIGHTS UP
8	STAGE LIGHTS FEED
9	STAGE LIGHTS DOWN

P5 MANUAL CONTROLS

1
2
3
4
5
6
7
8
9

P/N 39346

T1-BLACK
T2-BROWN
T3-RED

SE38P-MR0 PANDUIT
EXPANDABLE BRAIDED SLEEVING

P1
1
2
3
4
5
6
7
8
9

ALL WIRE IS 18 AWG UL1007

T7-VIOLET
T8-GRAY
T9-WHITE

T4-ORANGE
T5-YELLOW
T6-BLUE

SCHEMATIC REPRESENTATION

T1	CURTAIN OPEN	(BLACK)	P1	1
T2	CURTAIN FEED	(BROWN)	P1	2
T3	CURTAIN CLOSE	(RED)	P1	3
T4	HOUSE LIGHTS UP	(ORANGE)	P1	4
T5	HOUSE LIGHTS DOWN	(YELLOW)	P1	5
T6	HOUSE LIGHTS FEED	(BLUE)	P1	6
T7	STAGE LIGHTS UP	(VIOLET)	P1	7
T8	STAGE LIGHTS FEED	(GRAY)	P1	8
T9	STAGE LIGHTS DOWN	(WHITE)	P1	9

Override Cable assembly. P/N 39346.
Figure 29

P5
MANUAL CONTROLS
1
2
3
4
5
6
7
8
9

P/N 39444

T1-BLACK

T2-BROWN

T3-RED

SE38P-MR0 PANDUIT
EXPANDABLE BRAIDED SLEEVING

ALL WIRE IS 18 AWG UL1007

P1
1
2
3

SCHEMATIC REPRESENTATION

T1	CURTAIN OPEN	(BLACK)	P1	1
T2	CURTAIN FEED	(BROWN)	P1	2
T3	CURTAIN CLOSE	(RED)	P1	3

Curtain Override Cable assembly. P/N 39444
Figure 30

P10   Auxiliary Manual Controls: Masking. (Use 39449 cable assembly if panel is not mounted in BTC-10 cabinet.)

P10	DESCRIPTION
1	MASK FLAT
2	MASK SCOPE
3	MASK SPECIAL
4	MASK FEED
5	MASK FLAT
6	MASK SCOPE
7	MASK SPECIAL
8	MASK FEED

AUXILIARY MANUAL CONTROLS   **P10**

8 7 6 5 4 3 2 1

P/N 39449

T1-BLACK
T2-BROWN
T4-ORG

SE38P-MR0 PANDUIT
EXPANDABLE BRAIDED SLEEVING

P1
1
2
3
4

ALL WIRE IS 18 AWG UL1007

T5-ORG
T3-RED

SCHEMATIC REPRESENTATION

T1	MASK FLAT	(BLACK)	P1	1
T2	MASK SCOPE	(BROWN)	P1	2
T3	MASK SPECIAL	(RED)	P1	3
T4	MASK FEED	(ORANGE)	P1	4
T5		(ORANGE)		
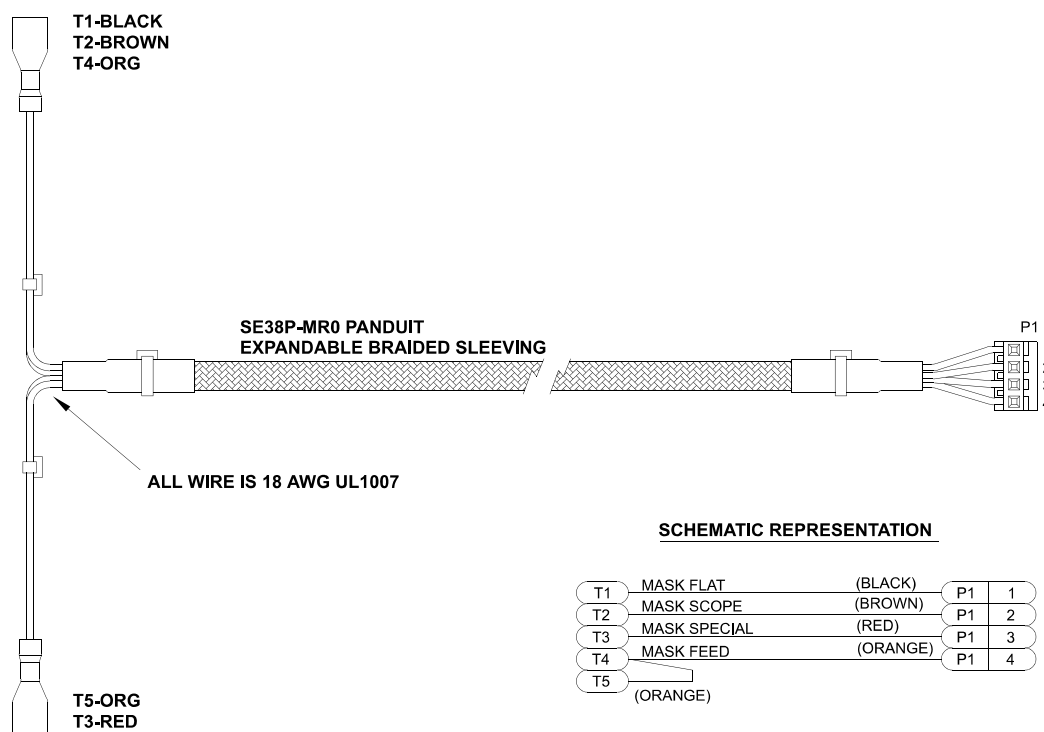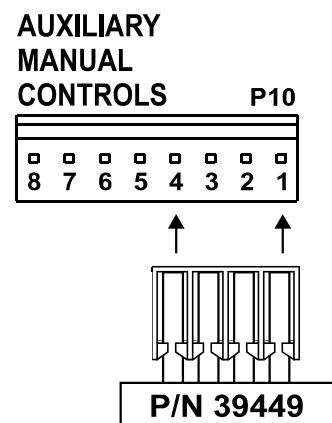
Masking Override Cable assembly. P/N 39449.
Figure 31

39334 I/O CPU Board Status LED

The 39334 I/O CPU Board plugs into the J1 connector on all termination boards. The purpose of this board is to handle the communications to the CNA Main Board and to control the inputs and outputs. The Status LED is used for troubleshooting and indicates 1 of 3 condition codes.
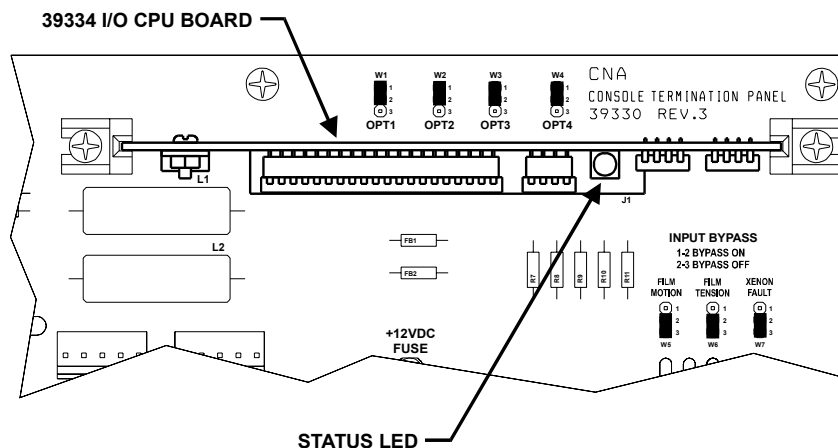
39334 I/O CPU Board.
Figure 32

Condition 1:   *Fast Blink* - The I/O CPU computer is working and is communicating properly with the CNA.

Condition 2:   *1 Blink On, Pause 2 seconds* - The I/O CPU computer is waiting for data from the CNA, and the inputs and outputs are disabled. This condition indicates that since a power up, the I/O CPU has not received data from the CNA. The I/O is disabled and 39334 CPU will wait indefinitely for communications to be established.

Condition 3:   *2 Blinks On, Pause 2 seconds* - Communications Timeout, I/O is disabled. This condition indicates that communications were once established to the CNA and subsequently lost.

The following diagram shows the duration of the LED *off time* and LED *on time* for each condition**.**
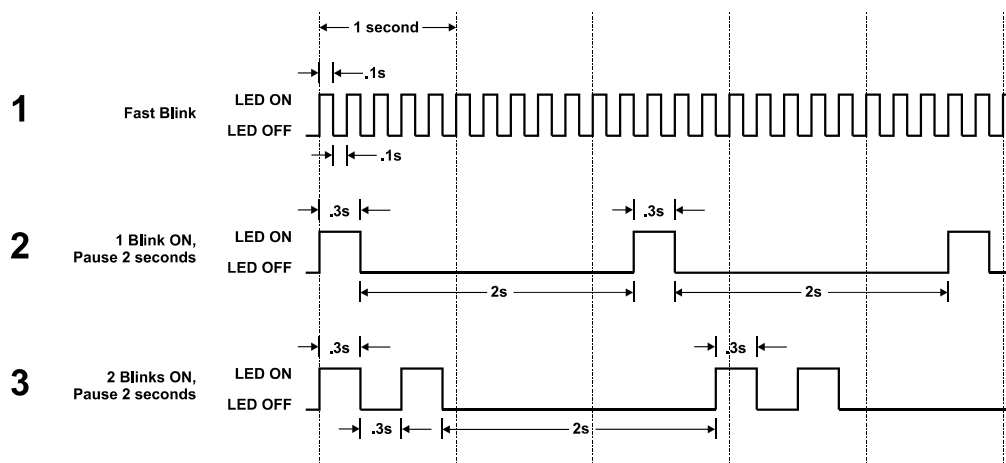
Figure 33

39334 Firmware:

Version 1   Supports only the 39330 and 39331 termination boards
Version 3   Supports the 39330, 39331 and 39332 termination boards
Version 4   Supports the 39330, 39331, 39332 termination boards and the 39370 volume control
                board.

The version of firmware is printed on the 39334 CPU board micro controller. The Host software
(LIN Status screen) will also report the 39334 version number and checksum.

BTC-10 Booth Termination Cabinet

The Booth Termination board can be mounted in the console or optionally in a wall mount cabinet. The BTC-10 wall cabinet can be delivered to the job site early allowing the electrician to pre-wire the curtains, masking motors, LSN (Sync Network), light dimmer and sound processor. The BTC-10 is available with optional manual override switches.
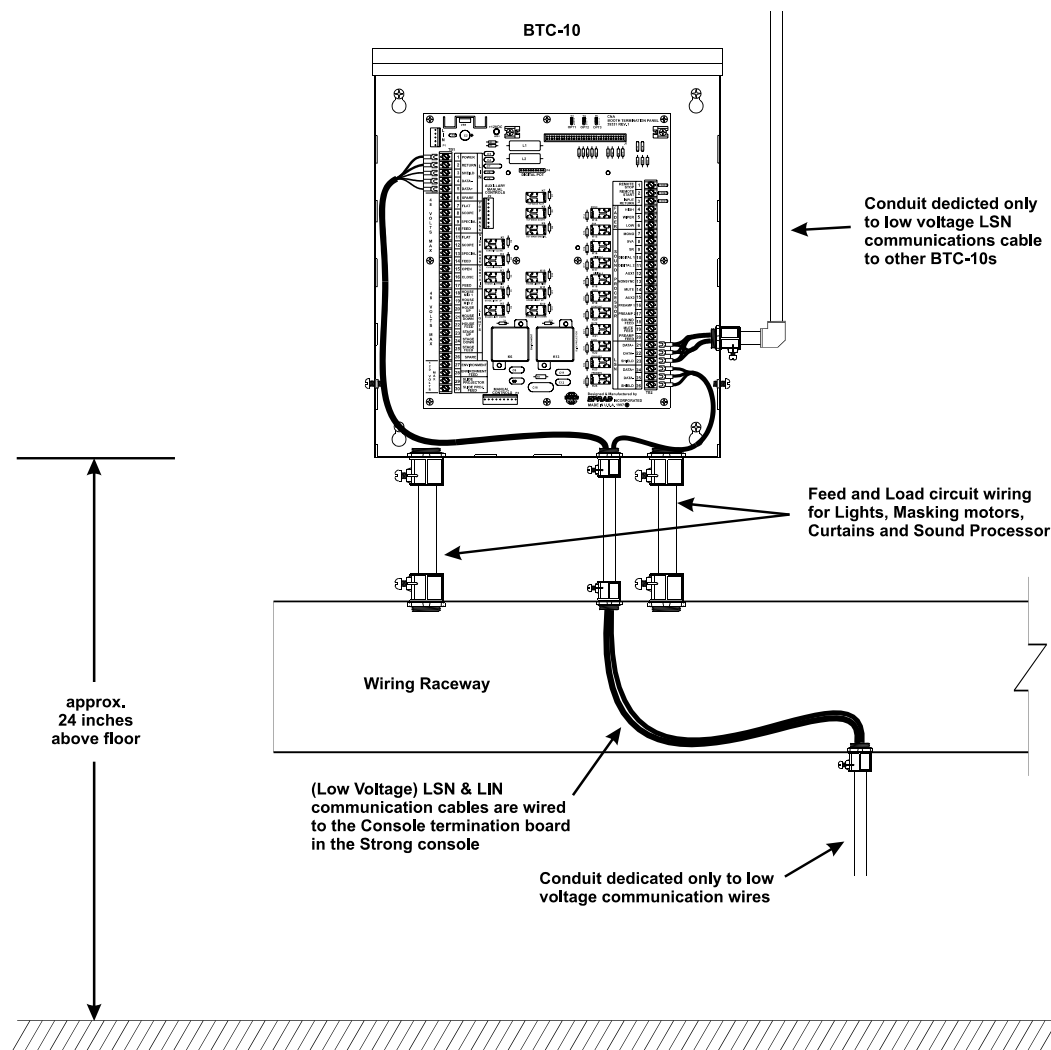
Figure 34

The Figure above shows a typical BTC-10 installation. The internal connections required for LSN and LIN communications cables are also shown. The LIN and one LSN cable is wired to the Console termination board in the Strong Console. Keep all LSN and LIN cables separated from high voltage and electrically noisy wiring by running them in conduit dedicated to low voltage communication wires.

The cabinet is constructed of 16 gage steel measuring 16-1/2 inches high by 14 inches wide by 3-1/2 inches deep. The four mounting holes are keyholes capable of accepting 1/4-20 bolts or screws with a maximum head diameter of 7/16 inch.

Begin by locating the four keyhole center lines on the wall. Install the appropriate wall anchors and turn the fasteners until 1/4 inch is left between the head and wall. It is recommended that the top of the BTC-10 not exceed 46" from the floor for proper viewing and operation of the control panel.

Hang the cabinet on the four fasteners and secure it by tightening the fasteners.
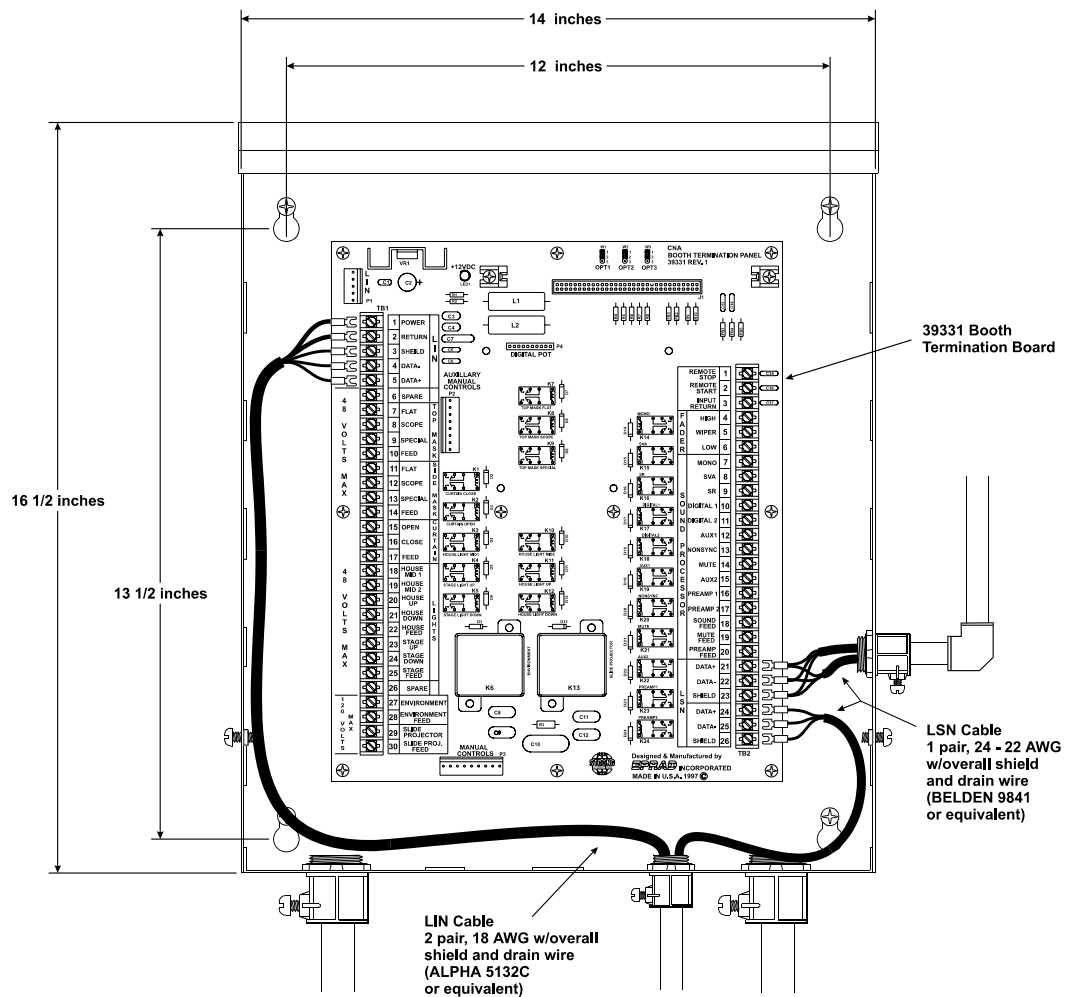
Figure 35

7/8 inch and 1-1/8 inch knockouts are provided on the bottom and both sides of the cabinet. Prepare the cabinet for wiring by removing the desired knockouts. Shown below is a dimensional drawing illustrating the locations of the BTC-10's mounting holes and knock-outs.

BTC-10 CABINET DIMENSIONS

16.600
14.250

A   A

1-1/8 INCH
KNOCKOUT

7/8 INCH
KNOCKOUT

0.750
0.000

3.520

12.500
10.000
7.500
5.000
2.500
0.000

0.000
1.750
3.500

0.000
1.000
13.000
14.000

3.500
1.750
0.000

0.000
2.000
4.500
7.000
9.500
12.000
14.000

ø0.312
0.500   A
ø0.563

DETAIL 'A'

Figure 36

CNA Booth Termination Cabinet   BTC-10

MANUAL CONTROLS

LIGHTING   CURTAIN   TOP MASKING   SIDE MASKING
UP   UP   OPEN   FLAT   SPECIAL   FLAT   SPECIAL
HOUSE STAGE
DOWN   DOWN   CLOSE   SCOPE   SCOPE

AUXILIARY
SWITCHES   S1   S2   S3   S4   S5   S6   S7

Control Panel
Figure 37

The BTC-10 provides (optional) override switches for masking, curtains and auditorium lights. Two auxiliary switches can be installed and their function can be determined by the installer. The auxiliary switches can be either momentary or maintained contact. The momentary switches are rated for 6 amps @ 120 vac and the maintained switches are rated for 16 amps @ 120 vac.

S1 -   House Lights UP/DOWN
S2 -   Stage Lights UP/DOWN
S3 -   Curtains OPEN/CLOSE
S4 -   Top Masking FLAT/SCOPE
S5 -   Top Masking SPECIAL
S6 -   Side Masking FLAT/SCOPE
S7 -   Side Masking SPECIAL

Available (standard) Configurations:

Part No. 39340   BTC-10 with no switches
Part No. 39340-1   BTC-10 with S1, S2 & S3
Part No. 39340-2   BTC-10 with S1, S2, S3, S4, S5, S6 & S7
Part No. 39340-3   BTC-10 with S4, S5, S6 & S7

Order auxiliary switches separately.
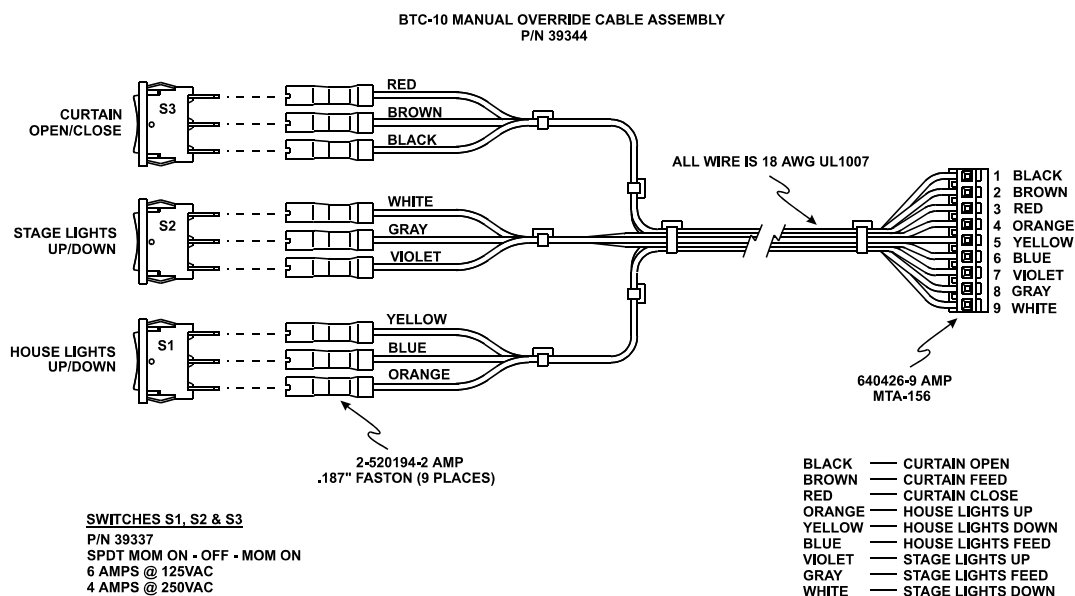
Figure 38

The manual override cable assembly drawings are shown. The 39344 and the 39345 cable assemblies may also be ordered separately.

BTC-10 AUXILIARY MANUAL OVERRIDE CABLE ASSEMBLY
P/N 39345

SWITCHES S5 & S7

P/N 39338
SPDT MOM ON - OFF
6 AMPS @ 125VAC
4 AMPS @ 250VAC

SWITCHES S4 & S6

P/N 39337
SPDT MOM ON - OFF - MOM ON
6 AMPS @ 125VAC
4 AMPS @ 250VAC
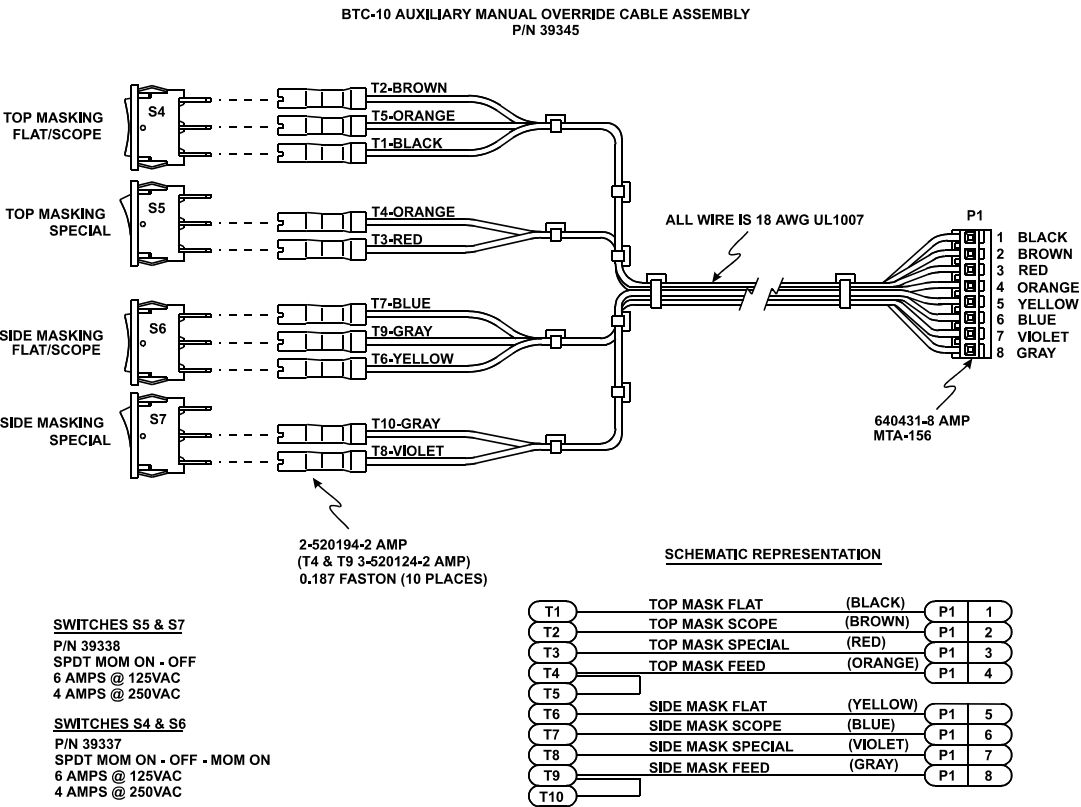
Figure 39

Configuring the CNA System

CNA Main Board

This section describes the setup and operation of the CNA main board.

Network ID

The LSN can support up to 64 devices (CNAs, Remote Status Monitors and a Gateway Interface). Each device will each require a unique Id number. Id 0 is reserved for the *Host PC* and Ids 1 through 63 are assigned to CNAs and other devices as necessary. To keep things simple, assign the CNA Ids starting at 1, corresponding to the house number and working up. The Remote Monitor's Ids, if used, should be assigned to the higher numbers starting at 62 and working down. You may want to keep Id 63 reserved for a portable or *secondary* host.

To set the Id number, first locate the eight position dip switch designated S1.
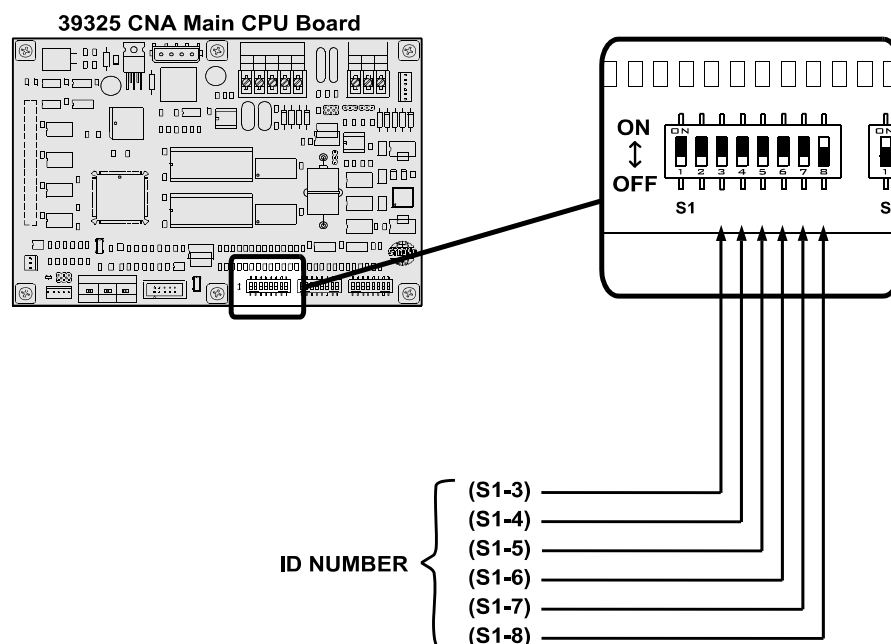
Figure 40

S1-3 through S1-8 are used to set the ID number. The number is represented as a 6-bit binary number which allows for 64 possible ID numbers (0-63). Do not use 0 (zero) as an ID number. It has been reserved for the PC Gateway Interface.

Each bit (switch) has a decimal value. Add up the decimal values to get the ID number. For example, ID number 15 would be 8+4+2+1=15 or a DIP switch setting of 001111.

Use the table to configure the CNAs Id number with switches S1-3 through S1-8.

S1-3	On: 1	Decimal value = 32
	Off: 0	Decimal value = 0 (Factory Default)
S1-4	On: 1	Decimal value = 16
	Off: 0	Decimal value = 0 (Factory Default)
S1-5	On: 1	Decimal value = 8
	Off: 0	Decimal value = 0 (Factory Default)
S1-6	On: 1	Decimal value = 4
	Off: 0	Decimal value = 0 (Factory Default)
S1-7	On: 1	Decimal value = 2
	Off: 0	Decimal value = 0 (Factory Default)
S1-8	On: 1	Decimal value = 1 (Factory Default)
	Off: 0	Decimal value = 0
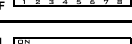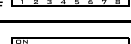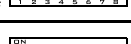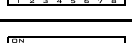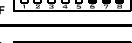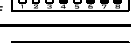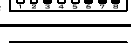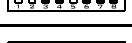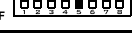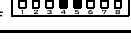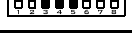
Figure 41

Alarm Loudness setting

The alarm loudness can be set for one of three intensities; LOW (87 dBA), MEDIUM (94 dBA), HIGH (98 dBA).
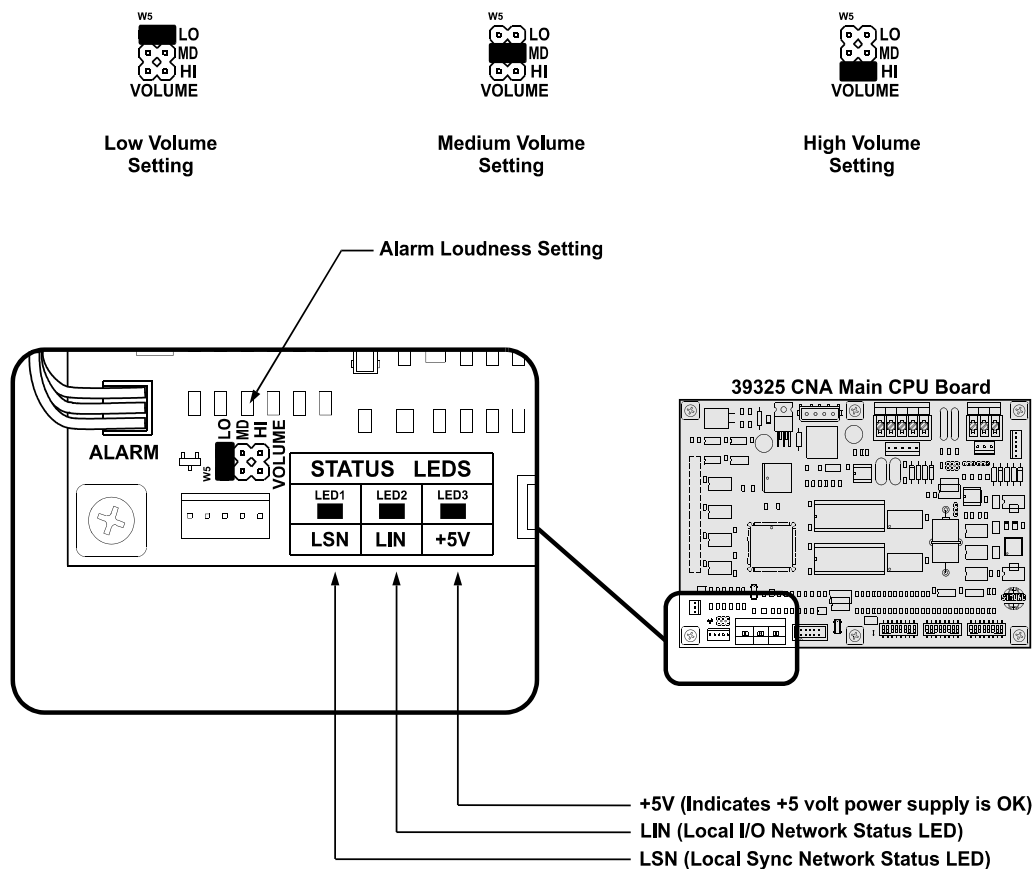
Figure 42

Status LEDs

There are three status LEDs on the 39325/ 39425 Main CPU Board. These indicate the status of the +5 volt power supply, the LSN and the LIN. Following are the three conditions for the LIN and LSN LEDs:

Fast Blinking Rate: The CNA computer is working and is communicating properly.

Slow Blinking Rate: The CNA computer is working, but is *not* communicating.

Off: The CNA computer has a problem.

Battery

Be sure the battery is seated properly in the sockets and the battery jumper W4 is in the ON position.

**Battery
Enable Jumper**

**Plastic
Hold-down
Tie**

Battery
CNA Battery Jumper Configuration
Figure 43

Battery   **Battery
Enable Jumper**

eCNA Battery Jumper Configuration
Figure 44
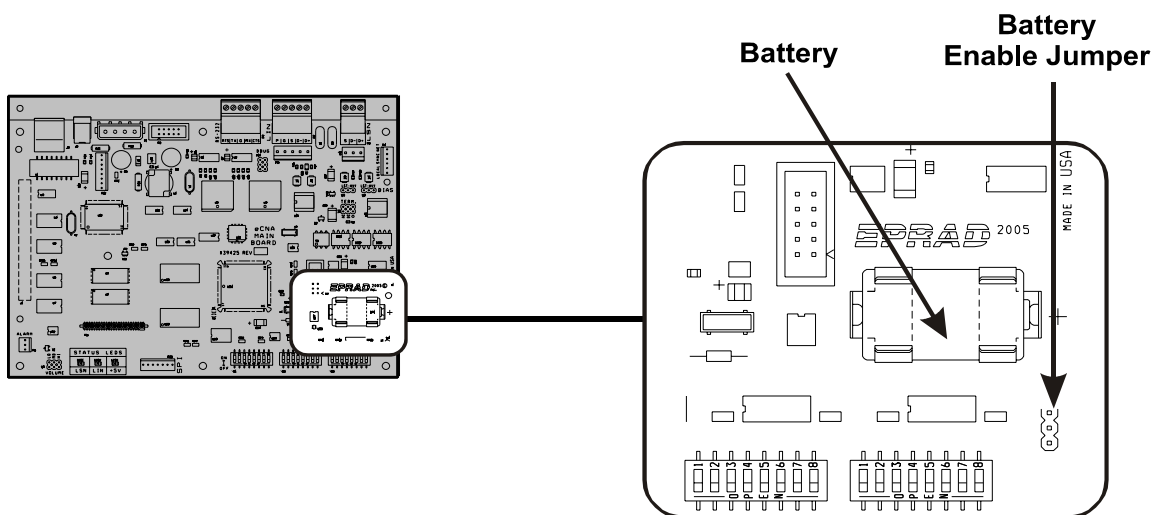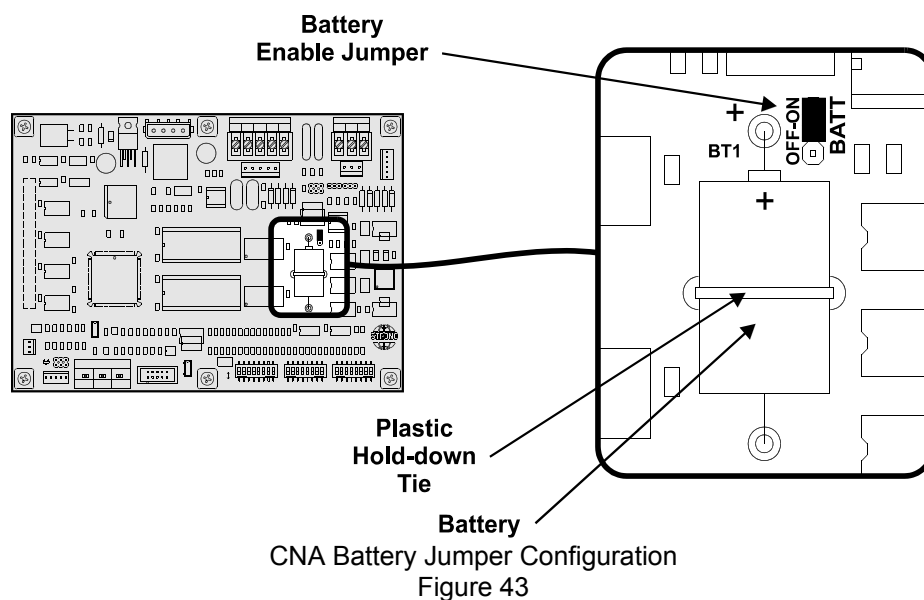
No attempt should be made by the user to replace the lithium battery. Return the board or entire system to Strong International or have an experienced technician replace it in the event of failure. Copy all program information to another CNA or back it up with the Host program before replacing to minimize data loss and reprogramming time.
Caution: When the battery is removed, all user configured data will be lost.

Mainboard Configuration

Various aspects of operation can be customized with DIP switch settings. The switch definitions for the eCNA automation are described in the following sections.

eCNA-200 DIP Switch Settings
Current to version 2.001
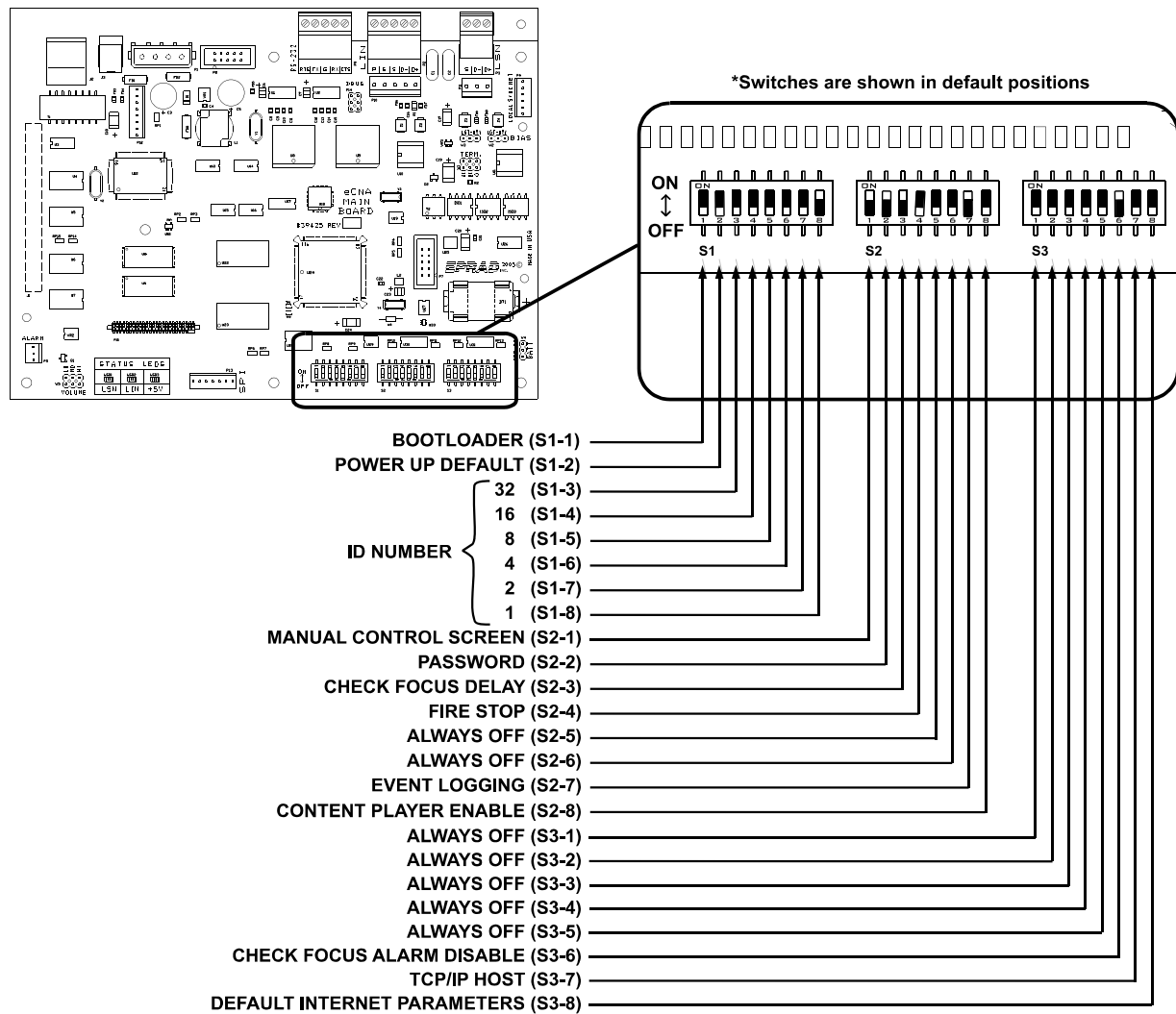
Figure 45

Switch Definitions, eCNA-200

S1-1   Bootloader

On   :   Forces Bootloader
Off   :   Normal use (factory default)

The Bootloader program supports the LSN flash update network commands to load the eCNA-200 application program into flash memory over the LSN. The Bootloader itself is erase protected and cannot be erased by the user. This protection ensures that the Bootloader can always be reloaded even if the rest of the flash memory is corrupted through programmer error

or by other means. If flash memory was corrupted, setting this switch to on will force the Bootloader program at power up.

S1-2   Power Up Defaults

On   :Force "Supervisory Defaults" on power up. Default Supervisory data will be restored on each power up overwriting all user programmed supervisory data.

Off   :Will **not** overwrite user programmed supervisory data on power up. (Factory Default)

S1-3 through S1-8 Network ID

Sets the LSN network ID value of the eCNA.

S2-1   Manual Control Screen

On   :Enable the "Manual Control" screen. (Factory Default)

Off   :Disable the "Manual Control" screen.

The Manual Control screen allows the manual control of most outputs including: sound, lens, masking, lights and volume level.

S2-2   Password

On   :Requires use of the "high level" password to access many of the programming functions. (Factory Default)

Off   :Disables the password. No password is required to access the programming functions.

High level password is user-configurable, This switch can be disabled via the Host or locally.

S2-3   Check Focus Delay

On   :Enables the "Check Focus Delay" function. In Clock Start or Timed Start the alarm will sound prior to the show starting. (Factory Default)

Off   :Disables the "Check Focus Delay" function.

The Check Focus feature alerts the operator that the show is about to start. In Timed Start the alarm will begin to sound 7 seconds prior to the show starting. This gives the operator time to make any quick adjustments and to insure the image on the screen is in focus.
This feature is available for manual start inputs as well.

S2-4   Fire Stop Option

On   :Enables the "Fire Stop" function.

Off   :Disables the "Fire Stop" function. (Factory Default)

39331 Booth Termination Board - Converts the Remote Stop input to a Fire Stop input and the Slide Projector relay (K13) to a Fire Stop output. Fire Stop *acts* like a Remote Stop with the following exceptions:

- Sound is Muted.
- Slide Projector on 39330 *Console Termination Board* is turned off *or* held off.
- K13 relay (Slide Projector) on Booth Termination board is turned on.
- Zones 3-16 are unaffected by a firestop input.

If this feature is enabled the slide projector must be wired to the 39330 Console termination board.

39332 Termination Board - Remote Stop input must be enabled on board. (W1-OPT1 jumper across pins 2 and 3 changes the Film Tension input to a Remote Stop input.) Converts the Remote Stop input to a Fire Stop input. Fire Stop *acts* like a Remote Stop with the following exceptions:

- Sound is Muted.
- Slide Projector is turned off *or* held off.

S2-5   Always Off

On   :Undefined
Off   :Undefined (Factory Default)

S2-6   Always Off

On   :Undefined
Off   :Undefined (Factory Default)

S2-7   Event Logging

On   :Enabled - Events are sent to the Host computer. (Factory Default)
Off   :Disabled - Events are not sent to the Host computer.

S2-8   Content Player Option

On   :Enables interface with Digital Content Player
Off   :Disables interface option. (Factory Default)

S3-6   Check Focus Delay alarm

On   :Disables the RCM/ RSM-10 "Check Focus Alarm" (Factory Default)
Off   :Enables the RCM/ RSM-10 "Check Focus Alarm"

S3-7   TCP Host

On   :TCP Host
Off   :LSN Host (Factory Default)

Selects between Ethernet Host communications or standard LSN Host communications.

S3-8   Default Internet Parameters

On   :Default parameters
Off   :User parameters (Factory Default)
Selects from Default parameters and EEPROM (User-configured parameters)

S3-1 through S3-5, Always Off

On   :Undefined
Off   :Undefined (Factory Default)

CNA-200 DIP Switch Settings
Current to version 1.029
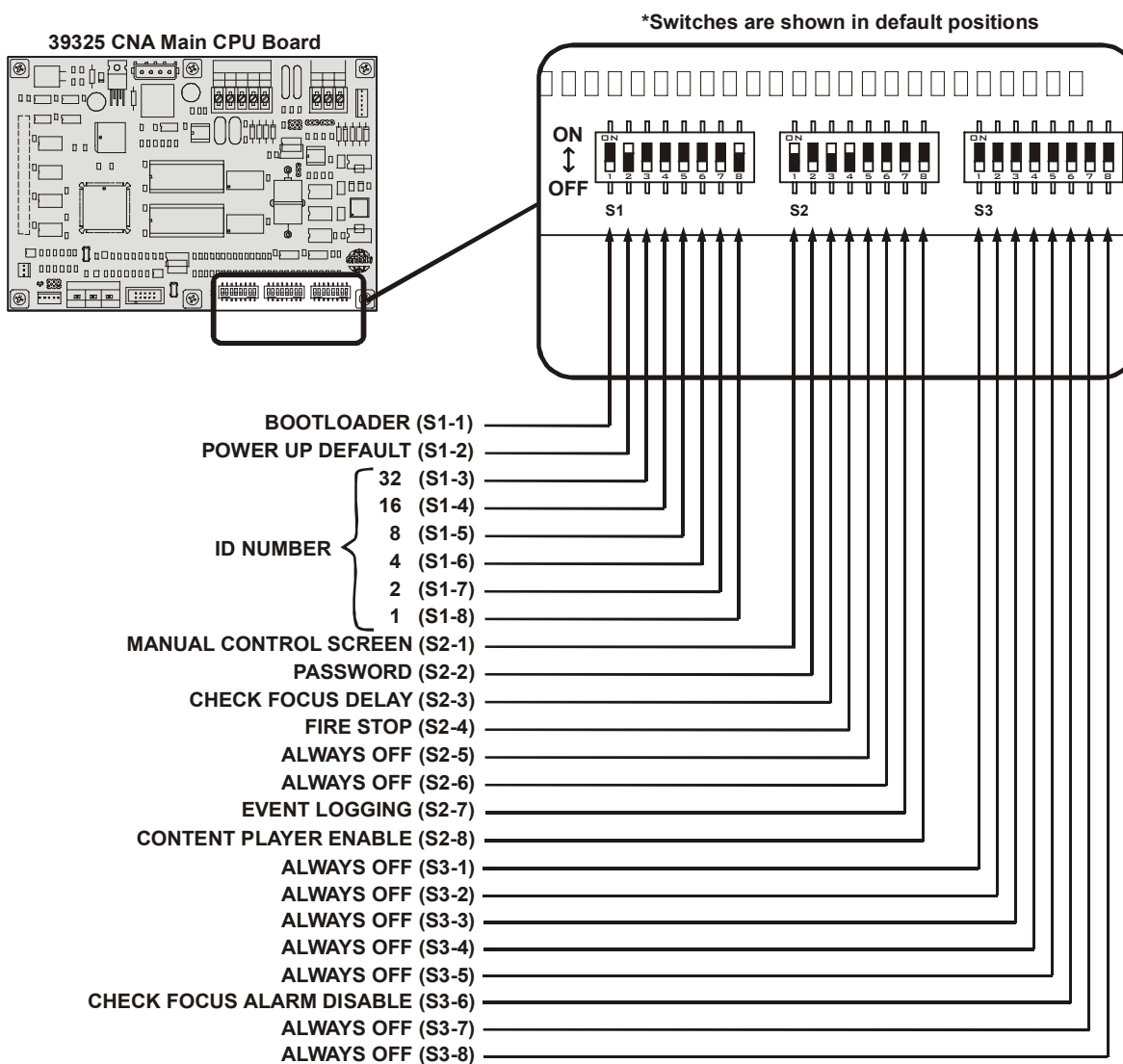
Figure 46

Switch Definitions, CNA-200

S1-1   **Bootloader**   *Note: Applies to version 1.016 and up*

     On   :Force Bootloader.
     Off   :Normal Use. (Factory Default)

The Bootloader program supports the LSN flash update network commands to load the CNA-200 application program into flash memory over the LSN. The Bootloader itself is erase protected and cannot be erased by the user. This protection ensures that the Bootloader can always be reloaded even if the rest of the flash memory is corrupted through programmer error or by other means. If flash memory was corrupted, setting this switch to on will force the Bootloader program at power up.

S1-2   **Power Up Defaults**   *Note: Applies to version 1.000 and above*

     On   :Force "Supervisory Defaults" on power up. Default Supervisory data will be restored on each power up overwriting all user programmed supervisory data.
     Off   :Will not overwrite user programmed supervisory data on power up. (Factory Default)

S1-3 through S1-8 Network ID

Used to configure the CNA-200's LSN ID#

S2-1   **Manual Control Screen**   *Note: Applies to version 1.011 and above*

     On   :Enable the "Manual Control" screen. (Factory Default)
     Off   :Disable the "Manual Control" screen.

The Manual Control screen allows the manual control of most outputs including: sound, lens, masking and lights. Starting with version 1.016, the volume level can also be adjusted.

S2-2   **Password**   *Note: Applies to version 1.000 and above*

     On   :Requires use of the "high level" password to access many of the programming functions. (Factory Default)
     Off   :Disables the password. No password is required to access the programming functions.

High level password is user-configurable for version 1.021 and up.
This switch's function can be overridden from the host or locally with version 1.029 and up.

S2-3   **Check Focus Delay**   *Note: Applies to version 1.006 and above*

     On   :Enables the "Check Focus Delay" function. In Clock Start or Timed Start the alarm will sound prior to the show starting. (Factory Default)
     Off   :Disables the "Check Focus Delay" function.

The Check Focus feature alerts the operator that the show is about to start. In Timed Start the alarm will begin to sound 7 seconds prior to the show starting. This gives the operator time to make any quick adjustments and to insure the image on the screen is in focus.
This feature is available for manual start inputs as well with firmware versions 1.022 and above.

S2-4   **Fire Stop Option**   *Note: Applies to version 1.011 and above*

On   :Enables the "Fire Stop" function. (Factory Default)
Off   :Disables the "Fire Stop" function.

39331 Booth Termination Board - Converts the Remote Stop input to a Fire Stop input and the Slide Projector relay (K13) to a Fire Stop output. Fire Stop *acts* like a Remote Stop with the following exceptions:

•   Sound is Muted.
•   Slide Projector on 39330 *Console Termination Board* is turned off *or* held off.
•   K13 relay (Slide Projector) on Booth Termination board is turned on.
•   Zones 3-16 are unaffected by a firestop input.

If this feature is enabled the slide projector must be wired to the 39330 Console termination board.

39332 Termination Board - Remote Stop input must be enabled on board. (W1-OPT1 jumper across pins 2 and 3 changes the Film Tension input to a Remote Stop input.) Converts the Remote Stop input to a Fire Stop input. Fire Stop *acts* like a Remote Stop with the following exceptions:

•   Sound is Muted.
•   Slide Projector is turned off *or* held off.

S2-5   **Always Off**

On   :Undefined
Off   :Undefined (Factory Default)

S2-6   **Always Off**

On   :Undefined
Off   :Undefined (Factory Default)

S2-7   **Event Logging**   *Note: Applies to version 1.014 and above*

On   :Enabled - Events are sent to the Host computer.
Off   :Disabled - Events are not sent to the Host computer. (Factory Default)

S2-8   **Content Player Option**   *Note: Applies to version 1.000 and above*

On   :Enables interface with Content Player
Off   :Disables interface option.

S3-6 **Check Focus Delay alarm** *Note : Applies to version 1.029 and above*

On :Disables the RCM/ RSM-10 "Check Focus Alarm"
Off :Enables the RCM/ RSM-10 "Check Focus Alarm"

S3-1 through S3-5, S3-7&8 Always Off

On :Undefined
Off :Undefined (Factory Default)

eCNA-150 DIP Switch Settings
Current to Version 4.010
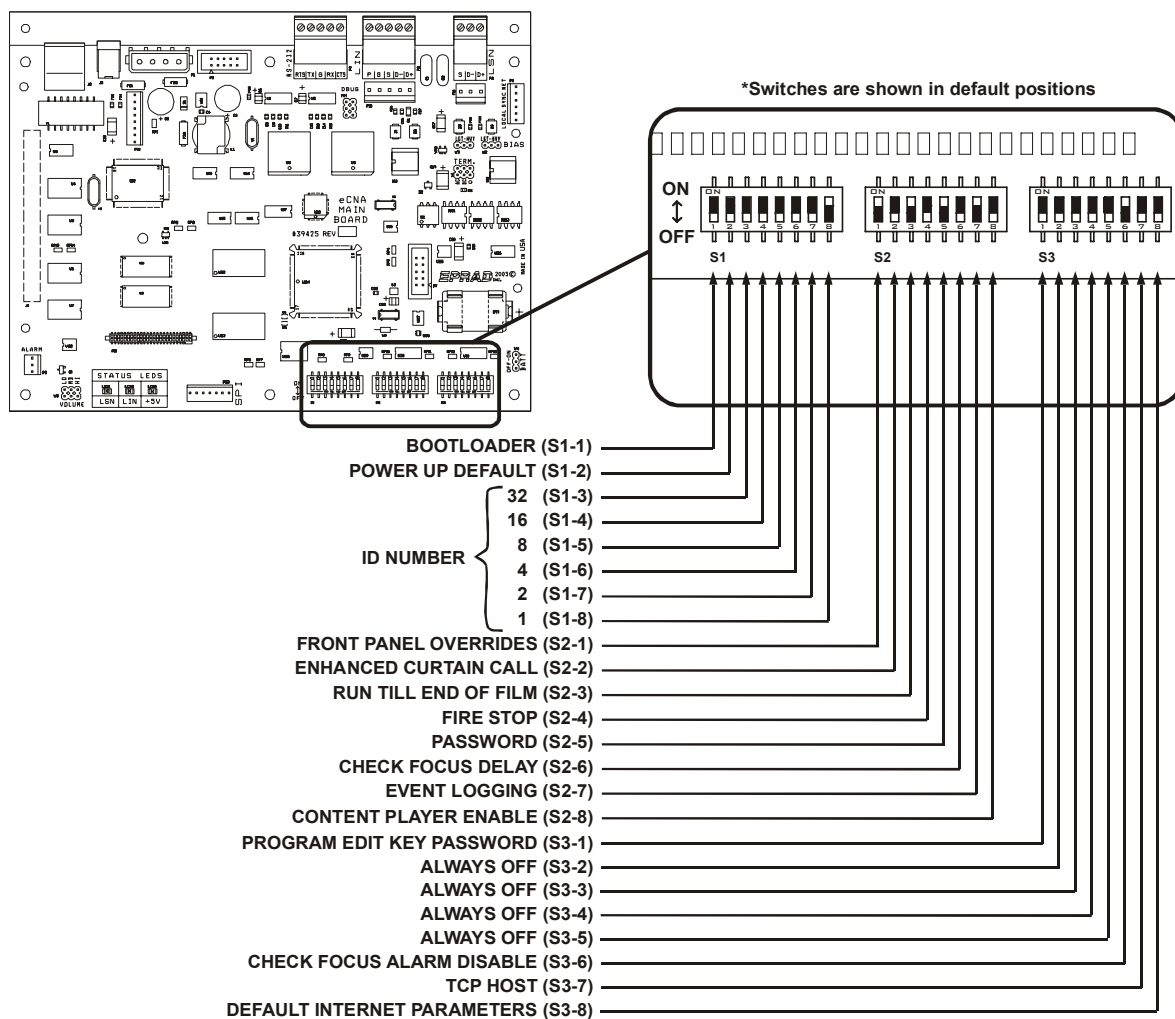
Figure 47

Switch Definitions, eCNA-150:

S1-1 **BootLoader**

On :Force Bootloader.
Off :Normal Use. (Factory Default)

S1-2   Supervisory Defaults

On   :Force "Supervisory Defaults" on power up. Default Supervisory data will be restored on
        each power up.

Off   :Will not overwrite user-programmed supervisory data on power up. If you change any
        of the default settings with the Host program this switch must be off or the next time the
        eCNA-150 is powered up all user settings will be over-written with the defaults.
        (Factory Default)

S1-3 through S1-8 Network ID

Used to configure the CNA-200's LSN ID#

S2-1   Front Panel Overrides

On   :Enable **front panel overrides**. The Sound, Lights, Lens/Masking and Auxiliary front
        panel switches will override the outputs without affecting the program. The next
        instruction will override any manual changes. (Factory Default)

Off   :Disable front panel overrides. The Sound, Lights, Lens/Masking and Auxiliary front
        panel switches are only used for programming.

S2-2   Curtain Call

On   :Enables the **Curtain Call** function and overrides the original Curtain Call function.
        Place the Curtain Call cue at a distance before the next cue that is equal to the curtain
        close time. When the eCNA-150 sees the Curtain Call cue, the curtains begin to close,
        the changeover closes and sound is muted. At the next cue, the curtains will begin to
        open. After the CURTAIN CLOSE TIMER counts down to zero, the curtain will be fully
        open and the changeover will open and the sound is selected.

Off   :Original Curtain Call function. (Factory Default)

S2-3   Run Til' End of Film

On   :Enables the **"Run til End of Film"** function. This overrides the normal 7 second motor
        off delay. The projector motor will run until the film runs out of the failsafe. (Factory
        Default)

Off   :Disables the "Run til End of Film" function. The projector motor will shut off after the
        normal 7 second delay.

S2-4   Firestop

On   :Enables the **"Fire Stop"** function.

39331 Booth Termination Board - Converts the Remote Stop input to a Fire Stop input and the
Slide Projector relay (K13) to a Fire Stop output. Fire Stop *acts* like a Remote Stop with the
following exceptions:
•   Sound is Muted.
•   Slide Projector on 39330 *Console Termination Board* is turned off *or* held off.
•   K13 relay (Slide Projector) on Booth Termination board is turned on.

39332 Termination Board - Remote Stop input must be enabled on board. (W1-OPT1 jumper across pins 2 and 3 changes the Film Tension input to a Remote Stop input.) Converts the Remote Stop input to a Fire Stop input. Fire Stop *acts* like a Remote Stop with the following exceptions:

- Sound is Muted.
- Slide Projector is turned off *or* held off.

Off   :Disables the "Fire Stop" function. (Factory Default)

S2-5   Password

On   :Requires use of the **password** to **access** many of the functions. (Factory Default)
Off   :Disables the password. No password is required to access the functions.
        This switch can be software overridden using the latest version of host software.

S2-6   Check Focus Delay

On   :Enables the "Check Focus Delay" function. In Clock Start or Timed Start the alarm will sound prior to the show starting.
Off   :Disables the "Check Focus Delay" function. (Factory Default)

The Check Focus feature alerts the operator that the show is about to start. In Timed Start the alarm will begin to sound 7 seconds prior to the show starting. This gives the operator time to make any quick adjustments and to insure the image on the screen is in focus.

S2-7   Event Logging

On   :Enabled - Events are sent to the Host computer. (Factory Default)
Off   :Disabled - Events are not sent to the Host computer.

S2-8   Content Player

On   : Enabled
Off   : Disabled (Factory Default)

This switch allows the eCNA to interact with a digital content player. Serial commands exchanged between the content player and CNA automation allows the digital projector and film projector to share the screen in a coordinated manner.
* *See CAI user Guide*

S3-1   Program Edit Key Password

On   : Enable (Password required to edit but not to view programs)
Off   : Disable (No password required for program edit) (Factory Default)

"View only" mode indicated by Program Edit LED Flashing

S3-2 to 3-5 Always Off (Undefined)

On   :Undefined
Off   :Undefined (Factory Default)

S3-6   RCM/RSM-10 "Check Focus Alarm"

On   : Enable the RSM/RCM-10 Alarm (Factory Default)
Off   :Disable the RSM/RCM-10 Alarm

Allows Unit to Sound alarm at the RSM 10 before the beginning of a presentation reminding operator to make any final focus adjustments.

S3-7   TCP Host

On   :TCP host routing enabled
Off   :LSN Host routing enabled (Factory Default)

Sets eCNA to communicate with HOST computer via Ethernet or LSN Networking.

S3-8   Default internet parameters

On   :Default parameters used TCP/IP
Off   :User parameters used for TCP/IP

This switch disables user defined EEPROM parameters and enables default IP of 192.168.0.254 and half duplex communication.

CNA-100/ 150 DIP Switch Settings
Current to Version 2.15/ 3.15

39325 CNA Main CPU Board

*Switches are shown in default positions

ON
↕
OFF

S1   S2   S3

BOOTLOADER (S1-1)
POWER UP DEFAULT (S1-2)

32   (S1-3)
16   (S1-4)
8   (S1-5)
ID NUMBER { 4   (S1-6)
2   (S1-7)
1   (S1-8)

FRONT PANEL OVERRIDES (S2-1)
ENHANCED CURTAIN CALL (S2-2)
RUN TILL END OF FILM (S2-3)
FIRE STOP (S2-4)
PASSWORD (S2-5)
CHECK FOCUS DELAY (S2-6)
EVENT LOGGING (S2-7)
CONTENT PLAYER ENABLE (S2-8)
PROGRAM EDIT KEY PASSWORD (S3-1)
ALWAYS OFF (S3-2)
ALWAYS OFF (S3-3)
ALWAYS OFF (S3-4)
ALWAYS OFF (S3-5)
CHECK FOCUS ALARM DISABLE (S3-6)
ALWAYS OFF (S3-7)
ALWAYS OFF (S3-8)

Figure 48

Switch Definitions, CNA-100/ 150

S1-1   **Force Bootloader**   *Note: Applies to versions 2.05/ 3.050 and above*

   On   :Force Bootloader.
   Off   :Normal Use. (Factory Default)

S1-2   **Supervisory Defaults**

   On   :Force "Supervisory Defaults" on power up. Default Supervisory data will be restored on
          each power up. (Factory Default)
   Off   :Will not overwrite user-programmed supervisory data on power up.

If you change any of the default settings with the Host program this switch must be off or the next time the CNA-150 is powered up all user settings will be over-written with the defaults.

S1-3 through S1-8 Network ID

Used to configure the CNA's LSN ID#

S2-1   Enable front panel Overrides

On   **:**Enable front panel overrides. The Sound, Lights, Lens/Masking and Auxiliary front panel switches will override the outputs without affecting the program. The next instruction will override any manual changes. (Factory Default)

Off   **:**Disable front panel overrides. The Sound, Lights, Lens/Masking and Auxiliary front panel switches are only used for programming**.**

S2-2   Enhanced Curtain Call

On   **:**Enables the Curtain Call function and overrides the original Curtain Call function. Place the Curtain Call cue at a distance before the next cue that is equal to the curtain close time. When the CNA-150 sees the Curtain Call cue, the curtains begin to close, the changeover closes and sound is muted. At the next cue, the curtains will begin to open. After the CURTAIN CLOSE TIMER counts down to zero, the curtain will be fully open and the changeover will open and the sound is selected.

Off   **:**Original Curtain Call function. (Factory Default)

S2-3   Run Til'end of Film

On   :Enables the "Run til End of Film" function. This overrides the normal 7 second motor off delay. The projector motor will run until the film runs out of the failsafe. (Factory Default)

Off   :Disables the "Run til End of Film" function. The projector motor will shut off after the normal 7 second delay.

S2-4   FireStop

On   :Enables the "Fire Stop" function.

39331 Booth Termination Board - Converts the Remote Stop input to a Fire Stop input and the Slide Projector relay (K13) to a Fire Stop output. Fire Stop *acts* like a Remote Stop with the following exceptions:

•   Sound is Muted.
•   Slide Projector on 39330 *Console Termination Board* is turned off *or* held off.
•   K13 relay (Slide Projector) on Booth Termination board is turned on.

39332 Termination Board - Remote Stop input must be enabled on board. (W1-OPT1 jumper across pins 2 and 3 changes the Film Tension input to a Remote Stop input.) Converts the Remote Stop input to a Fire Stop input. Fire Stop *acts* like a Remote Stop with the following exceptions:

- Sound is Muted.
- Slide Projector is turned off *or* held off.

Off   :Disables the "Fire Stop" function. (Factory Default)

S2-5   **Password** *Note: Applies to version 3.030 and later.*

On   :Requires use of the password to access many of the functions. (Factory Default)
Off   :Disables the password. No password is required to access the functions.

S2-6   **Check Focus Delay** *Note: Applies to version 3.030 and above.*

On   :Enables the "Check Focus Delay" function. In Clock Start or Timed Start the alarm will
            sound prior to the show starting. (Factory Default)
Off   :Disables the "Check Focus Delay" function**.**

The Check Focus feature alerts the operator that the show is about to start. In Timed Start the
alarm will begin to sound 7 seconds prior to the show starting. This gives the operator time to
make any quick adjustments and to insure the image on the screen is in focus.

S2-7   **Event Logging** *Note: Applies to version 3.040 and above.*

On   :Enabled - Events are sent to the Host computer.
Off   :Disabled - Events are not sent to the Host computer. (Factory Default)

S2-8   **Content Player** *Applies to version 3.090 and above.*

On   :Enable
Off   :Disable

* See CAI user Guide

S3-1   **Program Edit Key Password** *Note: Applies to versions 3.11 and above.*

On   :Enable Password required to edit but not to view programs)
Off   :Disable No password required for program edit)

"View only" mode indicated by Program Edit LED Flashing

*This switch's function can be disabled from the host or directly at the CNA with versions 2.15/
3.15 and up*

S3-6   **Check Focus Delay alarm** *Note: Applies to versions 2.15/ 3.15 and above*

On   :Disables the RCM/ RSM-10 "Check Focus Alarm"
Off   :Enables the RCM/ RSM-10 "Check Focus Alarm"

Remaining switches are not implemented yet and should stay in their default "always off" positions.

S3-2 to S3-5, S3-7 & S3-8 Undefined

Undefined, Factory default OFF position.

eCNA-100 DIP Switch Settings
Current to Version 3.010
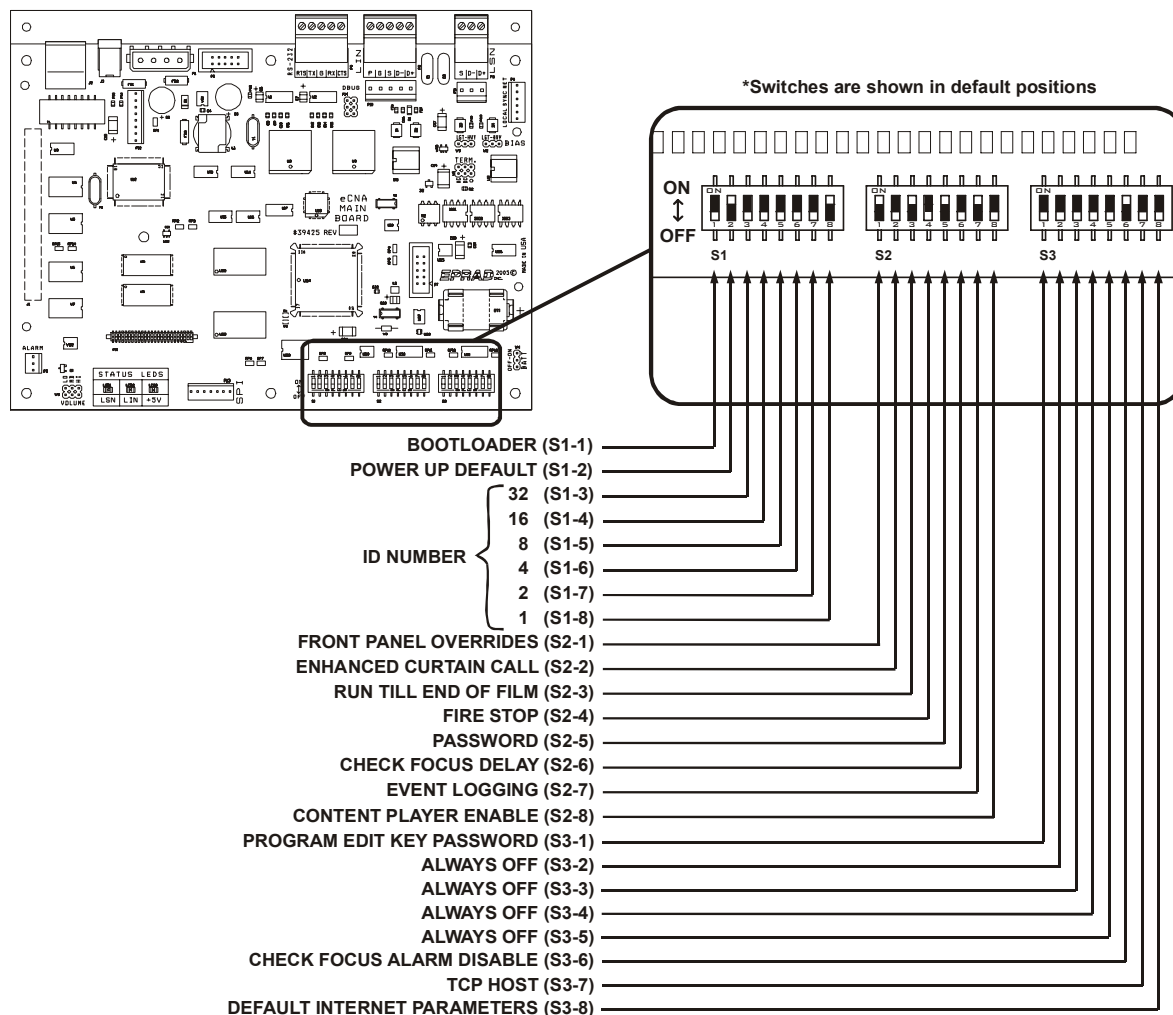

Figure 49

Switch Definitions, eCNA-100:

S1-1   Force Bootloader

On   :Force Bootloader.
Off   :Normal Use. (Factory Default)

S1-2   Supervisory Defaults

On   :Force "Supervisory Defaults" on power up. Default Supervisory data will be restored on each power up. (Factory Default)

Off   :Will **not** overwrite user-programmed supervisory data on power up. If you change any of the default settings with the Host program this switch must be off or the next time the eCNA-100 is powered up all user settings will be over-written with the defaults.

S1-3 through S1-8 Network ID

Used to configure the CNA-e100's LSN ID#

S2-1   Front Panel Overrides

On   :Enable front panel overrides. The Sound, Lights, Lens/Masking and Auxiliary front panel switches will override the outputs without affecting the program. The next instruction will override any manual changes. (Factory Default)

Off   :Disable front panel overrides. The Sound, Lights, Lens/Masking and Auxiliary front panel switches are only used for programming.

S2-2   Curtain Call

On   :Enables the Curtain Call function and overrides the original Curtain Call function. Place the Curtain Call cue at a distance before the next cue that is equal to the curtain close time. When the eCNA-100 sees the Curtain Call cue, the curtains begin to close, the changeover closes and sound is muted. At the next cue, the curtains will begin to open. After the CURTAIN CLOSE TIMER counts down to zero, the curtain will be fully open and the changeover will open and the sound is selected.

Off   :Original Curtain Call function. (Factory Default)

S2-3   Run Til' End of Film

On   :Enables the "Run til End of Film" function. This overrides the normal 7 second motor off delay. The projector motor will run until the film runs out of the failsafe. (Factory Default)

Off   :Disables the "Run til End of Film" function. The projector motor will shut off after the normal 7 second delay.

S2-4   Fire Stop

On   :Enables the "Fire Stop" function.

39331 Booth Termination Board - Converts the Remote Stop input to a Fire Stop input and the Slide Projector relay (K13) to a Fire Stop output. Fire Stop *acts* like a Remote Stop with the following exceptions:

• Sound is Muted.
• Slide Projector on 39330 *Console Termination Board* is turned off *or* held off.
• K13 relay (Slide Projector) on Booth Termination board is turned on.

39332 Termination Board - Remote Stop input must be enabled on board. (W1-OPT1 jumper across pins 2 and 3 changes the Film Tension input to a Remote Stop input.) Converts the Remote Stop input to a Fire Stop input. Fire Stop *acts* like a Remote Stop with the following exceptions:

- Sound is Muted.
- Slide Projector is turned off *or* held off.

Off   :Disables the "Fire Stop" function. (Factory Default)

S2-5   Password

On   :Requires use of the password to access many of the functions. (Factory Default)
Off   :Disables the password. No password is required to access the functions.
         This switch can be software overridden.

S2-6   Check Focus Delay

On   :Enables the "Check Focus Delay" function. In Clock Start or Timed Start the alarm will sound prior to the show starting.
Off   :Disables the "Check Focus Delay" function. (Factory Default)

The Check Focus feature alerts the operator that the show is about to start. This gives the operator time to make any quick adjustments and to insure the image on the screen is in focus.

S2-7   Event Logging

On   :Enabled - Events are sent to the Host computer.(Factory Default)
Off   :Disabled - Events are not sent to the Host computer.

The CNA has the ability to send system event logs to a Host P.C. via the LSN connection.
* *See Host user manual for more information*

S2-8   Content Player

On   :Enable
Off   :Disable (Factory Default)

This switch allows the eCNA to interact with a digital content player. Serial commands exchanged between the content player and CNA automation allows the digital projector and film projector to share the screen in a coordinated manner.
* *See CAI user Guide for further information*

S3-1   Program Edit Key Password

On   : Enable (Password required to edit but not to view programs)
Off   : Disable (No password required for program edit) (Factory Default)

"View only" mode indicated by Program Edit LED Flashing

S3-6   RCM/RSM-10 "Check Focus Alarm"

On   : Enable the RSM/RCM-10 Alarm (Factory Default)
Off   : Disable the RSM/RCM-10 Alarm

Enables/ disables alarm on RSM/ RCM 10/ 20. Alarm (when enabled) will sound to warn projectionist to check focus before the start of a show and after check focus delay.

S3-7   TCP Host

On   : TCP host routing enabled
Off   : LSN Host routing enabled (Factory Default)

Configures which port the eCNA uses for Host communications. The eCNA can send and receive host information via ethernet or standard LSN depending on this switch's configuration.

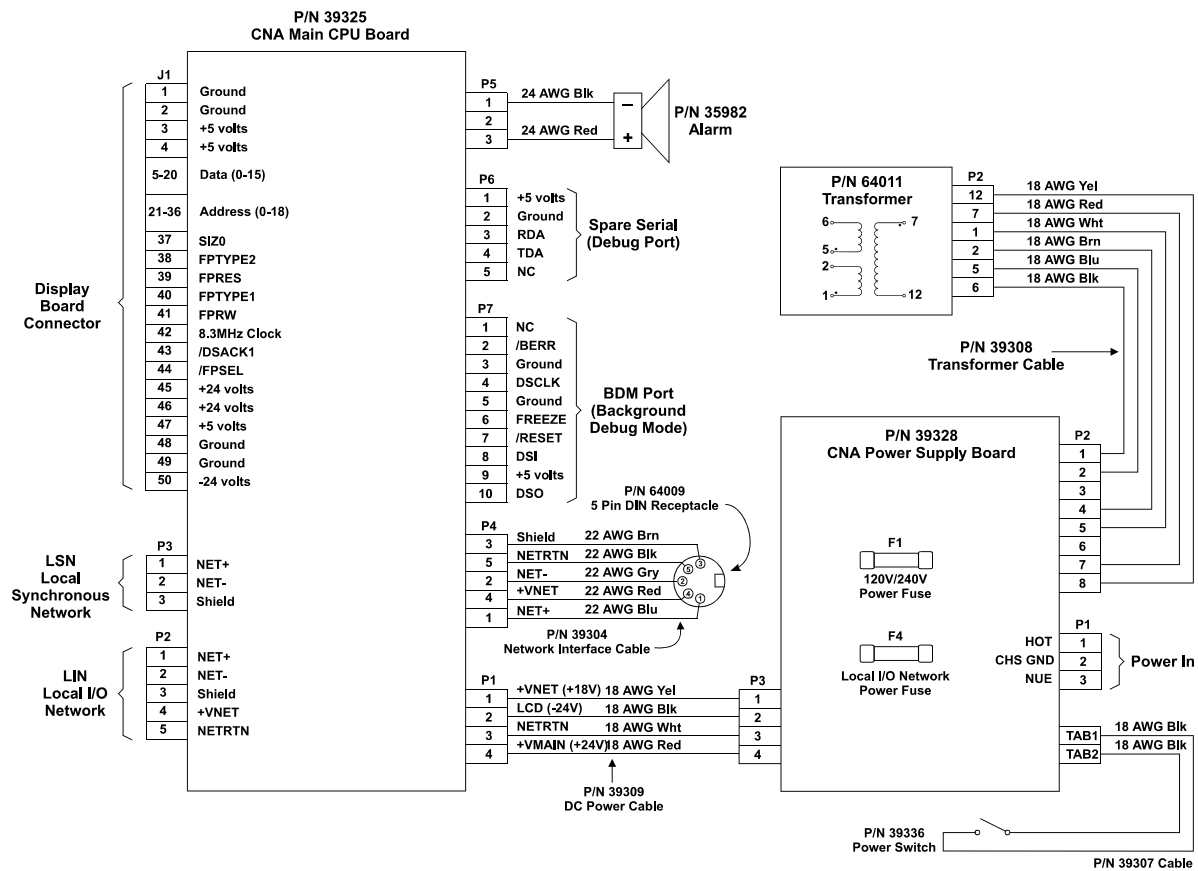### S3-8   Default internet parameters

On   : Default parameters used TCP/IP
Off   : User parameters used for TCP/IP (Factory Default)

This switch disables user defined EEPROM parameters and enables default IP of 192.168.0.254 and half duplex communication. This is of obvious value to the technician configuring the eCNA in the field. This selection would allow a unit with unknown IP parameters to be used for troubleshooting or substitution without re-configuring it.

S3-2 to 3-5   Undefined, Always Off (Factory Default)

These switches are undefined and should remain default "OFF".

System Block Diagrams

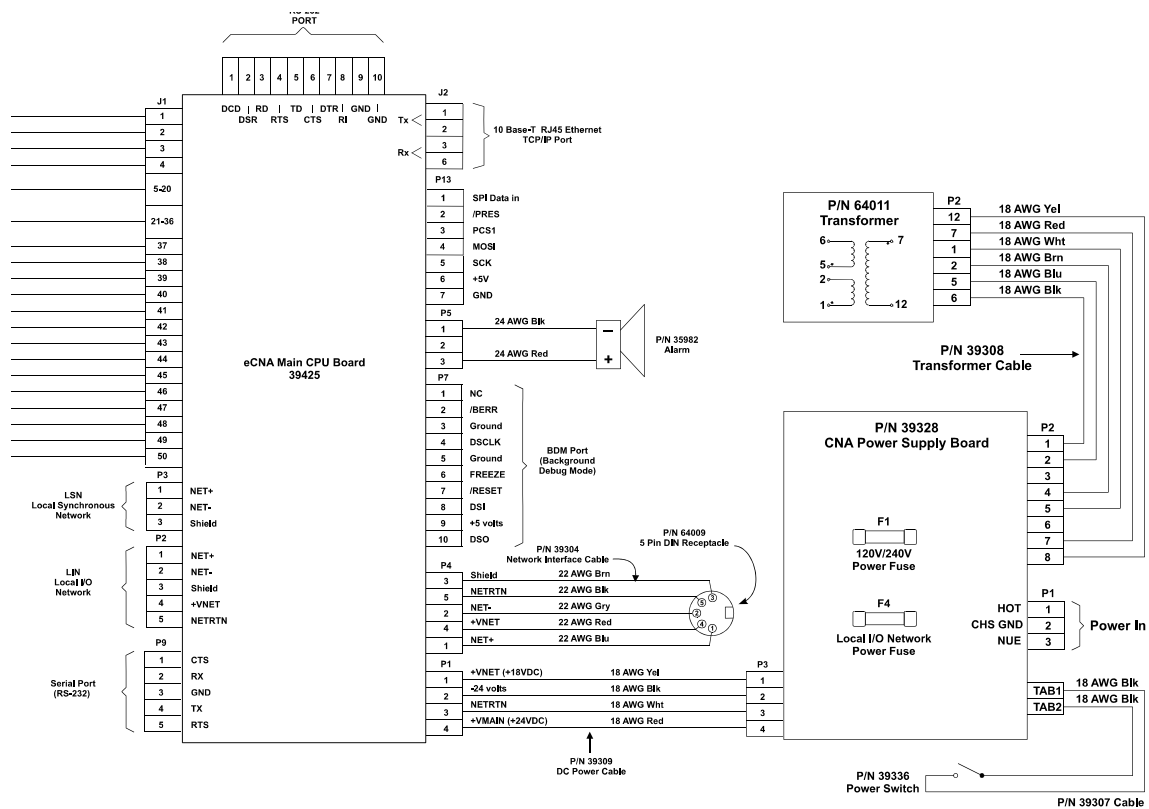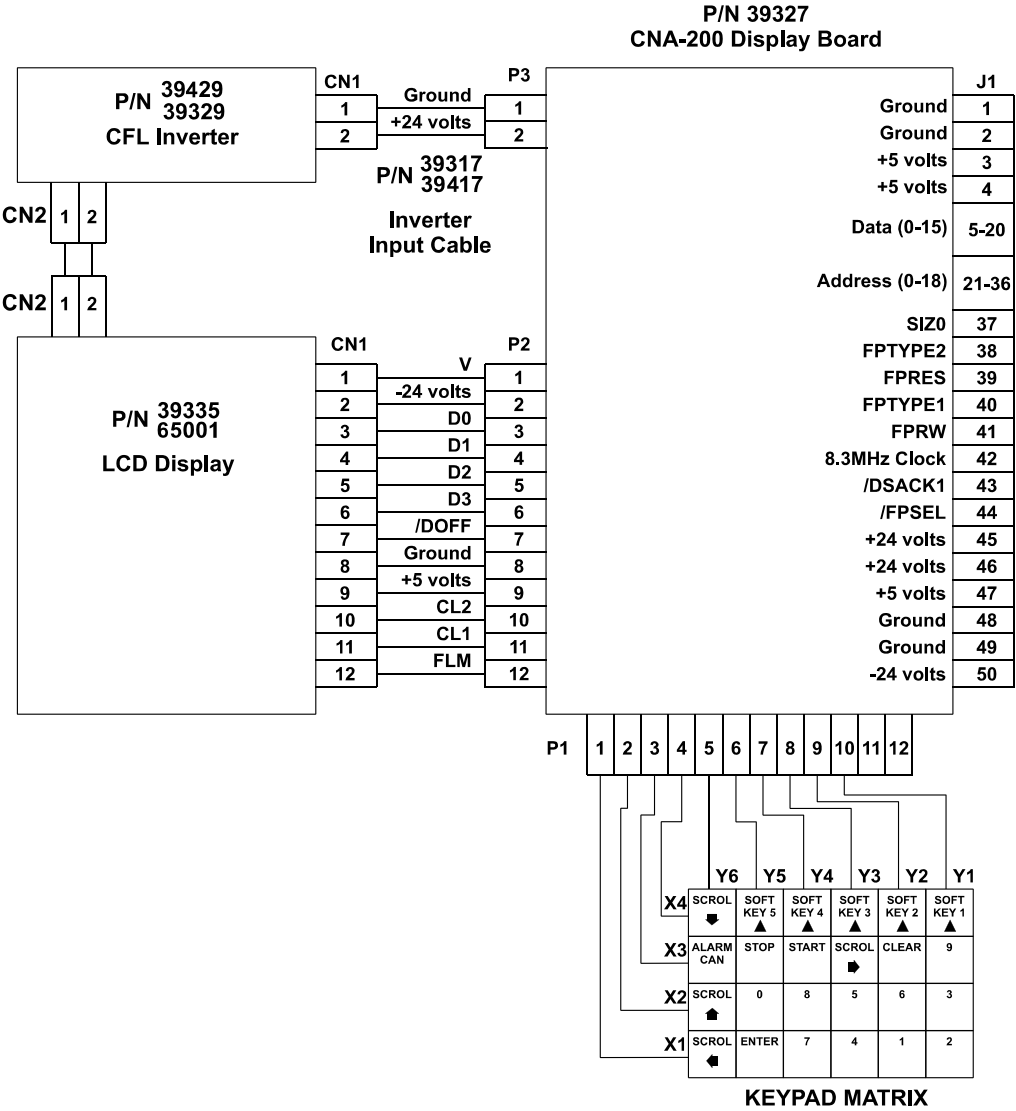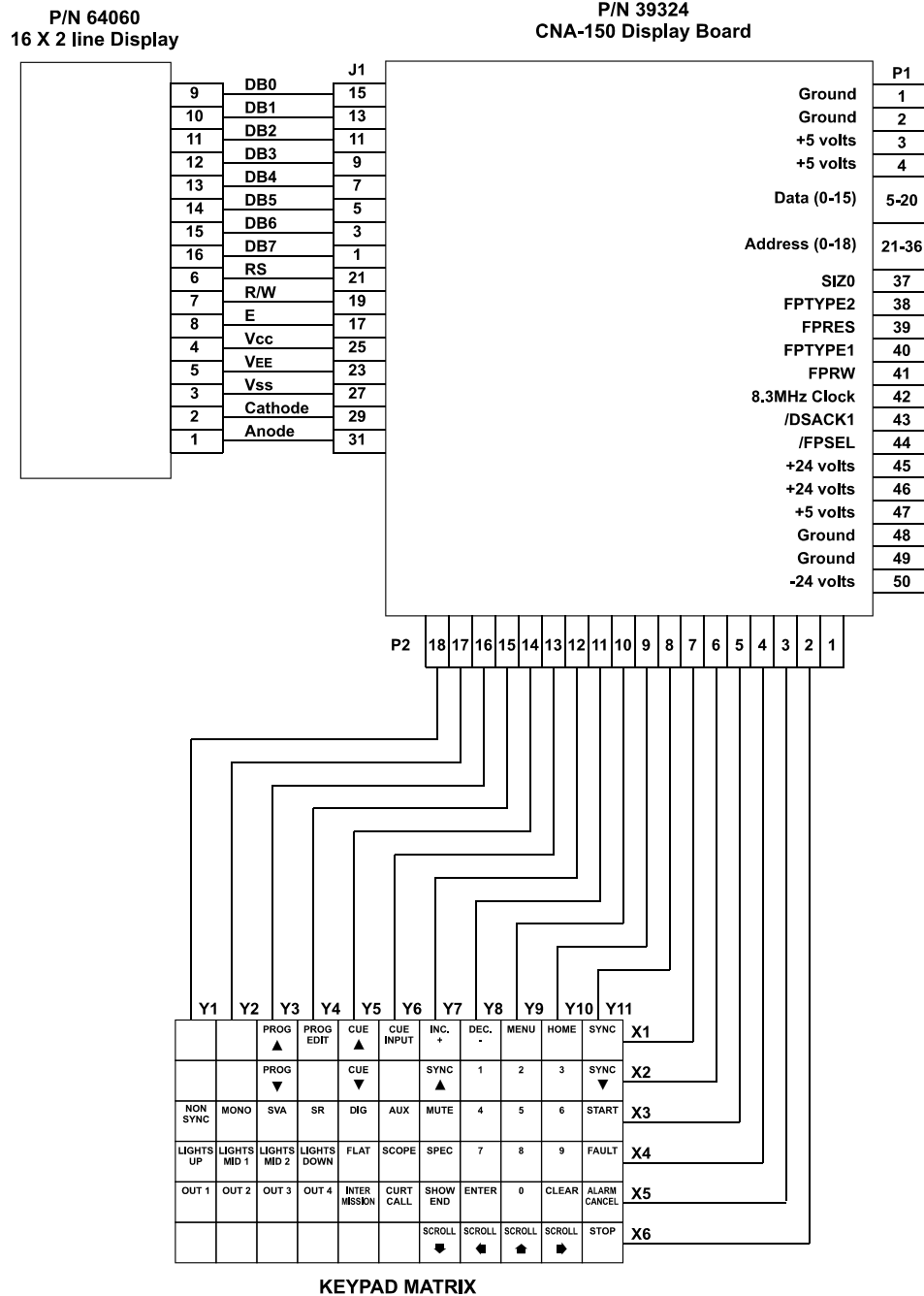
CNA Main CPU Board and Power Supply
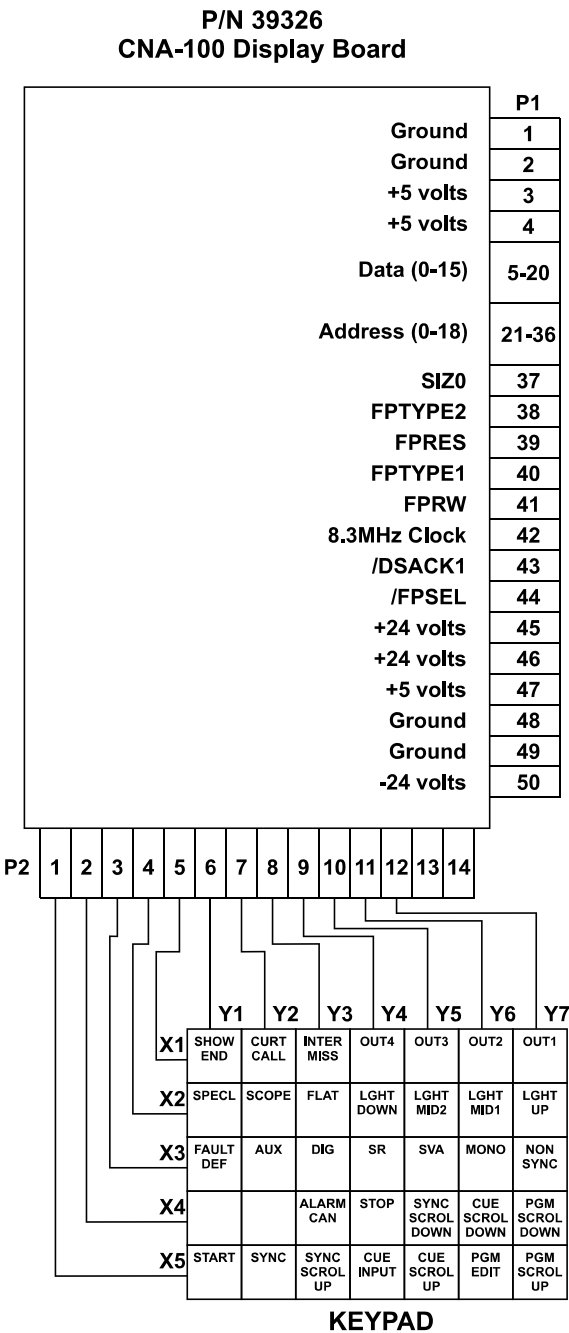Figure 50

CNA-200 AUTOMATION
Block Diagram

Figure 51

P/N 39327
CNA-200 Display Board

P/N 39429 39329 CFL Inverter	CN1		P3				J1
	1	Ground	1		Ground		1
	2	+24 volts	2		Ground		2
					+5 volts		3
					+5 volts		4

P/N 39317 39417
Inverter Input Cable

CN2 | 1 | 2

CN2 | 1 | 2

					Data (0-15)		5-20
					Address (0-18)		21-36

P/N 39335 65001 LCD Display	CN1	V	P2				
	1	-24 volts	1		SIZ0		37
	2	D0	2		FPTYPE2		38
	3	D1	3		FPRES		39
	4	D2	4		FPTYPE1		40
	5	D3	5		FPRW		41
	6	/DOFF	6		8.3MHz Clock		42
	7	Ground	7		/DSACK1		43
	8	+5 volts	8		/FPSEL		44
	9	CL2	9		+24 volts		45
	10	CL1	10		+24 volts		46
	11	FLM	11		+5 volts		47
	12		12		Ground		48
					Ground		49
					-24 volts		50

P1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12

	Y6	Y5	Y4	Y3	Y2	Y1
X4	SCROL ⬇	SOFT KEY 5 ▲	SOFT KEY 4 ▲	SOFT KEY 3 ▲	SOFT KEY 2 ▲	SOFT KEY 1 ▲
X3	ALARM CAN	STOP	START	SCROL ➡	CLEAR	9
X2	SCROL ⬆	0	8	5	6	3
X1	SCROL ⬅	ENTER	7	4	1	2

KEYPAD MATRIX

CNA-200 Keyboard and Display Block Diagram
Figure 52

P/N 64060
16 X 2 line Display

P/N 39324
CNA-150 Display Board

P/N 64060		J1			P1
9	DB0	15		Ground	1
10	DB1	13		Ground	2
11	DB2	11		+5 volts	3
12	DB3	9		+5 volts	4
13	DB4	7			
14	DB5	5		Data (0-15)	5-20
15	DB6	3			
16	DB7	1		Address (0-18)	21-36
6	RS	21			
7	R/W	19		SIZ0	37
8	E	17		FPTYPE2	38
4	Vcc	25		FPRES	39
5	VEE	23		FPTYPE1	40
3	Vss	27		FPRW	41
2	Cathode	29		8.3MHz Clock	42
1	Anode	31		/DSACK1	43
				/FPSEL	44
				+24 volts	45
				+24 volts	46
				+5 volts	47
				Ground	48
				Ground	49
				-24 volts	50

P2 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

KEYPAD MATRIX

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	
			PROG ▲	PROG EDIT	CUE ▲	CUE INPUT	INC. +	DEC. -	MENU	HOME	SYNC	X1
			PROG ▼		CUE ▼		SYNC ▲	1	2	3	SYNC ▼	X2
	NON SYNC	MONO	SVA	SR	DIG	AUX	MUTE	4	5	6	START	X3
	LIGHTS UP	LIGHTS MID 1	LIGHTS MID 2	LIGHTS DOWN	FLAT	SCOPE	SPEC	7	8	9	FAULT	X4
	OUT 1	OUT 2	OUT 3	OUT 4	INTER MISSION	CURT CALL	SHOW END	ENTER	0	CLEAR	ALARM CANCEL	X5
					SCROLL ▼	SCROLL ◀	SCROLL ▲	SCROLL ▶	STOP			X6

CNA-150 Keyboard and Display Block Diagram
Figure 53

P/N 39326
CNA-100 Display Board

	P1
Ground	1
Ground	2
+5 volts	3
+5 volts	4
Data (0-15)	5-20
Address (0-18)	21-36
SIZ0	37
FPTYPE2	38
FPRES	39
FPTYPE1	40
FPRW	41
8.3MHz Clock	42
/DSACK1	43
/FPSEL	44
+24 volts	45
+24 volts	46
+5 volts	47
Ground	48
Ground	49
-24 volts	50

P2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |

KEYPAD

	Y1	Y2	Y3	Y4	Y5	Y6	Y7
X1	SHOW END	CURT CALL	INTER MISS	OUT4	OUT3	OUT2	OUT1
X2	SPECL	SCOPE	FLAT	LGHT DOWN	LGHT MID2	LGHT MID1	LGHT UP
X3	FAULT DEF	AUX	DIG	SR	SVA	MONO	NON SYNC
X4			ALARM CAN	STOP	SYNC SCROL DOWN	CUE SCROL DOWN	PGM SCROL DOWN
X5	START	SYNC	SYNC SCROL UP	CUE INPUT	CUE SCROL UP	PGM EDIT	PGM SCROL UP

CNA-100 Keyboard and Display Board
Figure 54

System Hardware Configuration

Automation ID No. _____

Termination Panel Jumper Configuration

SINGLE PANEL

P/N 39332	
JUMPER	**SETTING**
W1	☐ 1-2 FILM TENSION ☐ 2-3 REMOTE STOP
W2	☒ 1-2 UNDEFINED ☐ 2-3 UNDEFINED
W3	☒ 1-2 UNDEFINED ☐ 2-3 UNDEFINED
W4	☒ 1-2 UNDEFINED ☐ 2-3 UNDEFINED
W5	☐ 1-2 BYPASS ON ☐ 2-3 BYPASS OFF
W6	☐ 1-2 BYPASS ON ☐ 2-3 BYPASS OFF
W7	☐ 1-2 BYPASS ON ☐ 2-3 BYPASS OFF

DUAL PANELS	

CONSOLE P/N 39330	
JUMPER	**SETTING**
W1	☐ 1-2 PANEL #1 ☐ 2-3 PANEL #2
W2	☒ 1-2 UNDEFINED ☐ 2-3 UNDEFINED
W3	☒ 1-2 UNDEFINED ☐ 2-3 UNDEFINED
W4	☒ 1-2 UNDEFINED ☐ 2-3 UNDEFINED
W5	☐ 1-2 BYPASS ON ☐ 2-3 BYPASS OFF
W6	☐ 1-2 BYPASS ON ☐ 2-3 BYPASS OFF
W7	☐ 1-2 BYPASS ON ☐ 2-3 BYPASS OFF

BOOTH P/N 39331	
JUMPER	**SETTING**
W1	☒ 1-2 UNDEFINED ☐ 2-3 UNDEFINED
W2	☒ 1-2 UNDEFINED ☐ 2-3 UNDEFINED
W3	☒ 1-2 UNDEFINED ☐ 2-3 UNDEFINED

CNA DIP Switch Configuration

MAIN BOARD P/N 39325/39425

S1							
1	2	3	4	5	6	7	8
☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF

S2							
1	2	3	4	5	6	7	8
☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF

S3							
1	2	3	4	5	6	7	8
☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF	☐ ON ☐ OFF

IP ADDRESS	MAC ADDRESS
_ _ _ . _ _ _ . _ _ _ . _ _ _	_ _ - _ _ - _ _ - _ _ - _ _ - _ _

Index:

List of Illustrations:

Replacement Parts:

Below is a listing of the major components for each CNA automation. This information is provided to assist the technician or automation owner when an automation fails or is damaged. The part numbers will help speed the process of ordering replacement components and should help ensure that proper items are sent.

Part Description	Strong P/N	EPRAD P/N
CNA Power Supply PC Board	5198304	39328
CNA Power Transformer		64011
DPST Rocker Switch, Power and Overrides		39336
SPDT Rocker Switch, Overrides Momentary		39337
SPDT Rocker Switch, Overrides Momentary		39338
DC Power Harness (Power supply to CPU board)		39309
Piezo Transducer (Alarm)		39307
CNA CPU Board	5172008	39325
eCNA CPU Board		38352

CNA-100 Specific Parts

CNA-100 Display PCB	5172009	39326
CNA-100 Front Panel (Keypad Overlay, Switches and Metal)		39310

### CNA-150 Specific Parts

CNA-150 Display PCB		39324-PCB
CNA-150 Front Panel (Keypad Overlay, Switches and Metal)		39521
CNA-150 LCD (Display Only)		64060

CNA-200 Specific Parts

CNA-200 Display PCB		39327-1
CNA-200 (Display Only)	5172011	39335
CNA-200 Front Panel (Keypad Overlay, Switches and Metal)		39320
Inverter PCB		39329
Replacement Display Backlight Lamp		39319
Display Conversion kit, Stanley to Optrex		39302
TDK Inverter PCB		39429

Termination Board Wiring supplement:

Top Mask
Side Mask

39332 Termination Board Wiring

Top Mask
Side Mask
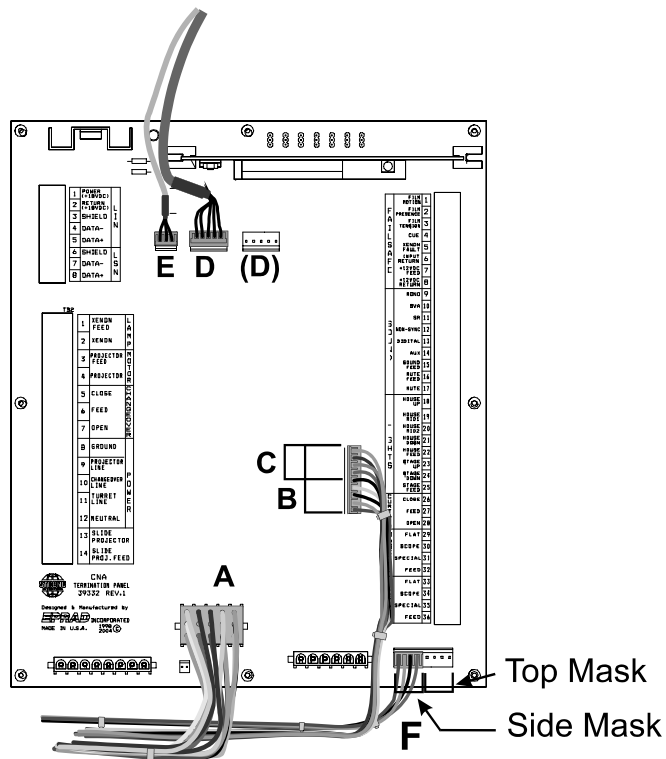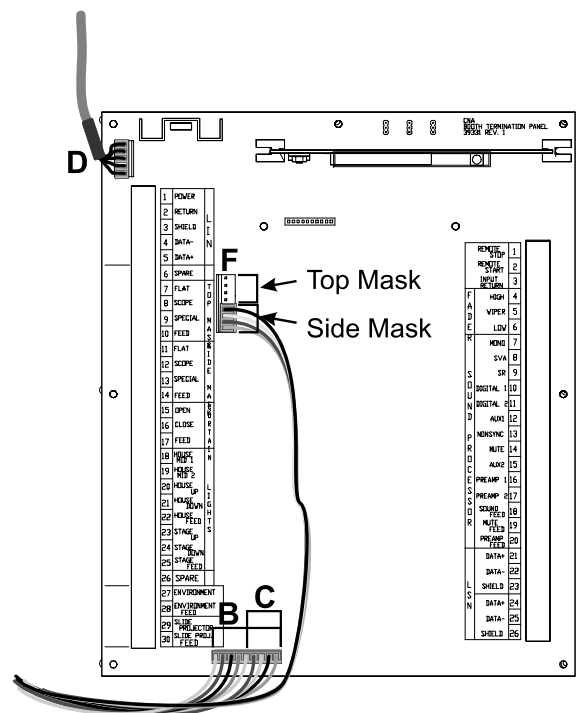
39331 Termination Board Wiring
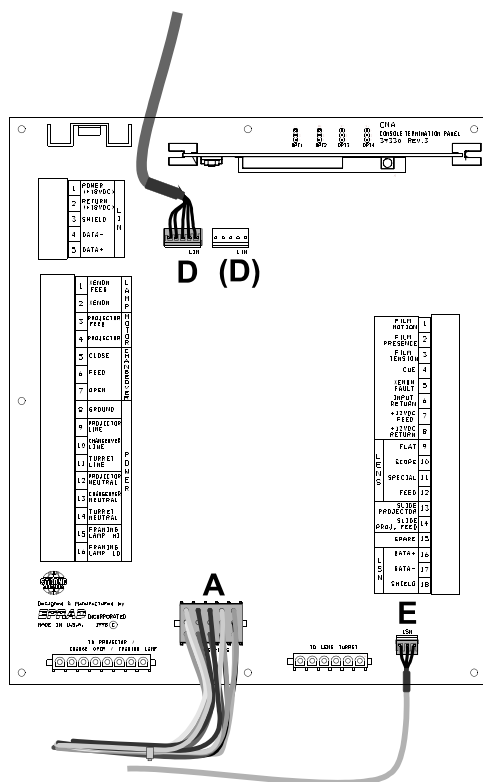
39330 Termination Board Wiring

A	39349
B	39346
C	39444
D	39347 Etc...(LIN Cable)
E	39348 Etc...(LSN Cable)
F	39449

Figure F, 39449 Cable can be used as either a Top or a Side Masking override.

Figure E, LSN cable is not required for operation.

Figures D and (D) are wired in parallel on the PCB.

For more information see the Termination Board Installation section of this manual.