# CINENET™

**CNA Automation Installation Instructions**

**February 2000**

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## Installation

# CNA Automation
## Installation Manual

### *PR001   Revision 1.0*

This manual covers the installation of the following equipment:

- CNA-200, CNA-150 and CNA-100 Automations
- 39330, 39331 and 39332 Termination Panels
- BTC-10 Booth Termination Cabinet

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

- PR002 Revision 1.2 CNA-200 Setup and Operation Manual
- PR003 Revision 1.2 CNA-150 Setup and Operation Manual
- PR004 Revision 1.0 CNA-100 Setup and Operation Manual
- PR005 Revision 1.0 QDC-400 Installation and Setup Manual
- PR006 Revision 1.0 ACP-50 Installation and Setup Manual
- PR007 Revision 1.0 RVC-5 Installation and Setup Manual
- PR008 Revision 1.0 PCI-64 Gateway Interface Installation
- PR009 Revision 1.0 CineNet Host Software
- PR010 Revision 1.0 RCM-10/RSM-10 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.

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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 common functions and locations in the booth and communicate on a serial communications link. Automation systems and remote stations distributed throughout the booth and other areas of the multiplex also communicate on a serial communications link.

To enhance the operation of the CNA and provide a broader level of control, the CINENET™ Gateway PC Card and Host software is available. This product will provide a PC interface to the CNA automations. The Host PC and software will allow management to access programming, real-time data and diagnostic information from 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 to become familiar with the system and its capabilities. This automation was designed to be easy to setup and operate. But it is the responsibility of the user to learn how to do so. 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 successful installation.

If while installing or operating the CNA automation you find any part of the manual to be unclear or incorrect, please let us know.

# Product Description

The CNA Cinema Network Automation System is a microprocessor based computer automation designed to automate 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 the serial communications 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. Termination Panel(s)
2. Control Panel

The Control Panel is contains the main computer which functions as the 'master' of the system and each I/O device is connected to it via a serial communications link. The devices are connected in a daisy-chain method and can then be distributed within the booth according to their logical location.

**CNA-200**
**Local I/O Network (LIN)**
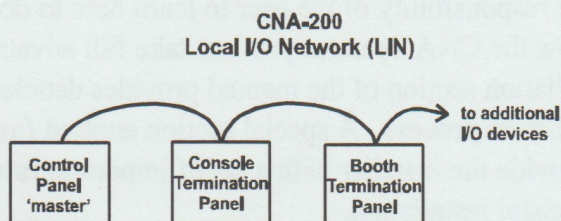


## Local Synchronous Network (LSN)

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 connected together in a daisy-chain configuration, which allows the transmission line to continue from one unit to the next.

**Local Synchronous Network (LSN)**
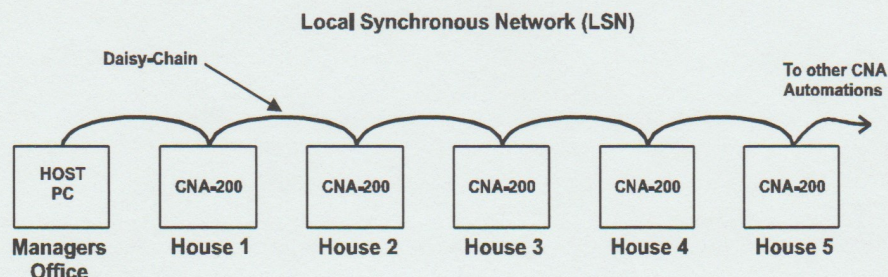
## System Components

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 consist 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 is flexible 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 Panels into a single panel. This panel provides an option of a single lower cost board for installations that do not need the functions on separate boards.

## 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 power *dry* relay contact outputs.
- High power 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 relays and I/O CPU Control Board get their power from the network cable. The Control Board will plug onto the relay board to provide the I/O and network interface.

**Booth Termination Panel**

This panel provides the outputs to control the following functions:

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

Inputs:

- Remote Start
- Remote Stop/Fire Stop

Features:

- Low power dry relay contact outputs.
- High power dry relay contact outputs for Slide Projector and Environment 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 can be 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 the Console and Booth Terminal 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, Nonsync, Mute

Inputs:

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

Features:

- Low power *dry* relay contact outputs.
- High power *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 network cable. The Control Board will plug onto the relay board to provide the I/O and network interface.

## Control Panel (Operator Interface)

The automation controller and front panel interface can 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.

Communications to the termination boards and other remote CNA systems is accomplished via two 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 Console and Booth 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, Remote Monitors and PC Host.

The control panel is used to setup, program and run the shows. It also displays error and status messages to the user. The control panel incorporates up to nine manual override switches used for emergency manual control. These are rocker switches and their general functions should be obvious to the operator. All manual controls circumvent the electronic circuitry giving the user the ability to control the major functions in the event of an automation failure.

The manual control functions are listed below:

1.  PROJECTOR - Maintained ON/AUTO
2.  LAMP - Maintained
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

*New front panel with DPDT switches.

# 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 that will help insure a successful 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 and handling. Please notify the freight carrier immediately if damage is found.

## Wiring the CNA System

The CNA-200 automation system is a microprocessor based theatre automation. 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-200 is listed below.

Microcomputers by their very nature, are susceptible to noise and power supply fluctuations. While the CNA-200 was designed to function in a noisy environment and survive poor installations, it is to the benefit to the end user that these guidelines be followed.

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

1.  Insure that all requirements of national and local electrical codes are satisfied during installation. Run *clean* power (dedicated to the CNA-200 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 acceptable and preferred and preferred if all automations were run from a single distribution point.

    IMPORTANT NOTE: Do not connect the projector motors, changeovers,

xenon rectifiers or other heavy or 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 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.

## 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.

Transformer
Input Connector

LIN (Local I/O Network)
Power Fuse,
3 amp 3AG Normal Blow
(Littelfuse 312003)

Voltage Selector
Switch

Line Power Fuse,
115V - 1.5 amp 3AG
Normal Blow (Littelfuse 31201.5)
230V - 0.75 amp 3AG
Normal Blow (Littelfuse 312.750)

HOT   GND   NEUT

Automation
Power Output

**Rack Mount Power Supply Configuration**

Line Power Fuse,
115V - 1.5 amp 3AG Normal Blow (Littelfuse 31201.5)
230V - 0.75 amp 3AG Normal Blow (Littelfuse 312.750)

GREEN (GRN/YEL)   BLACK (BRN)

Voltage Selector
Switch

HOT
GND
NEUT

WHITE (BLU)

18 AWG
Hook-up Wire for
Power

22-16 AWG
Spade Terminal
(AMP 327735)

LIN (Local I/O Network) Power Fuse,
3 amp 3AG Normal Blow
(Littelfuse 312003)

**Wall Mount Power Supply Configuration**

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.
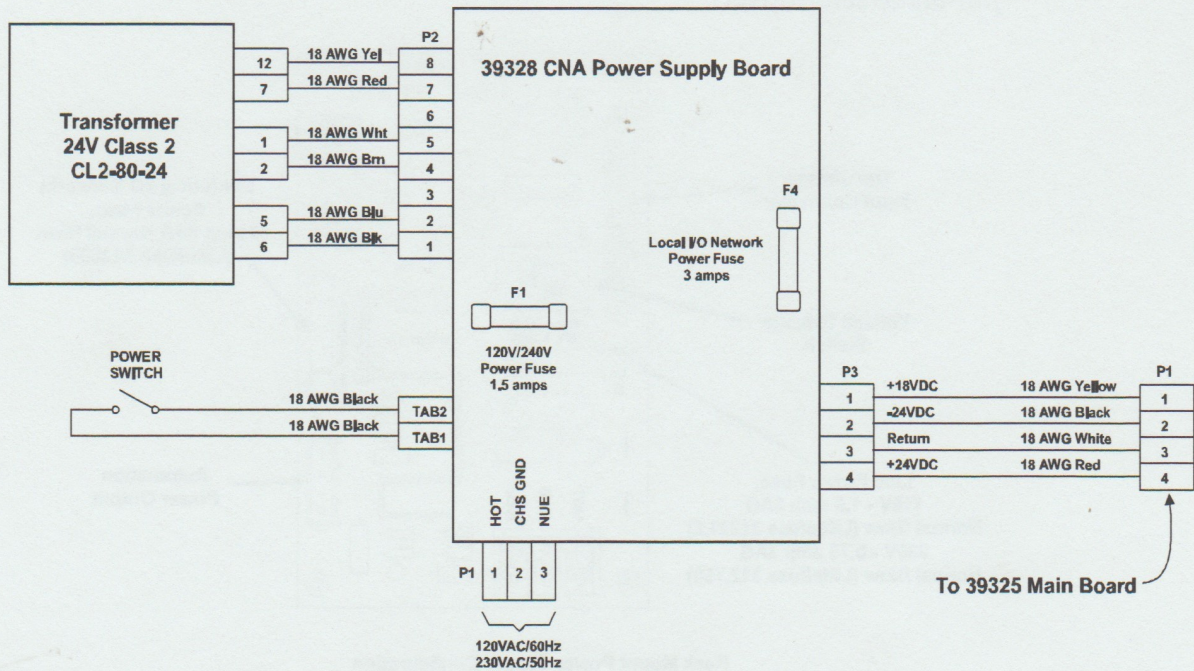


The CNA power supply provides three voltages to the automation via the 39325 Main Board.  The +24 and -24 volts are used for the computer and display.  The +18 volts is used to power the LIN devices.

## 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.
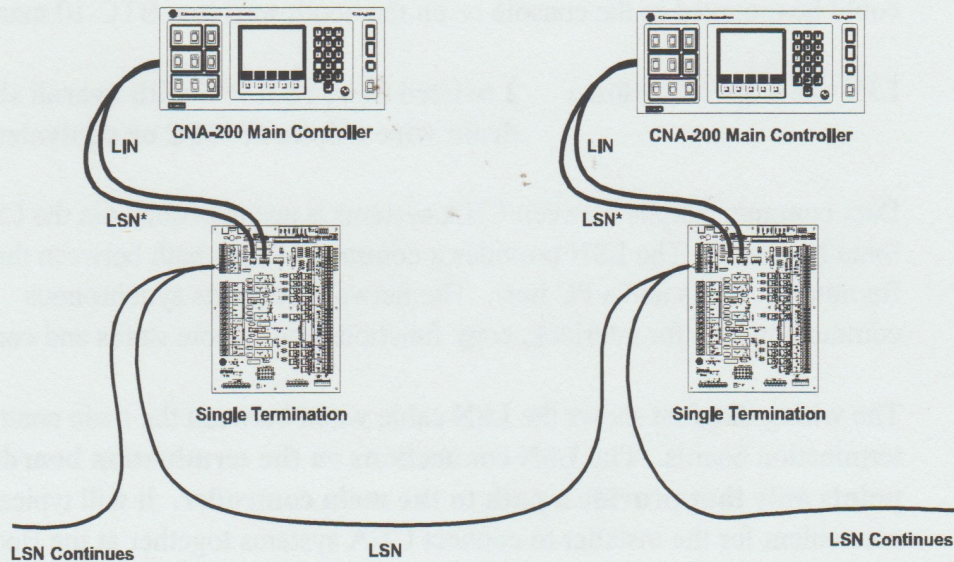


**Wiring to the 39332 Single Termination Panel
and between CNA-200 Automations**



\* Optional wiring method (See text)
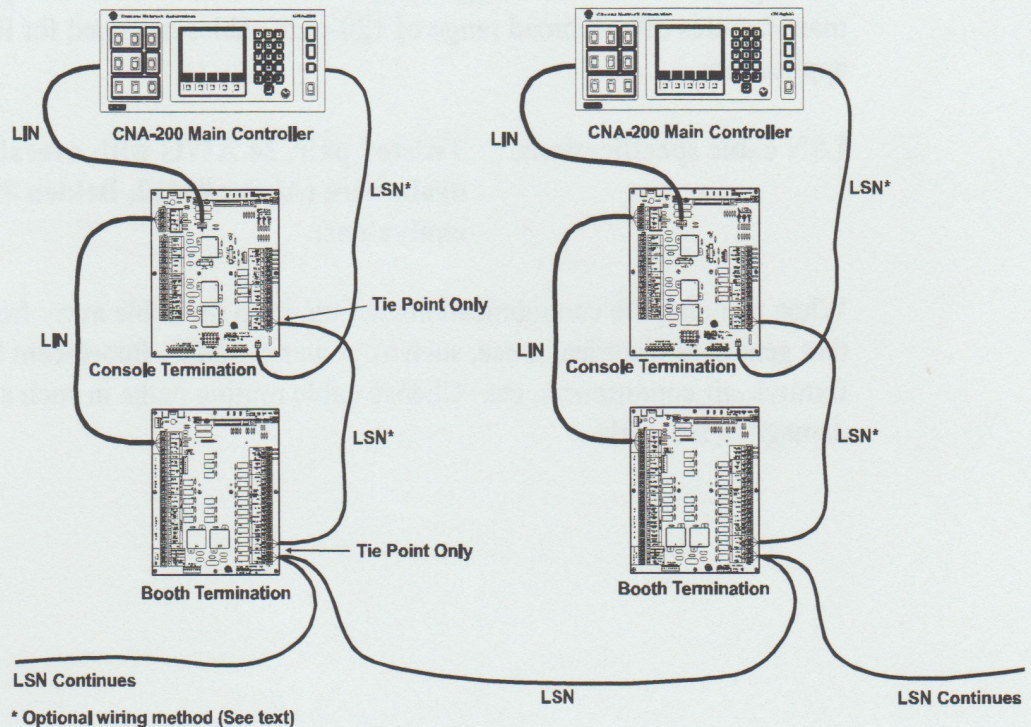
**Wiring to the 39330 Console and 39331 Booth Termination Panels
and between CNA-200 Automations**

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).

**LIN cable specifications:      2 twisted pair, 18 AWG with overall shield and drain wire (Alpha #5132C or equivalent).**

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 manufactures offer a broad range of 120-ohm cables designed for RS-485 applications.

**LSN cable specifications:      Twisted pair, 24 AWG with overall shield and drain wire (Alpha #6412, Belden #9841 or equivalent).**

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 the daisy chain connection topology. The bus must form a continuous path. Devices must not be branched or spoked.

**Correct Wiring Technique**
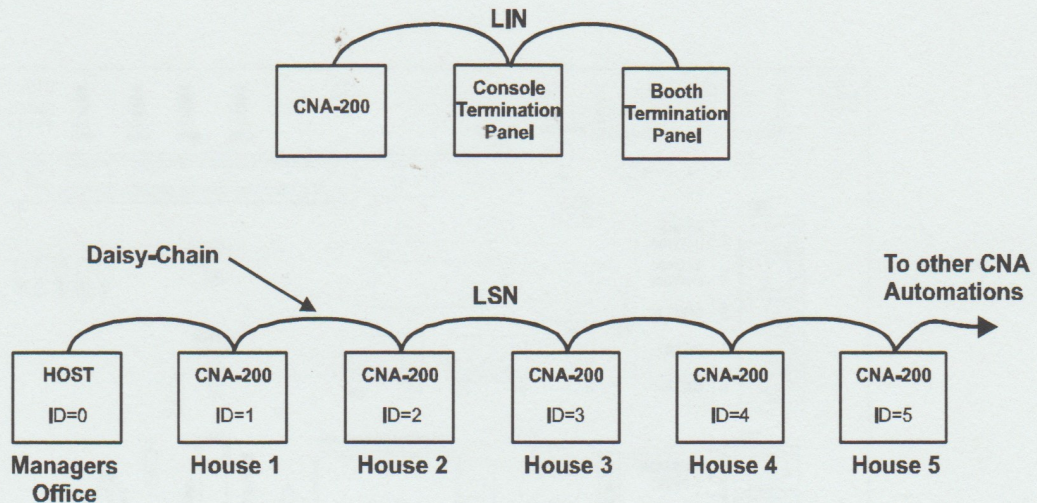


(a) Correct - The optimal configuration for the RS-485 bus is the daisy-chain connection.
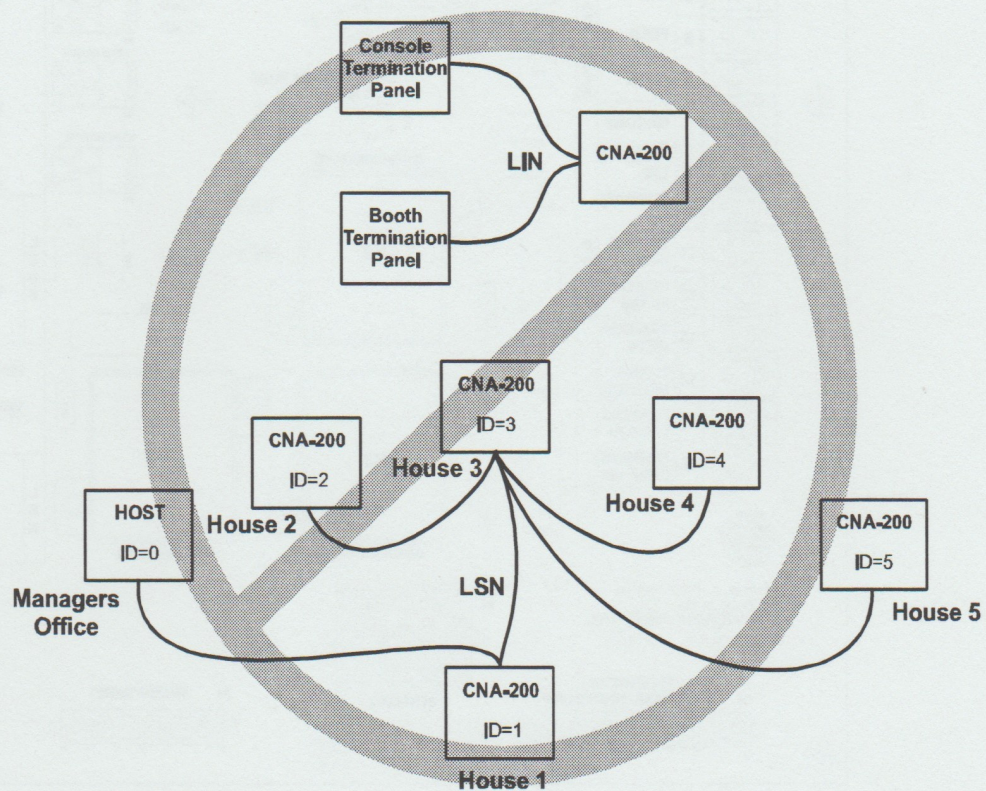


(b) Incorrect - This may create transmission line problems. Must be Daisy-Chained, not branched or home run.

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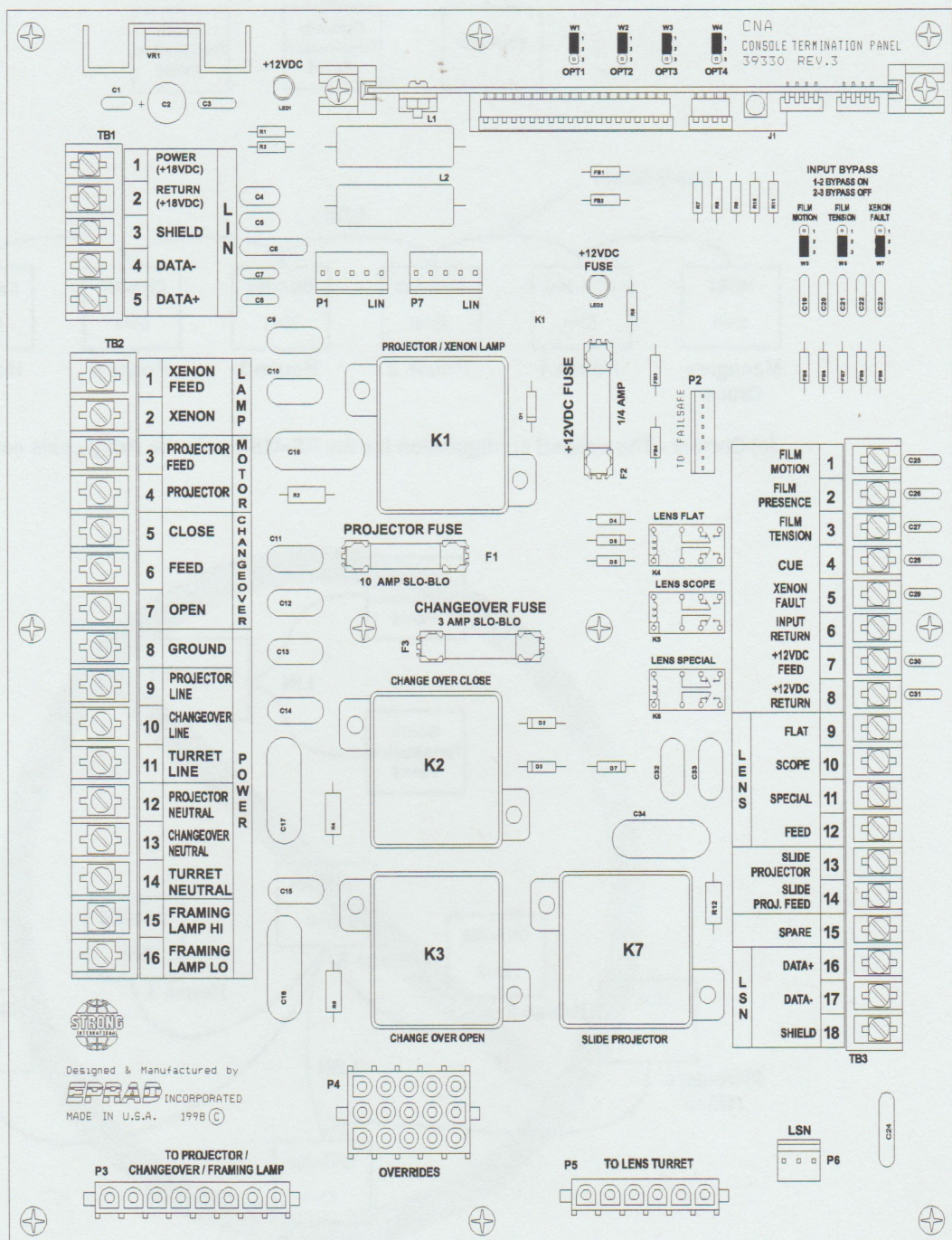
This is a functional block diagram of the 39330 Rev. 3 termination panel. All relevant signal paths are shown. This diagram can be useful for installation and troubleshooting.
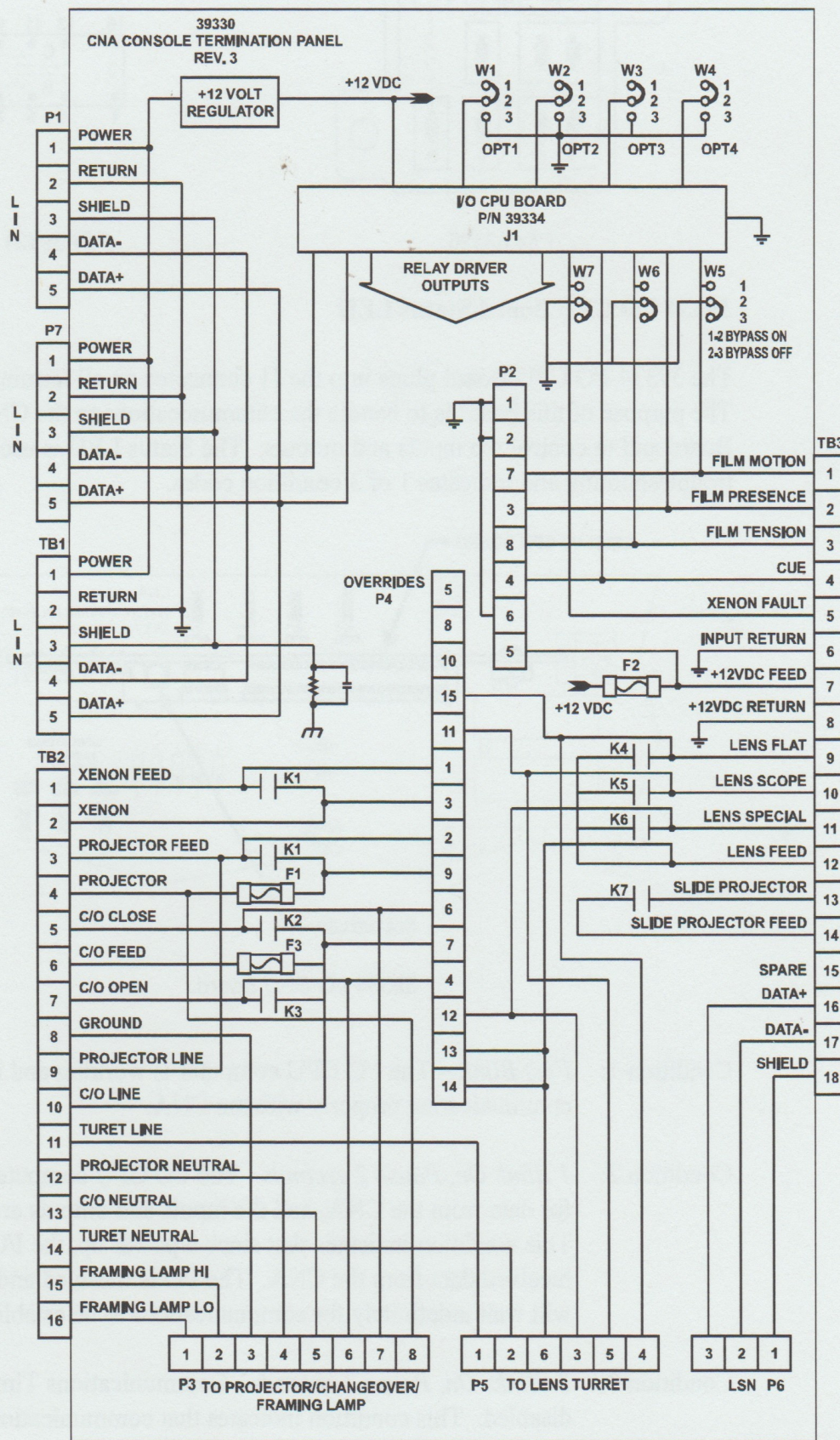
**LARGE RELAY**
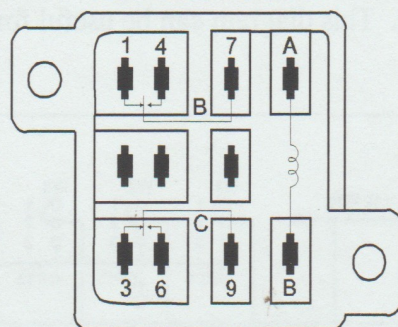


**SMALL RELAY**
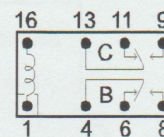


P/N 63426                              P/N 39121

### 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.
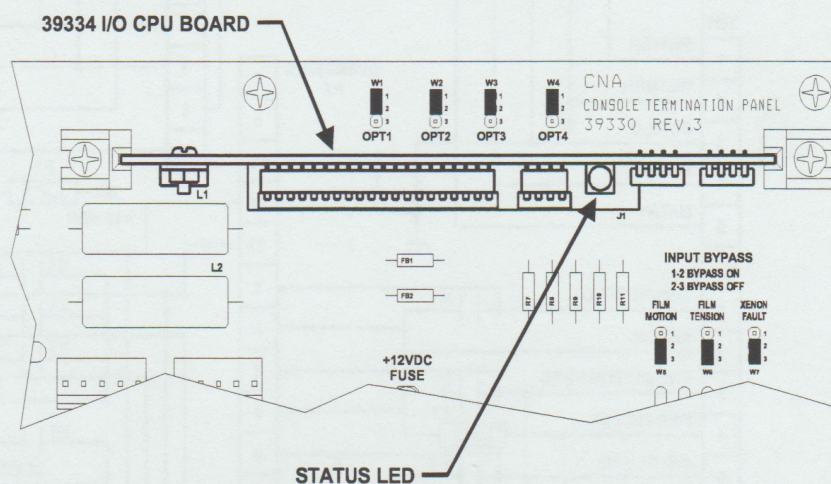


39334 I/O CPU Board.

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.
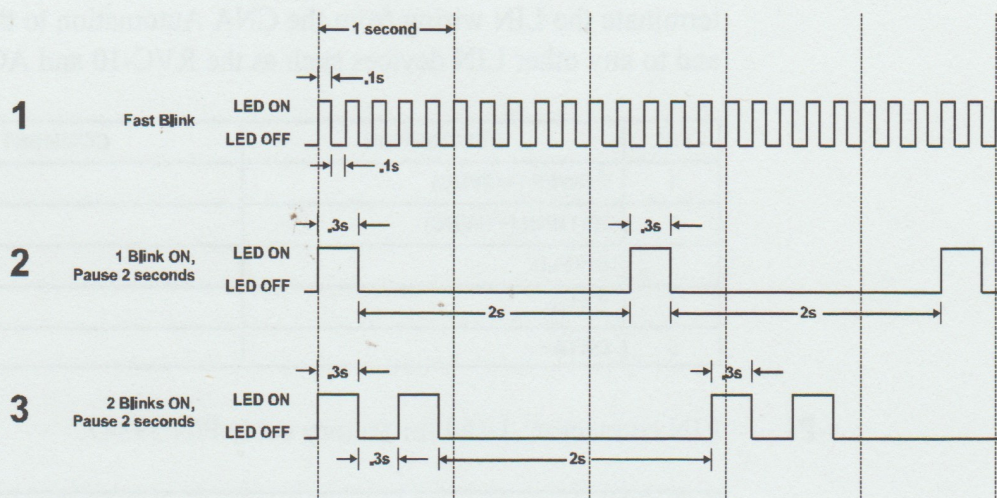


39334 Firmware:

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 microcontroller. The Host software (LIN Status screen) will also report the 39334 version number and checksum.

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**   LIN connector.  Used for factory cable P/N 39347.

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

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

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



LIN CABLE ASSEMBLY
P/N 39347

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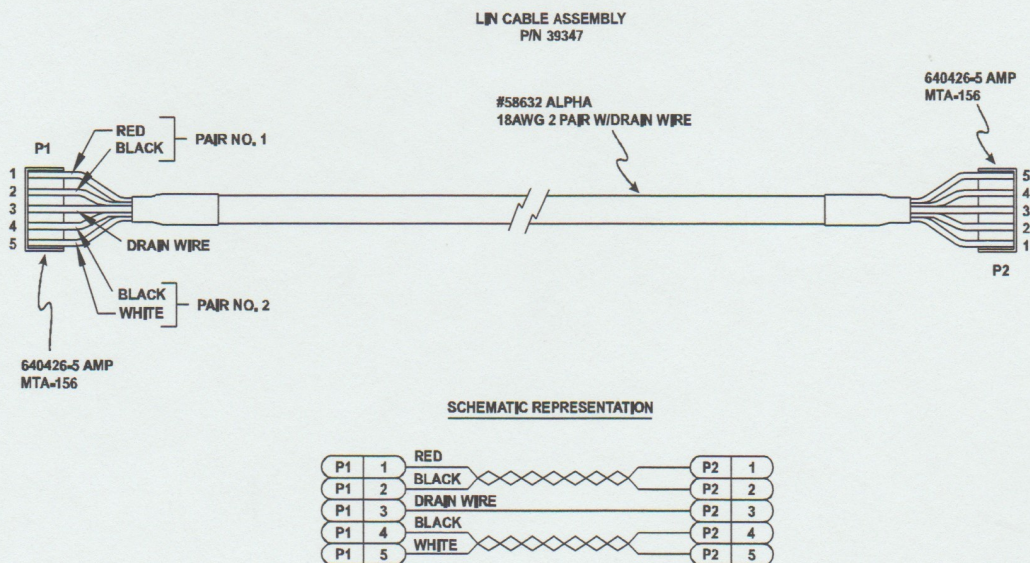
**P2**     Film failsafe and cue detector connector.  Factory cable.

| 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 special and are for factory wiring only.

| 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 | TURET LINE | FACTORY USE ONLY |
| 12 | PROJECTOR NEUTRAL | FACTORY USE ONLY |
| 13 | CHANGEOVER NEUTRAL | FACTORY USE ONLY |
| 14 | TURET 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 impedence 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.*

**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).
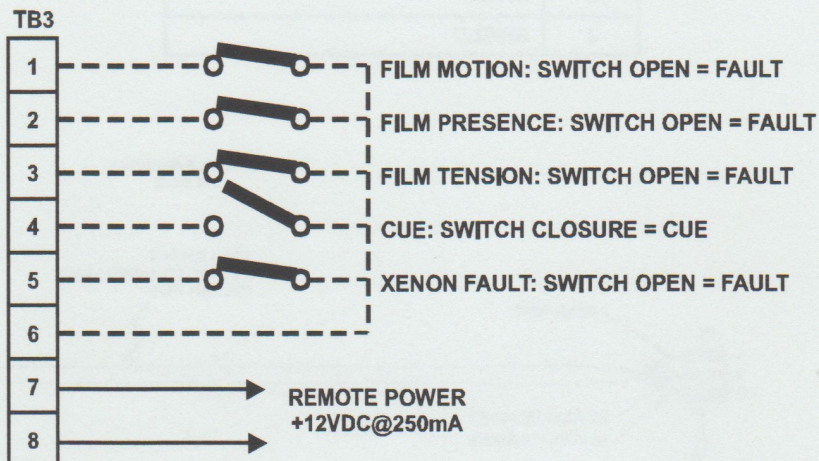


LENS:

| 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 K7B-7 |

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 |

LSN CABLE ASSEMBLY
P/N 39348

#9841 BELDEN
24 GAGE STRANDED 1 PAIR
W/DRAIN WIRE

640429-3 AMP
MTA-156

DRAIN WIRE

P1
1
2
3

WHITE/BLUE STRIPE
BLUE/WHITE STRIPE — TWISTED PAIR

640429-3 AMP
MTA-156

1
2
3
P2

SCHEMATIC REPRESENTATION

| P1 | 3 | BLUE/WHITE STRIPE | P2 | 3 |
| P1 | 2 | WHITE/BLUE STRIPE | P2 | 2 |
| P1 | 1 | DRAIN WIRE | P2 | 1 |
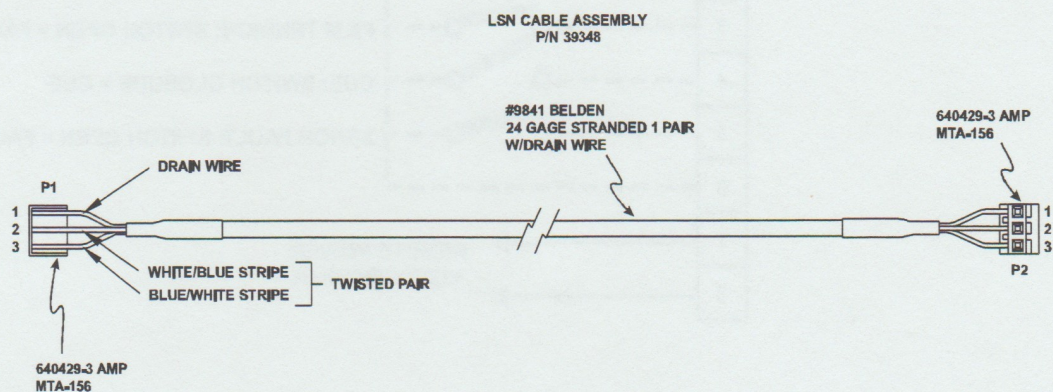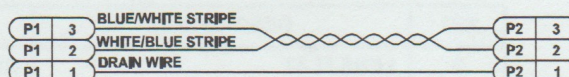
**W1 - W7** are optional and bypass jumpers for the 39330 termination panel.  If necessary, move the jumpers to the appropriate postions.

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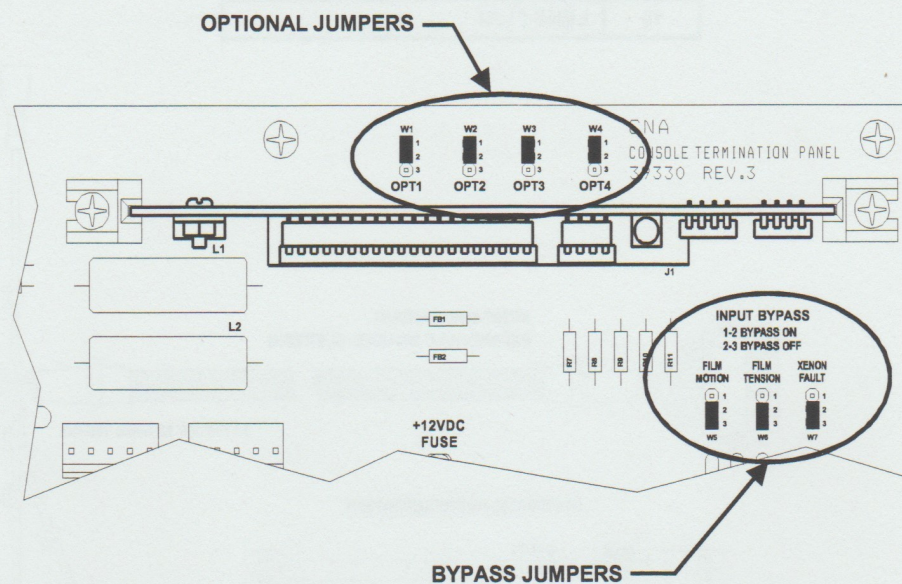
39330 Jumper Settings

**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 |

P4

OVERRIDES

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 |

Console Override Cable assembly.  P/N 39349.

**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 turet.

| P5 | DESCRIPTION |
|----|-------------|
| 1 | TURET LINE |
| 2 | TURET NEUTRAL |
| 3 | SPECIAL |
| 4 | FLAT |
| 5 | SCOPE |
| 6 | LENS FEED |

P5   TO LENS TURRET

## Booth Termination Board

**TB1**

**LIN**

| | | |
|---|---|---|
| 1 | POWER | |
| 2 | RETURN | LIN |
| 3 | SHEILD | |
| 4 | DATA- | |
| 5 | DATA+ | |
| 6 | SPARE | |
| 7 | FLAT | TOP MASK |
| 8 | SCOPE | |
| 9 | SPECIAL | |
| 10 | FEED | |
| 11 | FLAT | SIDE MASK |
| 12 | SCOPE | |
| 13 | SPECIAL | |
| 14 | FEED | |
| 15 | OPEN | CURTAIN |
| 16 | CLOSE | |
| 17 | FEED | |
| 18 | HOUSE MID 1 | |
| 19 | HOUSE MID 2 | |
| 20 | HOUSE UP | LIGHTS |
| 21 | HOUSE DOWN | |
| 22 | HOUSE FEED | |
| 23 | STAGE UP | |
| 24 | STAGE DOWN | |
| 25 | STAGE FEED | |
| 26 | SPARE | |
| 27 | ENVIRONMENT | |
| 28 | ENVIRONMENT FEED | |
| 29 | SLIDE PROJECTOR | |
| 30 | SLIDE PROJ. FEED | |

48 VOLTS MAX

48 VOLTS MAX

120 VOLTS MAX

**P1**

VR1

+12VDC

C1  C2 +

LED1

R1
R2

L1

L2

C3
C4
C7
C5
C6

**DIGITAL POT** P4

AUXILLARY MANUAL CONTROLS P2

K7 TOP MASK FLAT  D7
K8 TOP MASK SCOPE  D8
K9 TOP MASK SPECIAL  D9

K1 CURTAIN CLOSE  D2
K2 CURTAIN OPEN  D3
K3 HOUSE LIGHT MID1  D4
K4 STAGE LIGHT UP  D5
K5 STAGE LIGHT DOWN  D6

K10 HOUSE LIGHT MID2  D10
K11 HOUSE LIGHT UP  D11
K12 HOUSE LIGHT DOWN  D12

D1  D13

K6  ENVIRONMENT  K13  SLIDE PROJECTOR

C8  C11
C9  C12
C10

MANUAL CONTROLS P3

W1 OPT1  W2 OPT2  W3 OPT3

**CNA BOOTH TERMINATION PANEL 39331 REV. 1**

J1

R4 R5 R6 R7 R8  FB1 FB2 R9 R10

C13 C14

FB3 FB4 FB5

MONO D14 K14
SVA D15 K15
SR D16 K16
DIGITAL1 D17 K17
DIGITAL2 D18 K18
AUX1 D19 K19
NONSYNC D20 K20
MUTE D21 K21
AUX2 D22 K22
PREAMP1 D23 K23
PREAMP2 D24 K24

**TB2**

| | | |
|---|---|---|
| REMOTE STOP | 1 | C15 |
| REMOTE START | 2 | C16 |
| INPUT RETURN | 3 | C17 |
| HIGH | 4 | FADER |
| WIPER | 5 | |
| LOW | 6 | |
| MONO | 7 | |
| SVA | 8 | |
| SR | 9 | |
| DIGITAL 1 | 10 | SOUND PROCESSOR |
| DIGITAL 2 | 11 | |
| AUX1 | 12 | |
| NONSYNC | 13 | |
| MUTE | 14 | |
| AUX2 | 15 | |
| PREAMP 1 | 16 | |
| PREAMP 2 | 17 | |
| SOUND FEED | 18 | |
| MUTE FEED | 19 | |
| PREAMP FEED | 20 | |
| DATA+ | 21 | LSN |
| DATA- | 22 | |
| SHIELD | 23 | |
| DATA+ | 24 | |
| DATA- | 25 | |
| SHIELD | 26 | |

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STRONG INTERNATIONAL

**39331 Rev. 1 Booth Termination Panel**

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

**39331**
**CNA BOOTH TERMINATION PANEL**
**REV. 1**

+12 VOLT REGULATOR → +12 VDC

W1 1 2 3 OPT1   W2 1 2 3 OPT2   W3 1 2 3 OPT3

**I/O CPU BOARD**
**P/N 39334**
**J1**

RELAY DRIVER OUTPUTS

SERIAL INTERFACE

DIGITAL POT CONN. P4

**P1**

L I N

| 5 |
| 4 |
| 3 |
| 2 |
| 1 |

**TB1**

| 1 | POWER |
| 2 | RETURN |
| 3 | SHIELD |
| 4 | DATA- |
| 5 | DATA+ |
| 6 | SPARE |
| 7 | TOP MASK FLAT | K7 |
| 8 | TOP MASK SCOPE | K8 |
| 9 | TOP MASK SPECIAL | K9 |
| 10 | TOP MASK FEED |
| 11 | SIDE MASK FLAT | K7 |
| 12 | SIDE MASK SCOPE | K8 |
| 13 | SIDE MASK SPECIAL | K9 |
| 14 | SIDE MASK FEED |
| 15 | CURTAIN OPEN | K2 |
| 16 | CURTAIN CLOSE | K1 |
| 17 | CURTAIN FEED |
| 18 | HOUSE LIGHTS MID 1 | K3 |
| 19 | HOUSE LIGHTS MID 2 | K10 |
| 20 | HOUSE LIGHTS UP | K11 |
| 21 | HOUSE LIGHTS DOWN | K12 |
| 22 | HOUSE LIGHTS FEED |
| 23 | STAGE LIGHTS UP | K4 |
| 24 | STAGE LIGHTS DOWN | K5 |
| 25 | STAGE LIGHTS FEED |
| 26 | SPARE |
| 27 | ENVIRONMENT | K6 |
| 28 | ENVIRONMENT FEED |
| 29 | SLIDE PROJECTOR | K13 |
| 30 | SLIDE PROJECTOR FEED |

AUXILIARY MANUAL CONTROLS **P2**

| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |
| 7 |
| 8 |

MANUAL CONTROLS **P3**

| 1 |
| 3 |
| 2 |
| 4 |
| 5 |
| 6 |
| 7 |
| 9 |
| 8 |

**TB2**

| 1 | REMOTE STOP |
| 2 | REMOTE START |
| 3 | INPUT RETURN |
| 4 | HIGH |
| 5 | WIPER |
| 6 | LOW |
| 7 | MONO | K14 |
| 8 | SVA | K15 |
| 9 | SR | K16 |
| 10 | DIGITAL 1 | K17 |
| 11 | DIGITAL 2 | K18 |
| 12 | AUX 1 | K19 |
| 13 | NONSYNC | K20 |
| 14 | MUTE | K21 |
| 15 | AUX 2 | K22 |
| 16 | PREAMP 1 | K23 |
| 17 | PREAMP 2 | K24 |
| 18 | SOUND FEED |
| 19 | MUTE FEED |
| 20 | PREAMP FEED |
| 21 | DATA+ |
| 22 | DATA- |
| 23 | SHIELD |
| 24 | DATA+ |
| 25 | DATA- |
| 26 | SHIELD |

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 MAIN BOARD) |
| FIRE STOP | S2-4 = ON  (ON 39325 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 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: 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 off (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.**
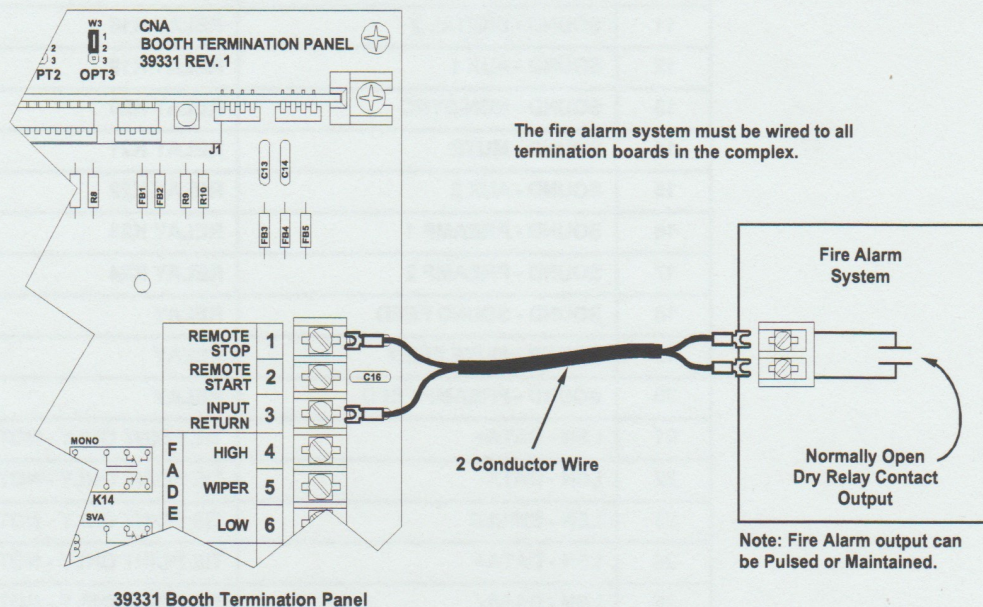


39331 Fire Stop Wiring

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

**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 MAIN BOARD) |
| FIRE STOP | S2-4 = ON (ON 39325 MAIN BOARD) |

REMOTE STOP

TB2

REMOTE START

1

2

3

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 convenient tie point only. 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

**MANUAL CONTROLS** P3

9 8 7 6 5 4 3 2 1

P/N 39444

T1-BLACK
T2-BROWN
T3-RED

SE38P-MR0 PANDUIT
EXPANDABLE BRAIDED SLEEVING

ALL WIRE IS 18 AWG UL1007

T7-VIOLET
T8-GRAY
T9-WHITE

T4-ORANGE
T5-YELLOW
T6-BLUE

P1
1
2
3
4
5
6
7
8
9

**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.

T1-BLACK

T2-BROWN

T3-RED

SE38P-MR0 PANDUIT
EXPANDABLE BRAIDED SLEEVING

ALL WIRE IS 18 AWG UL1007

P1
1
2
3
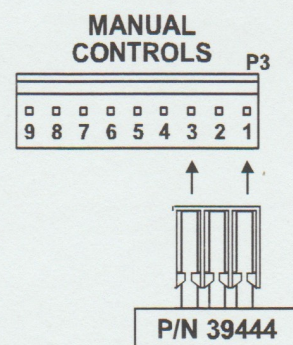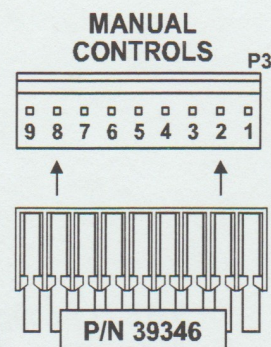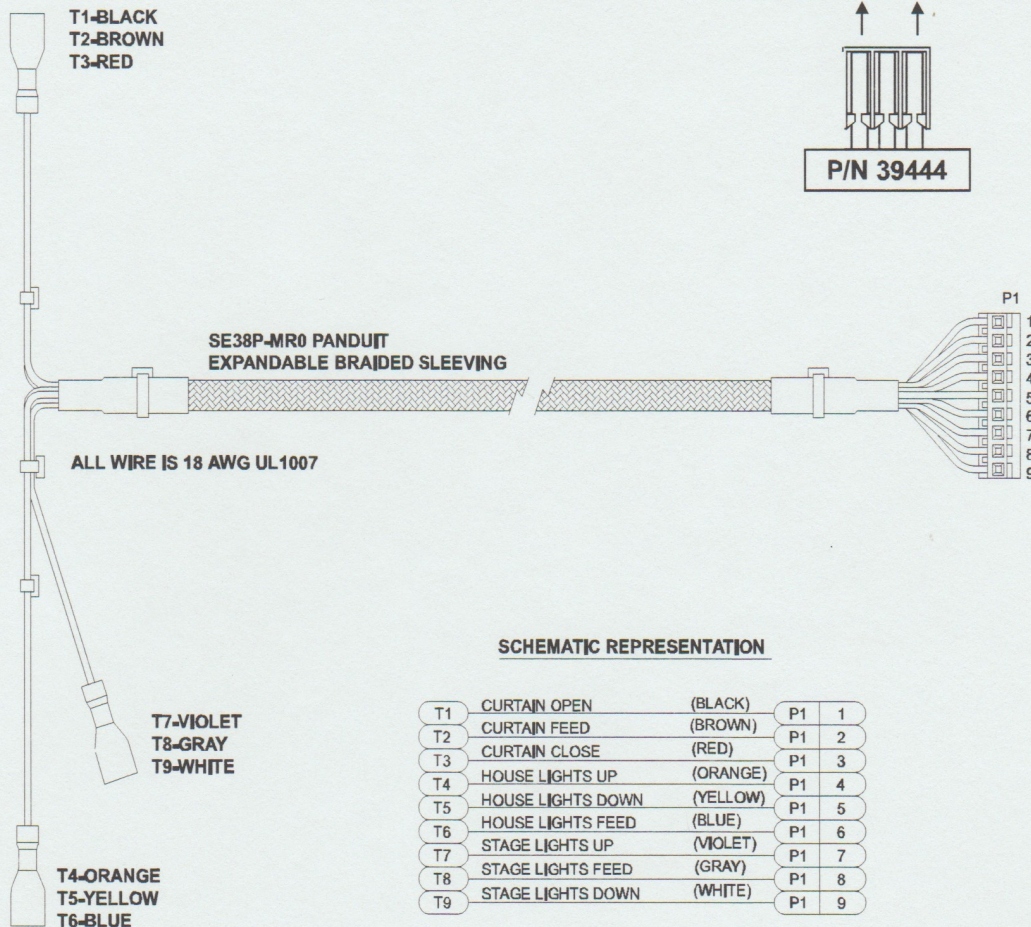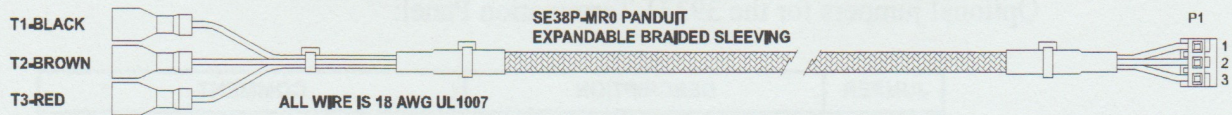
### SCHEMATIC REPRESENTATION

| 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

**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**
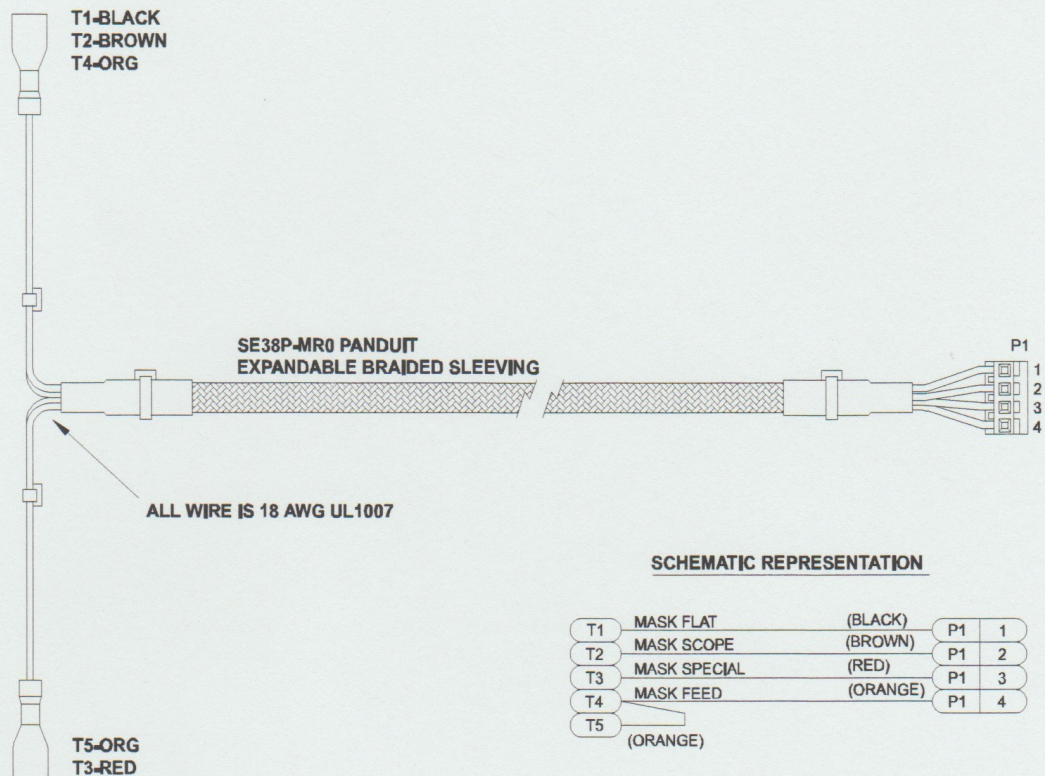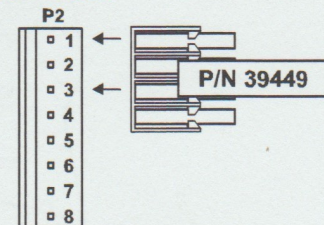
P2
1
2
3
4
5
6
7
8

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

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.

Optional jumpers for the 39331 Termination Panel:

| JUMPER | DESCRIPTION | COMMENT |
|--------|-------------|---------|
| W1 | OPT 1 | 1-2 UNDEFINED<br>2-3 UNDEFINED |
| W2 | OPT 2 | 1-2 UNDEFINED<br>2-3 UNDEFINED |
| W3 | OPT 3 | 1-2 UNDEFINED<br>2-3 UNDEFINED |
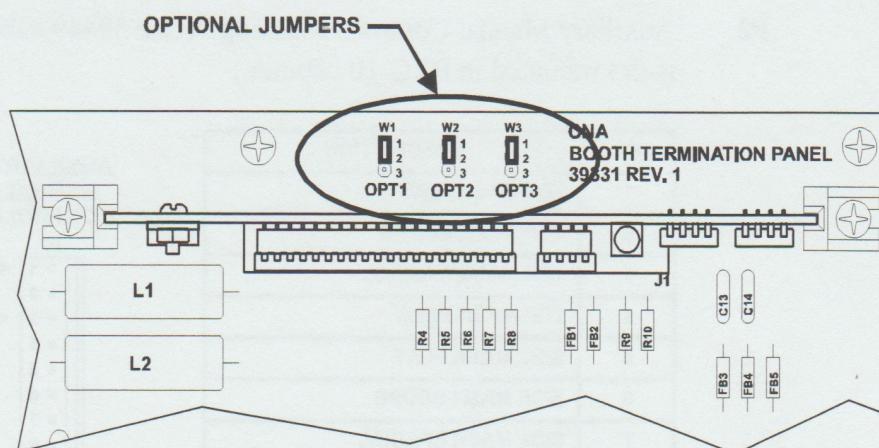
## Single Termination Board

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.
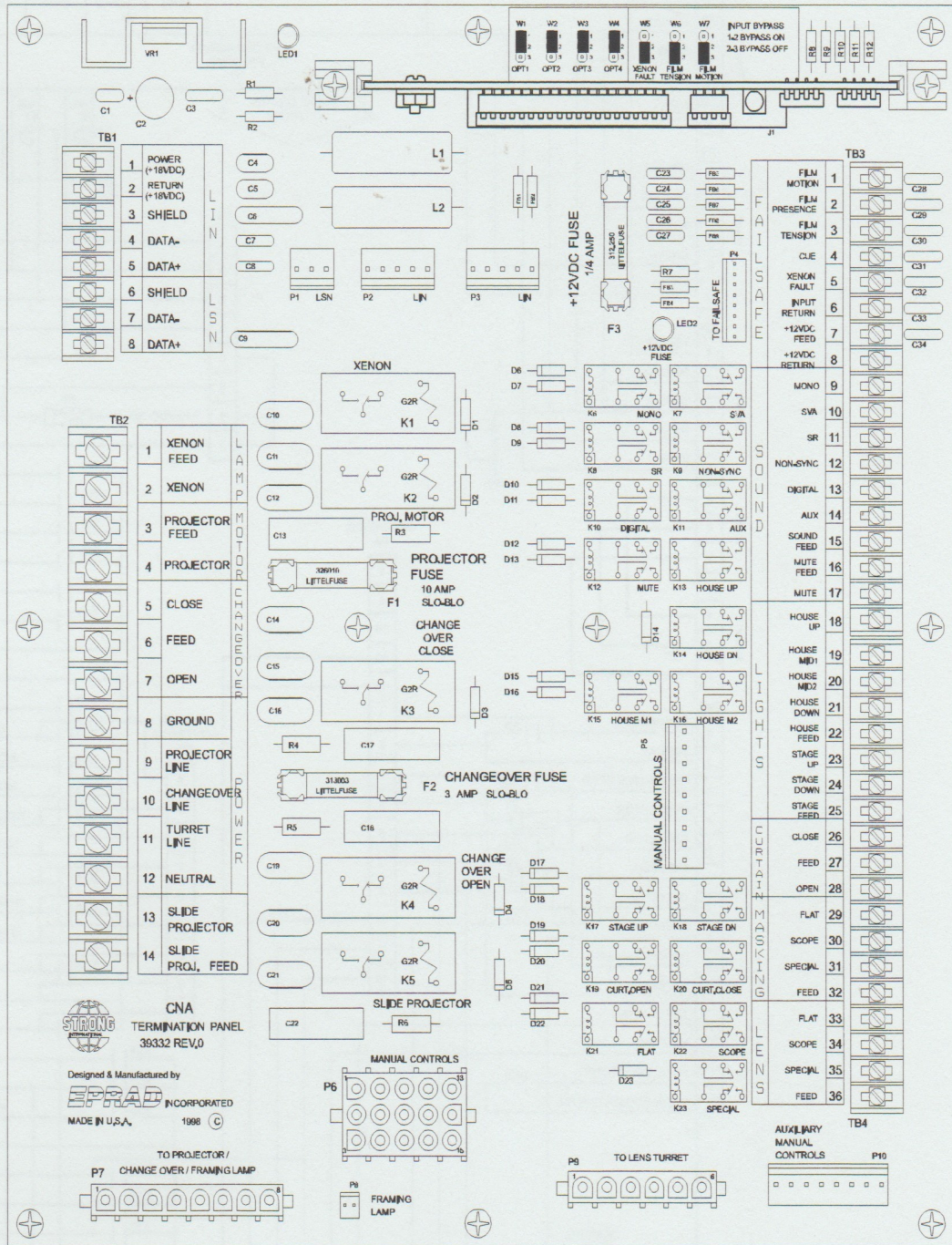
This is a functional block diagram of the 39332 termination panel.  All relevant signal paths are shown.
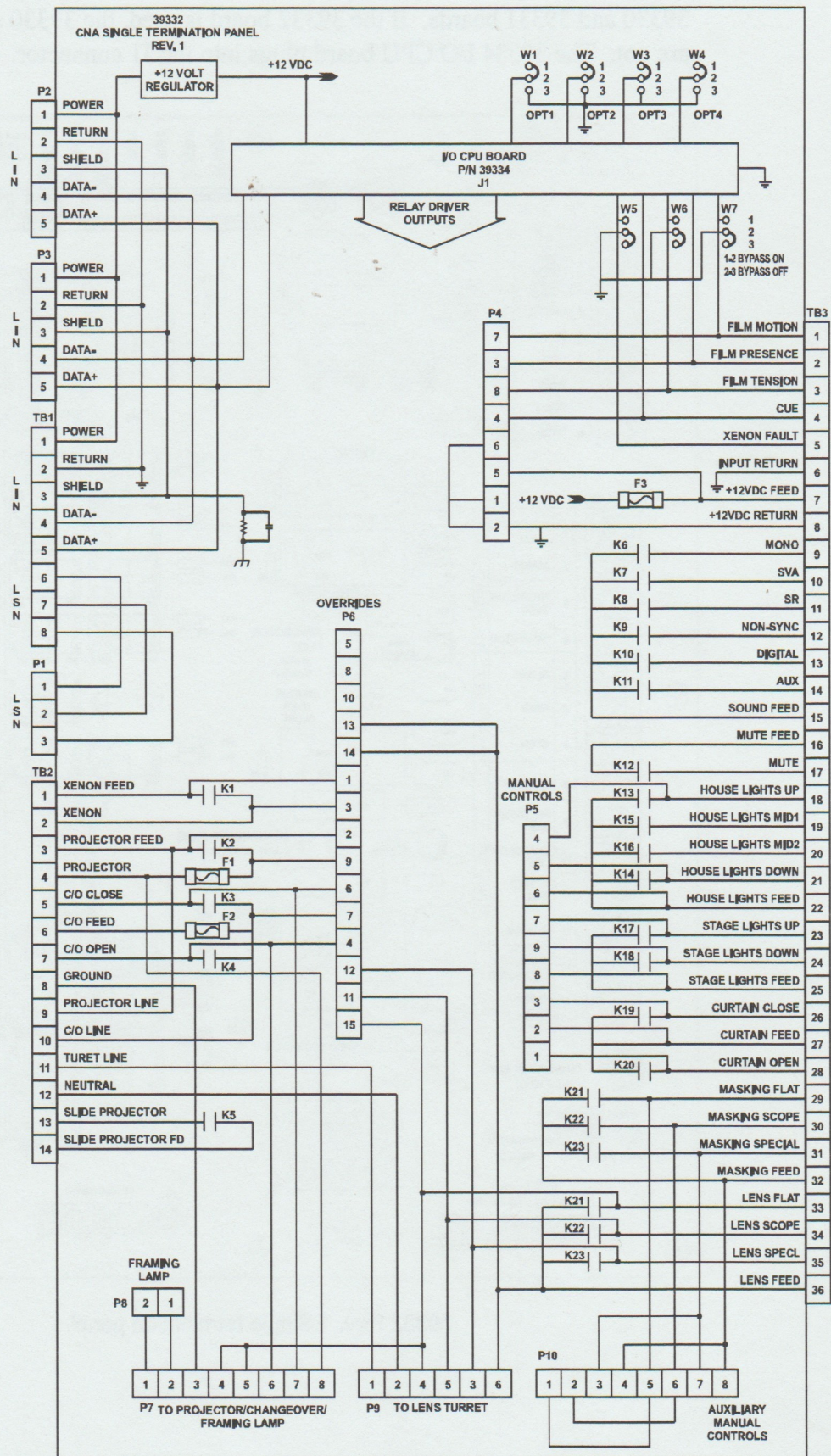
**LARGE RELAY**                    **SMALL RELAY**
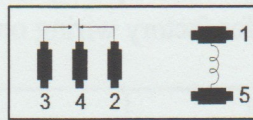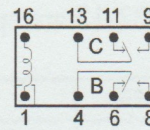
P/N 64055                          P/N 39121

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 | TURET 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 impedence of the load is not sufficiently smaller than the impedence 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.*

**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 | |
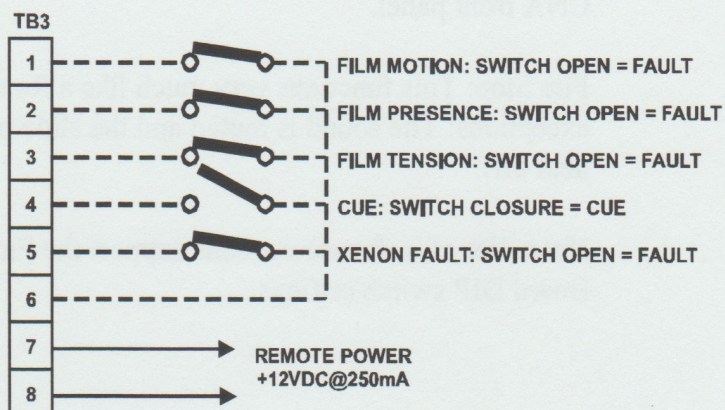
## FIRE STOP OPTION

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)<br>S2-4 = OFF  (ON 39325 MAIN BOARD) |
| REMOTE STOP | W1: 2-3  (ON 39332 TERMINATION BOARD)<br>S2-4 = OFF  (ON 39325 MAIN BOARD) |
| FIRE STOP | W1: 2-3  (ON 39332 TERMINATION BOARD)<br>S2-4 = ON  (ON 39325 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: 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.

INPUT BYPASS
1-2 BYPASS ON
2-3 BYPASS OFF

The fire alarm system must be wired to all termination boards in the complex.

Fire Alarm System

TB3

| FAILSAFE | | |
| FILM MOTION | 1 | C28 |
| FILM PRESENCE | 2 | C29 |
| FILM TENSION | 3 | C30 |
| CUE | 4 | C31 |
| XENON FAULT | 5 | C32 |
| INPUT RETURN | 6 | C33 |
| +12VDC FEED | 7 | C34 |
| +12VDC RETURN | 8 | |
| MONO | 9 | |

2 Conductor Wire

Normally Open
Dry Relay Contact
Output

Note: Fire Alarm output can be Pulsed or Maintained.

**39332 Termination Board**
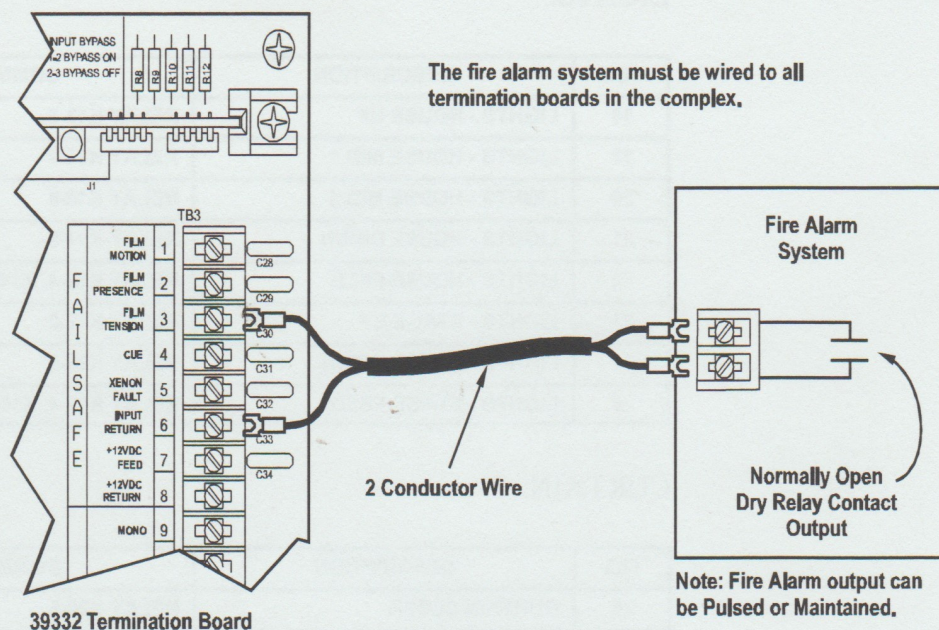
Fire Stop Input Wiring

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 postions.

| JUMPER | DESCRIPTION | COMMENT |
|--------|-------------|---------|
| W1 | OPT 1 | ☐ 1-2 TB3-3 IS A FILM TENSION INPUT<br>☐ 2-3 TB3-3 IS A REMOTE STOP INPUT |
| W2 | OPT 2 | ☐ 1-2 UNDEFINED<br>☐ 2-3 UNDEFINED |
| W3 | OPT 3 | ☐ 1-2 UNDEFINED<br>☐ 2-3 UNDEFINED |
| W4 | OPT 4 | ☐ 1-2 UNDEFINED<br>☐ 2-3 UNDEFINED |
| W5 | XENON FAULT | ☐ 1-2 BYPASS ON (NOT USING INPUT)<br>☐ 2-3 BYPASS OFF |
| W6 | FILM TENSION | ☐ 1-2 BYPASS ON (NOT USING INPUT)<br>☐ 2-3 BYPASS OFF |
| W7 | FILM MOTION | ☐ 1-2 BYPASS ON (NOT USING INPUT)<br>☐ 2-3 BYPASS OFF |
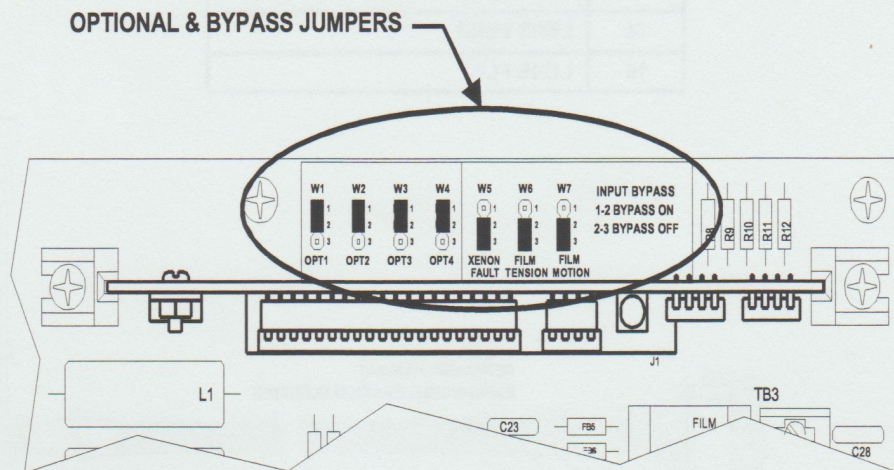


39332 Jumper Settings

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

```
1  4  7  10 13
2  5  8  11 14
3  6  9  12 15
```

SE38P-MR0 PANDUIT
EXPANDABLE BRAIDED SLEEVING

T2-BLACK
T7-BLACK

T8-RED
T11-VIOLET
T12-GRAY

12 WIRES 18 AWG 1007UL

T1-BLUE
T3-BLUE

T9-BROWN
T10-VIOLET

T4-ORANGE
T5-YELLOW
T6-WHITE

**SCHEMATIC REPRESENTATION**

| P1 | | | | |
|----|---|--------|-------------------|-----|
| 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 |
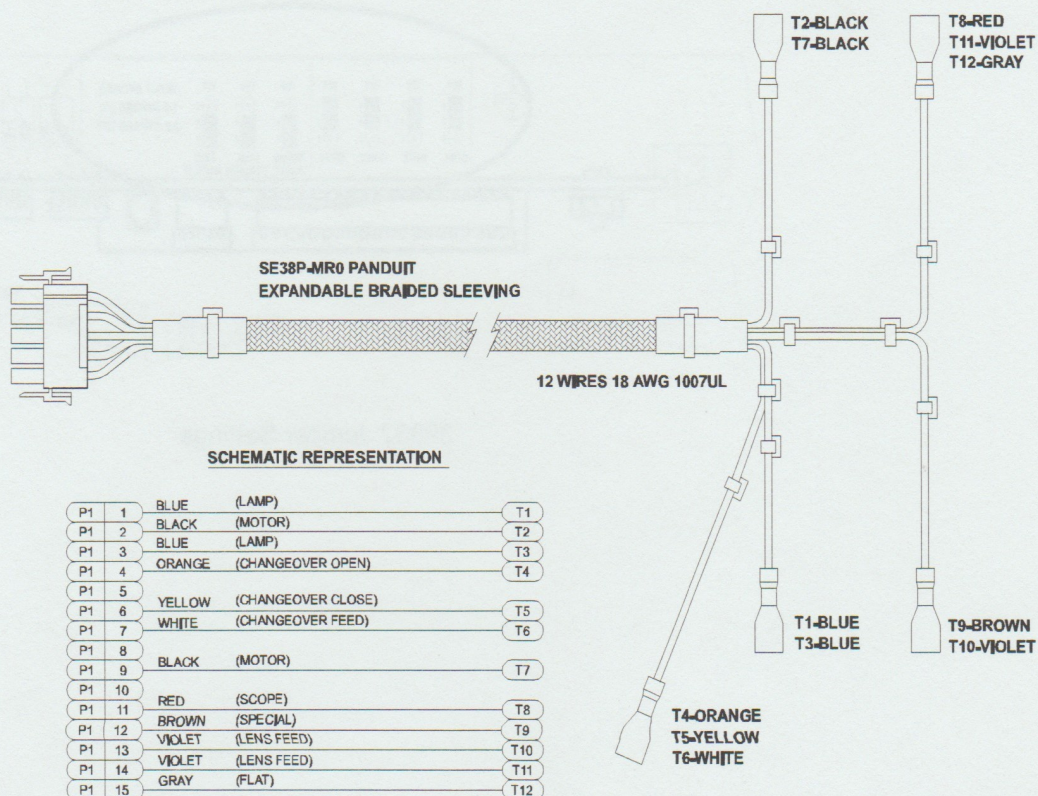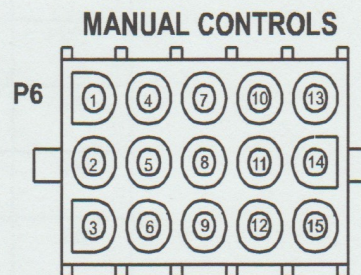
Override Cable assembly. P/N 39349.

**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 |

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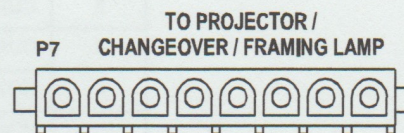
**P9**    To lens turet.

| P9 | DESCRIPTION |
|----|-------------|
| 1 | TURET LINE |
| 2 | TURET NEUTRAL |
| 3 | SPECIAL |
| 4 | FLAT |
| 5 | SCOPE |
| 6 | LENS FEED |

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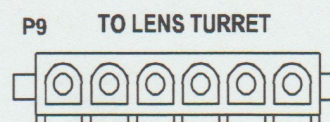
**P5**   Manual Controls: Curtain and Lights.  (Use 39346 or 39444 cable assembly.)

| 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

P/N 39346

P5 MANUAL CONTROLS

P/N 39444

T1-BLACK
T2-BROWN
T3-RED

SE38P-MR0 PANDUIT
EXPANDABLE BRAIDED SLEEVING

ALL WIRE IS 18 AWG UL1007

T7-VIOLET
T8-GRAY
T9-WHITE

T4-ORANGE
T5-YELLOW
T6-BLUE

P1

**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.

T1-BLACK
T2-BROWN
T3-RED

SE38P-MR0 PANDUIT
EXPANDABLE BRAIDED SLEEVING

P1
1
2
3

ALL WIRE IS 18 AWG UL1007
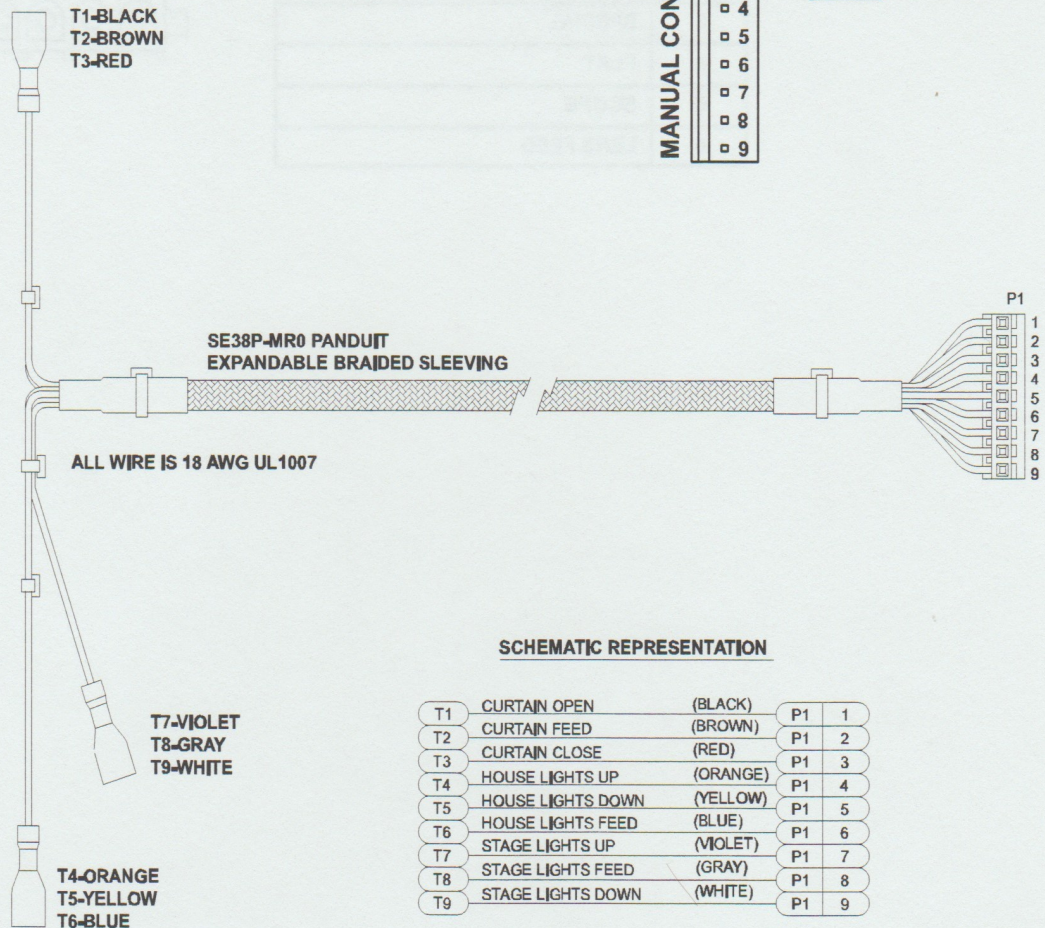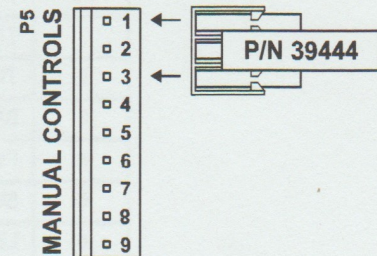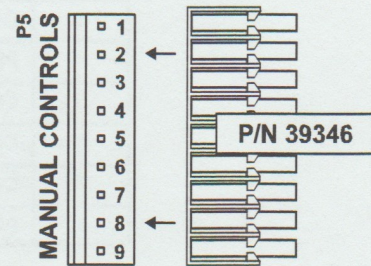
**SCHEMATIC REPRESENTATION**

| 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

**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
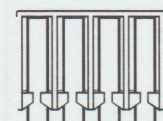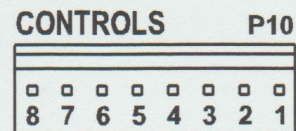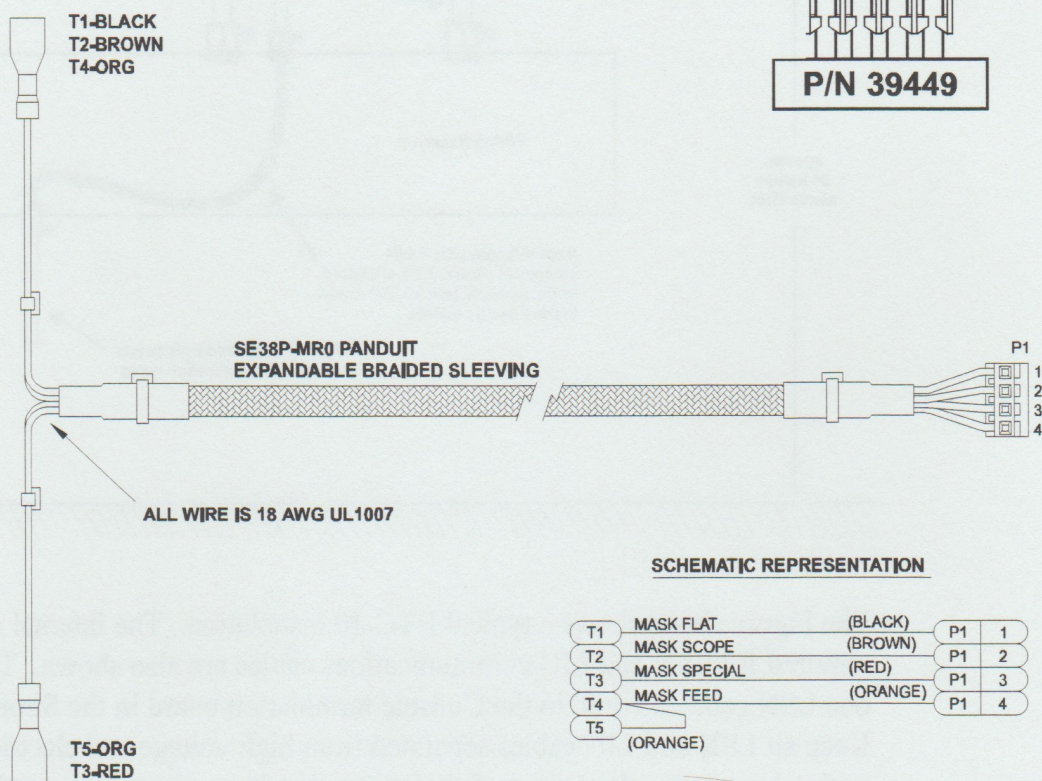
8 7 6 5 4 3 2 1

**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

**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.

## 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.
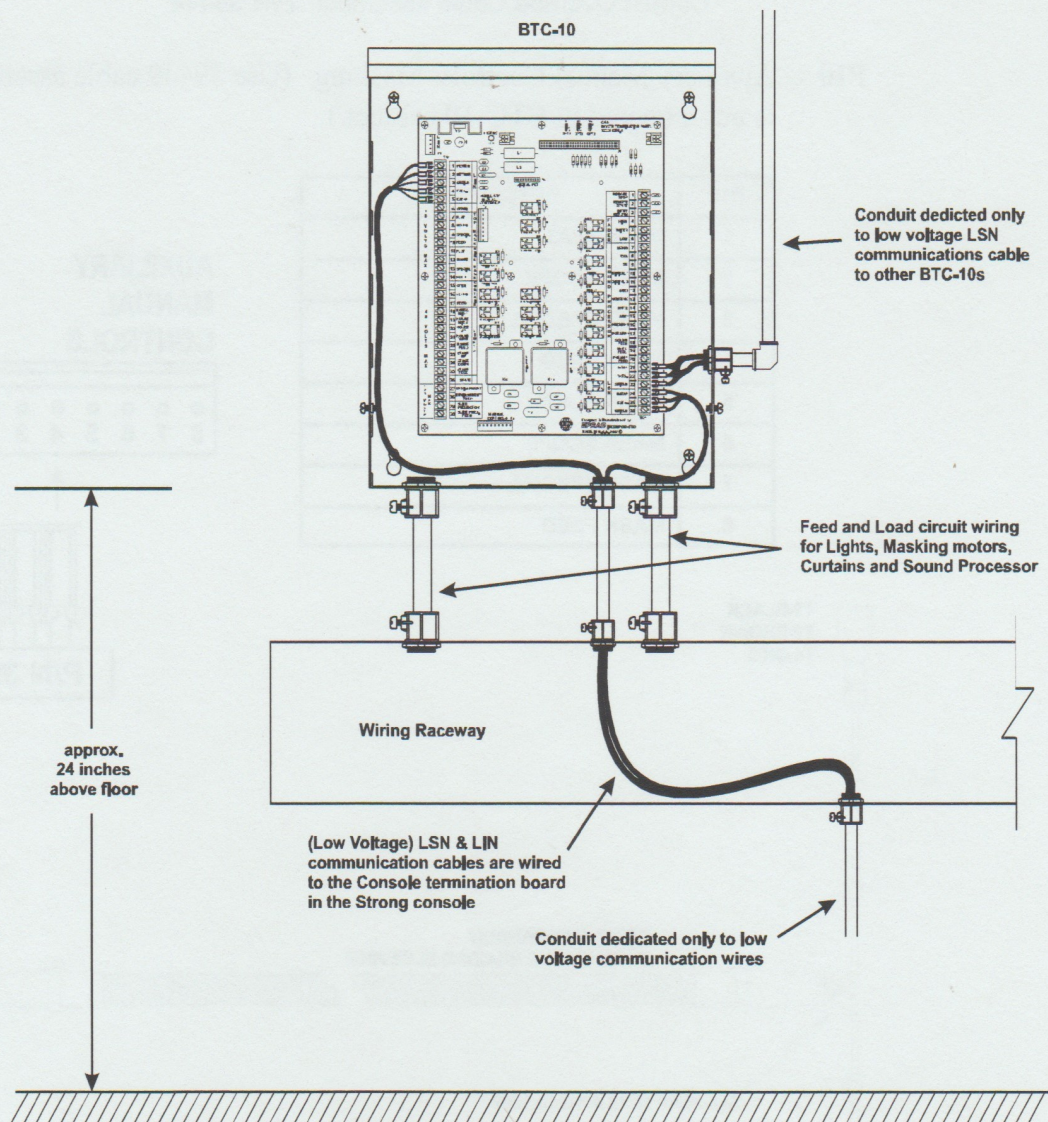


The Figure above shows a typical BTC-10 installation. The internal connections required for LSN and LIN communications cables are also shown. The LIN and one LSN cable is wired to the Console termination board in the Strong Console. Keep all LSN and LIN cables separated from high voltage and electrically 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 centerlines 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.



39331 Booth Termination Board

LSN Cable
1 pair, 24 – 22 AWG
w/overall shield
and drain wire
(BELDEN 9841
or equivalent)

LIN Cable
2 pair, 18 AWG w/overall
shield and drain wire
(ALPHA 5132C
or equivalent)
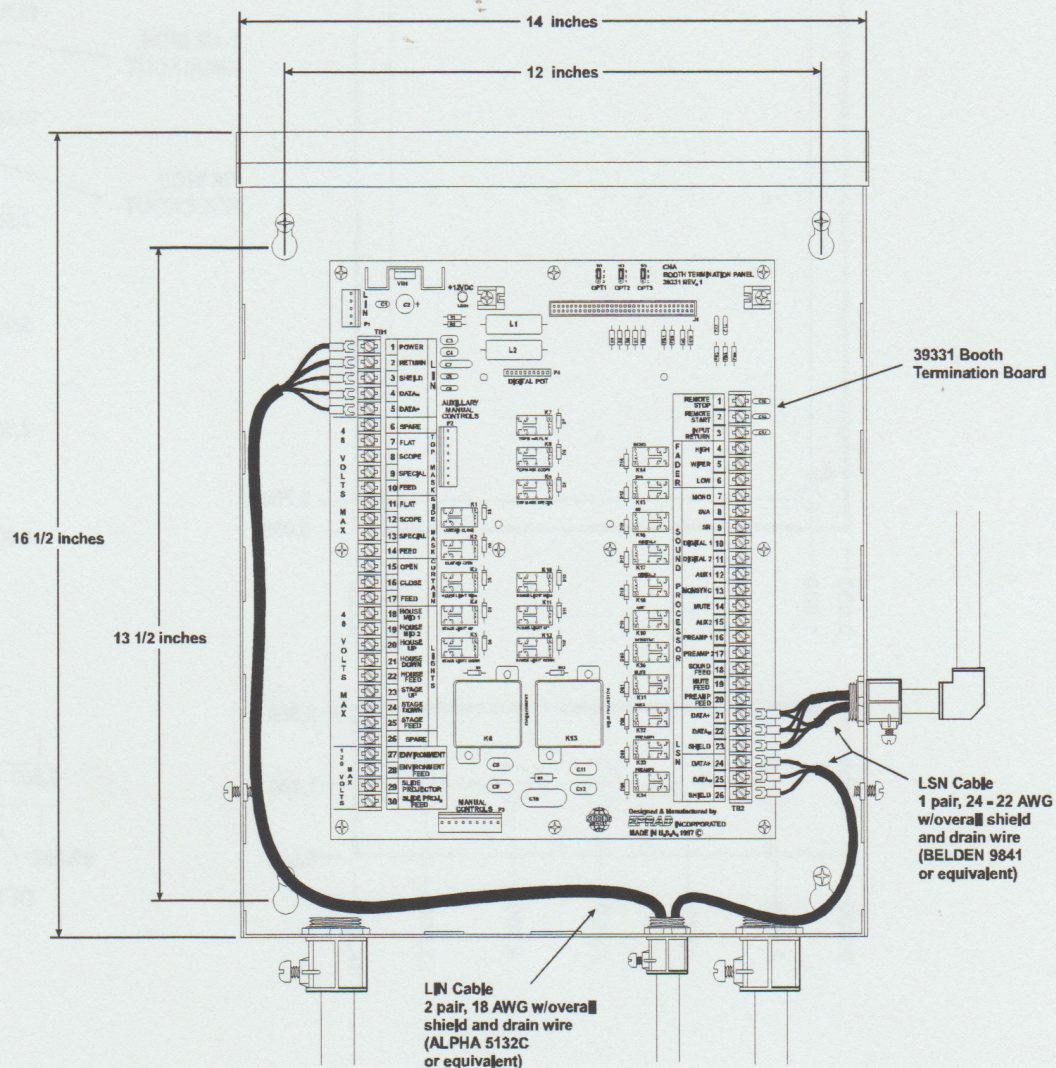
7/8 inch and 1-1/8 inch knockouts are provided on the bottom and both sides of the cabinet. Prepare the cabinet for wiring by removing the desired knockouts.

**BTC-10 CABINET DIMENSIONS**



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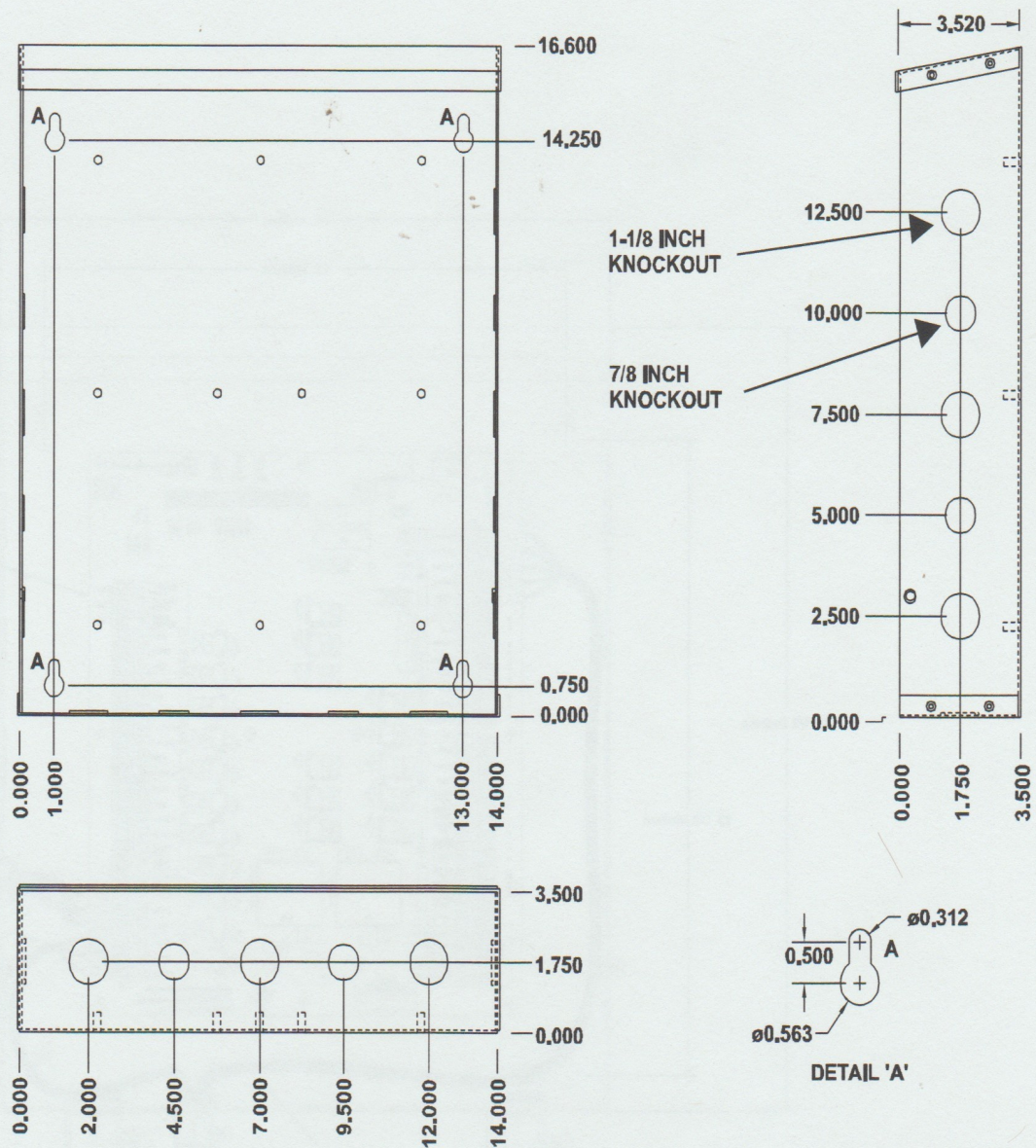
The BTC-10 provides (optional) override switches for masking, curtains and auditorium lights. Two auxiliary switches can be installed and their function can be determined by the installer. The auxiliary switches can be either momentary or maintained contact. The momentary switches are rated for 6 amps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



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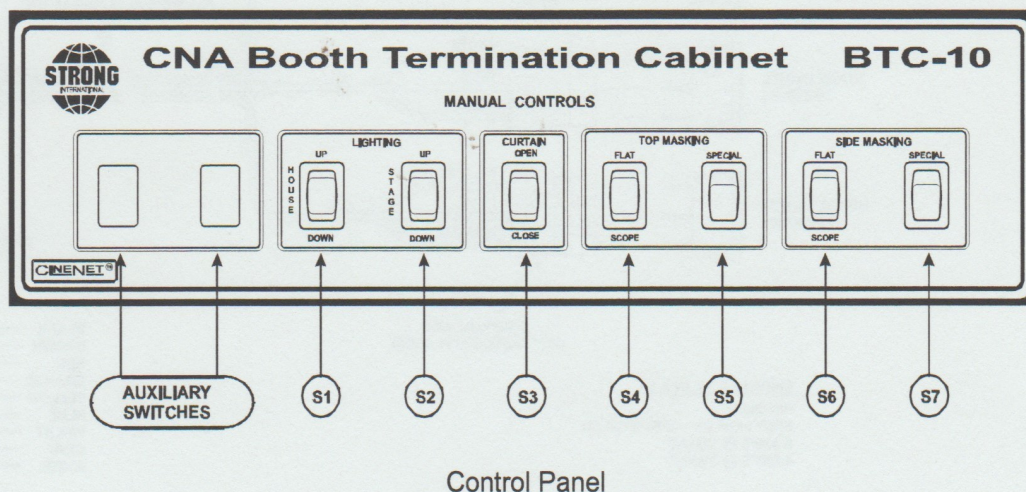
S1 - House Lights UP/DOWN
S2 - Stage Lights UP/DOWN
S3 - Curtains OPEN/CLOSE
S4 - Top Masking FLAT/SCOPE
S5 - Top Masking SPECIAL
S6 - Side Masking FLAT/SCOPE
S7 - Side Masking SPECIAL

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.

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

**BTC-10 MANUAL OVERRIDE CABLE ASSEMBLY**
**P/N 39344**

CURTAIN OPEN/CLOSE — S3 — RED / BROWN / BLACK

STAGE LIGHTS UP/DOWN — S2 — WHITE / GRAY / VIOLET

HOUSE LIGHTS UP/DOWN — S1 — YELLOW / BLUE / ORANGE

ALL WIRE IS 18 AWG UL1007

| | |
|1|BLACK|
|2|BROWN|
|3|RED|
|4|ORANGE|
|5|YELLOW|
|6|BLUE|
|7|VIOLET|
|8|GRAY|
|9|WHITE|

640426-9 AMP
MTA-156

2-520194-2 AMP
.187" FASTON (9 PLACES)

**SWITCHES S1, S2 & S3**
P/N 39337
SPDT MOM ON - OFF - MOM ON
6 AMPS @ 125VAC
4 AMPS @ 250VAC

| | |
|---|---|
|BLACK|— CURTAIN OPEN|
|BROWN|— CURTAIN FEED|
|RED|— CURTAIN CLOSE|
|ORANGE|— HOUSE LIGHTS UP|
|YELLOW|— HOUSE LIGHTS DOWN|
|BLUE|— HOUSE LIGHTS FEED|
|VIOLET|— STAGE LIGHTS UP|
|GRAY|— STAGE LIGHTS FEED|
|WHITE|— STAGE LIGHTS DOWN|

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

TOP MASKING FLAT/SCOPE — S4 — T2-BROWN / T5-ORANGE / T1-BLACK

TOP MASKING SPECIAL — S5 — T4-ORANGE / T3-RED

SIDE MASKING FLAT/SCOPE — S6 — T7-BLUE / T9-GRAY / T6-YELLOW

SIDE MASKING SPECIAL — S7 — T10-GRAY / T8-VIOLET

ALL WIRE IS 18 AWG UL1007

P1
| | |
|1|BLACK|
|2|BROWN|
|3|RED|
|4|ORANGE|
|5|YELLOW|
|6|BLUE|
|7|VIOLET|
|8|GRAY|

640431-8 AMP
MTA-156

2-520194-2 AMP
(T4 & T9 3-520124-2 AMP)
0.187 FASTON (10 PLACES)

**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

**SCHEMATIC REPRESENTATION**

| | | | | |
|---|---|---|---|---|
|T1|TOP MASK FLAT|(BLACK)|P1|1|
|T2|TOP MASK SCOPE|(BROWN)|P1|2|
|T3|TOP MASK SPECIAL|(RED)|P1|3|
|T4|TOP MASK FEED|(ORANGE)|P1|4|
|T5| | | | |
|T6|SIDE MASK FLAT|(YELLOW)|P1|5|
|T7|SIDE MASK SCOPE|(BLUE)|P1|6|
|T8|SIDE MASK SPECIAL|(VIOLET)|P1|7|
|T9|SIDE MASK FEED|(GRAY)|P1|8|
|T10| | | | |

# 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 the portable or *secondary* host.

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

**39325 CNA Main CPU Board**

ON
↕
OFF

1 2 3 4 5 6 7 8
S1

S2

(S1-3)
(S1-4)
(S1-5)
**ID NUMBER**
(S1-6)
(S1-7)
(S1-8)
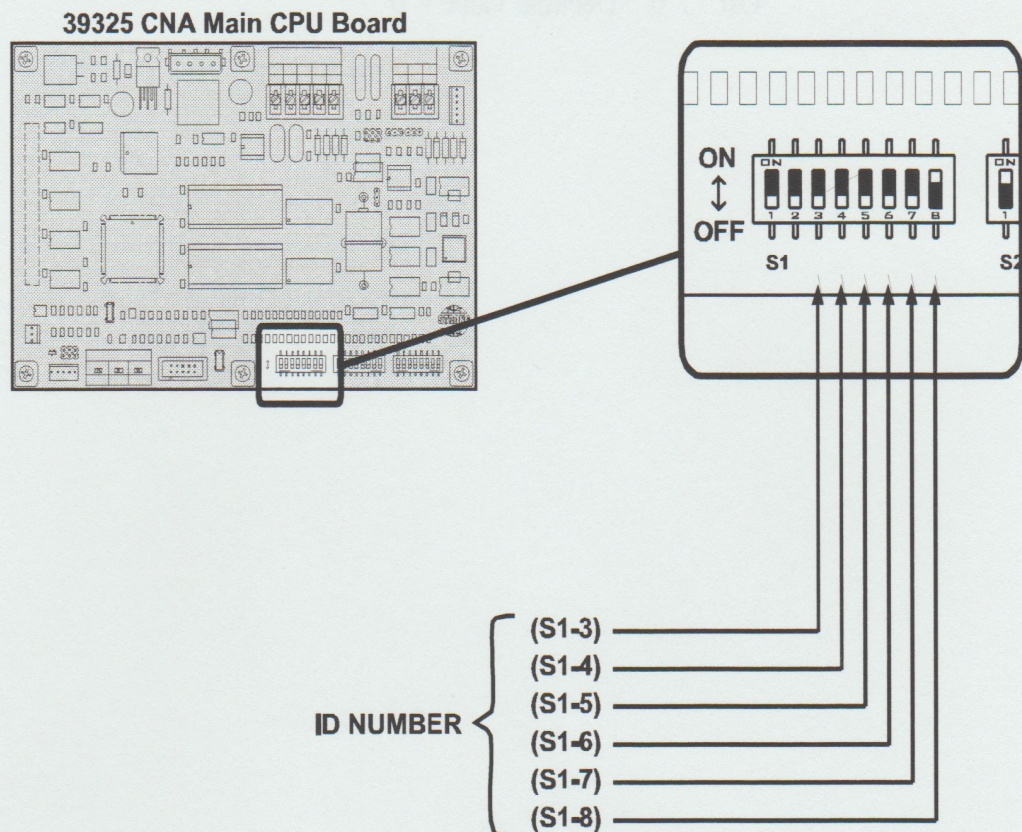
**S1-3** through **S1-8** are used to set the ID number. The number is represented as a 6-bit binary number which allows for 64 possible ID numbers (0-63). Do not use 0 (zero) as an ID number. It has been reserved for the PC Gateway Interface. Each

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.

| | | | |
|---|---|---|---|
| **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 |

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

## Alarm Loudness setting

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



Low Volume Setting          Medium Volume Setting          High Volume Setting



Alarm Loudness Setting

ALARM

STATUS LEDS

| LED1 | LED2 | LED3 |
| --- | --- | --- |
| LSN | LIN | +5V |

39325 CNA Main CPU Board

+5V (Indicates +5 volt power supply is OK)
LIN (Local I/O Network Status LED)
LSN (Local Sync Network Status LED)
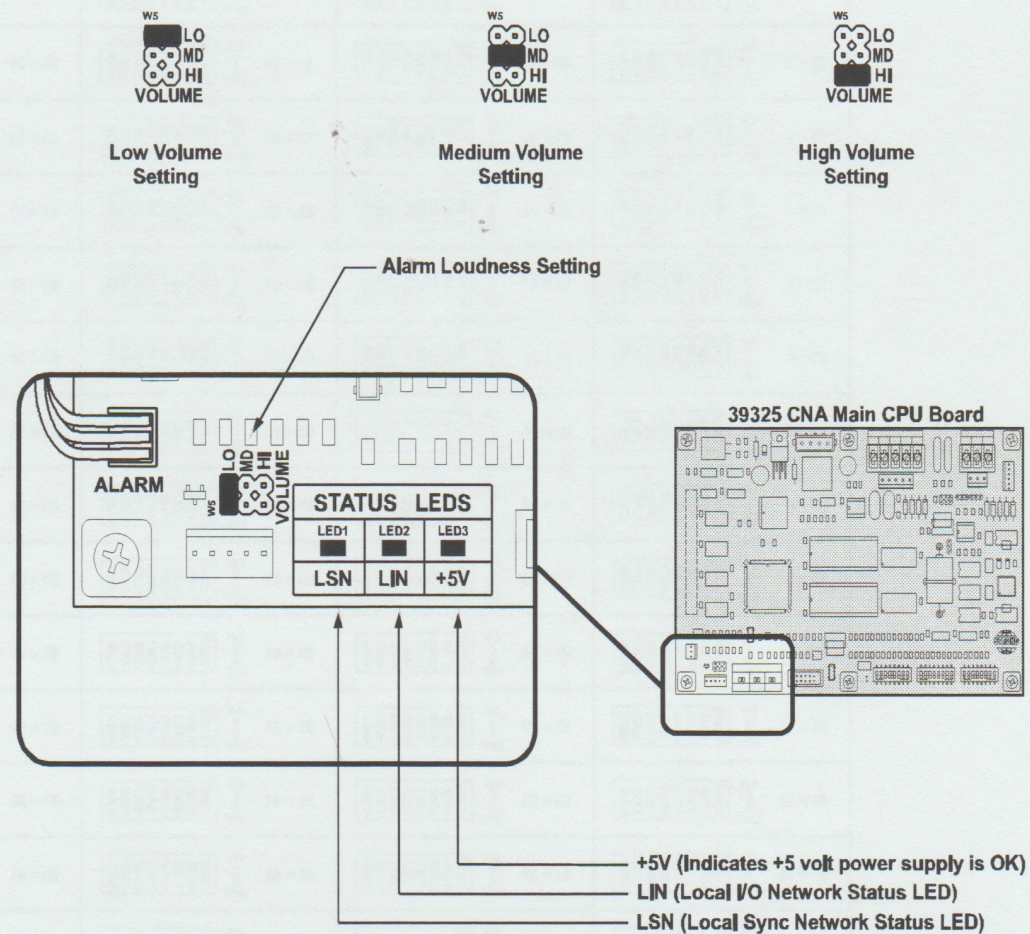
## Status LEDs

There are three status LEDs on the 39325 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**

BT1

OFF-ON

BATT

**Plastic Hold-down Tie**

**Battery**
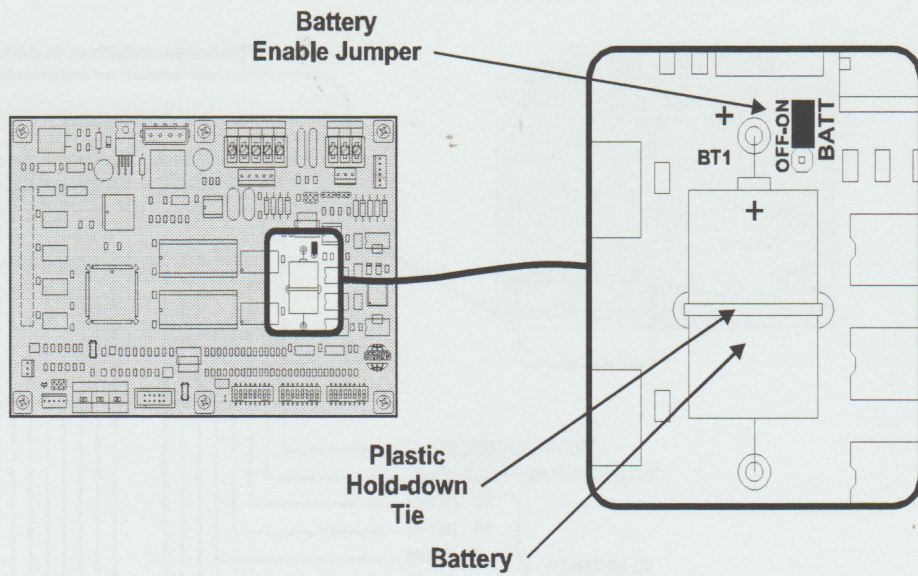
## Main Board DIP Switch Configuration

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

### CNA-200 Switch Definitions
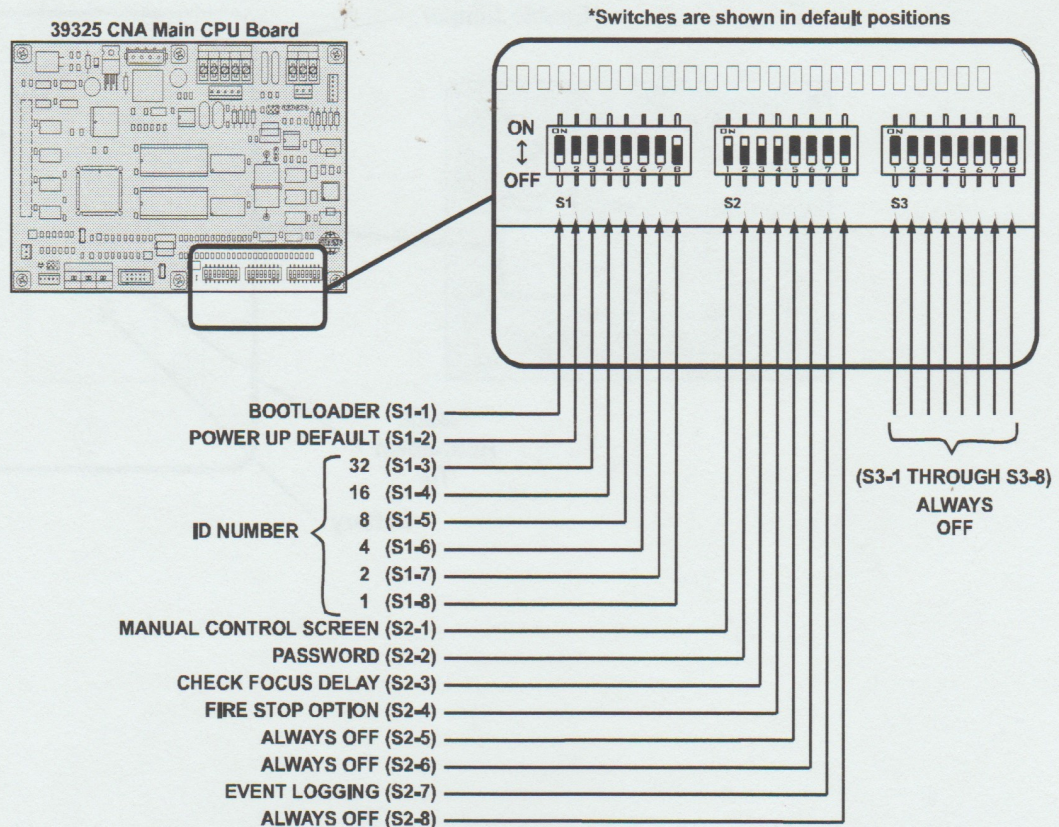


39325 CNA Main CPU Board

*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)
ID NUMBER    8   (S1-5)
4   (S1-6)
2   (S1-7)
1   (S1-8)
MANUAL CONTROL SCREEN (S2-1)
PASSWORD (S2-2)
CHECK FOCUS DELAY (S2-3)
FIRE STOP OPTION (S2-4)
ALWAYS OFF (S2-5)
ALWAYS OFF (S2-6)
EVENT LOGGING (S2-7)
ALWAYS OFF (S2-8)

(S3-1 THROUGH S3-8)
ALWAYS
OFF

### S1-1    Bootloader

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, this switch on will force the Bootloader program at power up.

*Note: Applies to version 1.016*

### 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)

*Note: Applies to version 1.000 through version 1.016*

### S1-3 through S1-8 Network ID

Used to set the ID number. See page 54.

### 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 and lights. Starting with version 1.016, the
volume level can also be adjusted.

*Note: Applies to version 1.011 through version 1.016*

### 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.

*Note: Applies to version 1.000 through version 1.016*

### 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.

*Note: Applies to version 1.006 through version 1.016*

---

### S2-4    Fire Stop Option

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.

**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.

*Note: Applies to version 1.011 through version 1.016*

---

### S2-5    Always Off

On    : Undefined
Off   : Undefined (Factory Default)

*Note: Applies to version 1.000 through version 1.016*

### S2-6    Always Off

---

On   : Undefined
Off   : Undefined (Factory Default)

*Note: Applies to version 1.000 through version 1.016*

### S2-7   Event Logging

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

*Note: Applies to version 1.014 through version 1.016*

### S2-8   Always Off

On   : Undefined
Off   : Undefined (Factory Default)

*Note: Applies to version 1.000 through version 1.016*

### S3-1 through S3-8 Always Off

On   : Undefined
Off   : Undefined (Factory Default)

*Note: Applies to version 1.000 through version 1.016*

## CNA-150 Switch Definitions
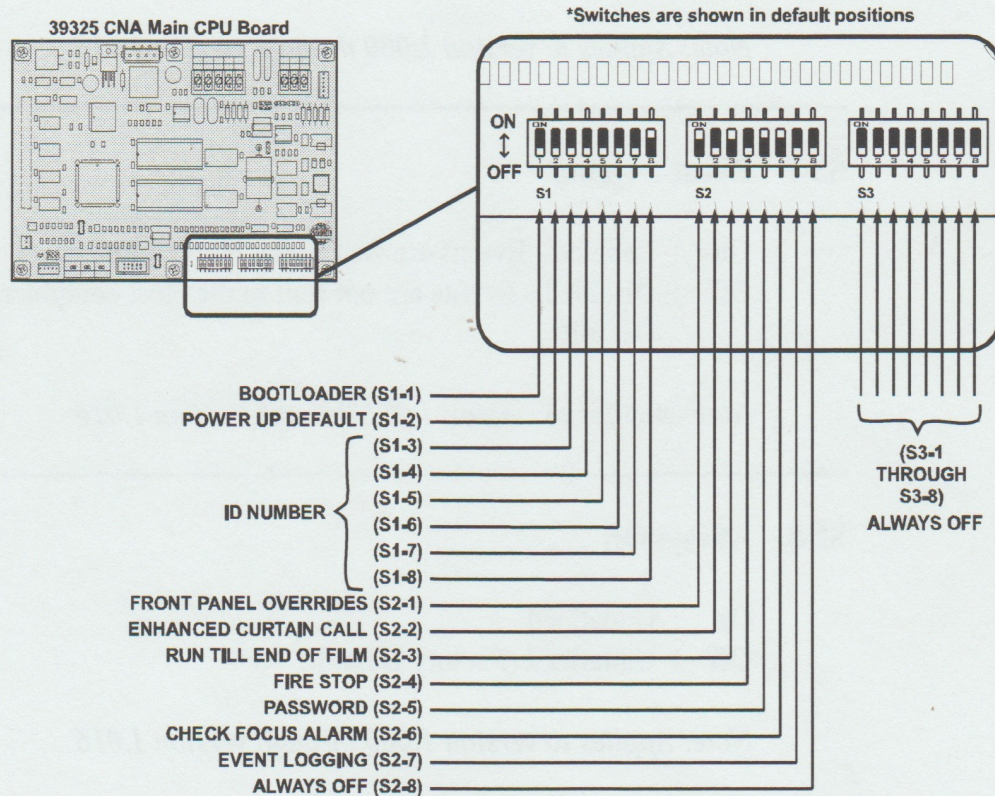


39325 CNA Main CPU Board

*Switches are shown in default positions

BOOTLOADER (S1-1)
POWER UP DEFAULT (S1-2)
(S1-3)
(S1-4)
(S1-5)
ID NUMBER (S1-6)
(S1-7)
(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 ALARM (S2-6)
EVENT LOGGING (S2-7)
ALWAYS OFF (S2-8)

(S3-1
THROUGH
S3-8)
ALWAYS OFF

### S1-1    Bootloader

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

The Bootloader program supports the LSN flash update network
commands to load the CNA-150 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, this
switch on will force the Bootloader program at power up.

*Note: Applies to version 3.050*

### S1-2    Power Up Default

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 from the front**

panel or 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.

*Note: Applies to version 3.000 through version 3.050*

---

### S1-3 through S1-8 ID Number

Used to set the ID number.  See page 54.

*Note: Applies to version 3.000 through version 3.050*

---

### 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.

*Note: Applies to version 3.000 through version 3.050*

---

### S2-2    Enhanced Curtain Call

On  : Enables the new 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)

*Note: Applies to version 3.000 through version 3.050*

---

### 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.

*Note: Applies to version 3.000 through version 3.050*

---

### S2-4   Fire Stop Option

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.

**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.

*Note: Applies to version 3.000 through version 3.050*

---

### 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.

*Note: Applies to version 3.030 through version 3.050*

---

### S2-6    Check Focus Alarm

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

Off : Disables the "Check Focus Alarm" function.

*Note: Applies to version 3.030 through version 3.050*

---

### S2-7    Always Off

On : Enabled - Events are sent to the Host computer.

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

*Note: Applies to version 3.040 through version 3.050*

---

### S2-8, S3-1 through S3-8 Always Off

On : Undefined

Off : Undefined (Factory Default)

*Note: Applies to version 3.000 through version 3.050*

## CNA-100 Switch Definitions



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)
ALWAYS OFF (S2-5)
ALWAYS OFF (S2-6)
EVENT LOGGING (S2-7)
ALWAYS OFF (S2-8)

(S3-1
THROUGH
S3-8)
ALWAYS OFF

## S1-1    Bootloader

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

The Bootloader program supports the LSN flash update network commands to load the CNA-100 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, this switch on will force the Bootloader program at power up.

*Note: Applies to version 2.05*

## S1-2    Power Up 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-100 is powered up all user settings will be over-written with the defaults.**

*Note: Applies version 1.00 through version 2.05*

---

### S1-3 through S1-8 ID Number

Used to set the ID number.  See page 54.

*Note: Applies to version 1.00 through version 2.05*

---

### 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.

*Note: Applies to version 1.00 through version 2.05*

---

### S2-2    Enhanced Curtain Call

On  :  Enables the new 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-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)

*Note: Version 1.07 through Version 2.05*

---

### 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.

*Note: Applies to version 1.07 through version 2.05*

---

### S2-4    Fire Stop Option

On    : Enables 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 on.
• K13 relay (Slide Projector) on Booth Termination board is turned on.

**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.

Off   : Disables the "Fire Stop" function.

*Note: Applies to version 1.08 through version 2.05*

---

### S2-5    Always Off

On   : Undefined
Off   : Undefined (Factory Default)

*Note: Applies to version 1.00 through version 2.05*

---

### S2-6     Always Off

    On   : Undefined
    Off   : Undefined (Factory Default)

*Note: Applies to version 1.00 through version 2.05*

### S2-7     Always Off

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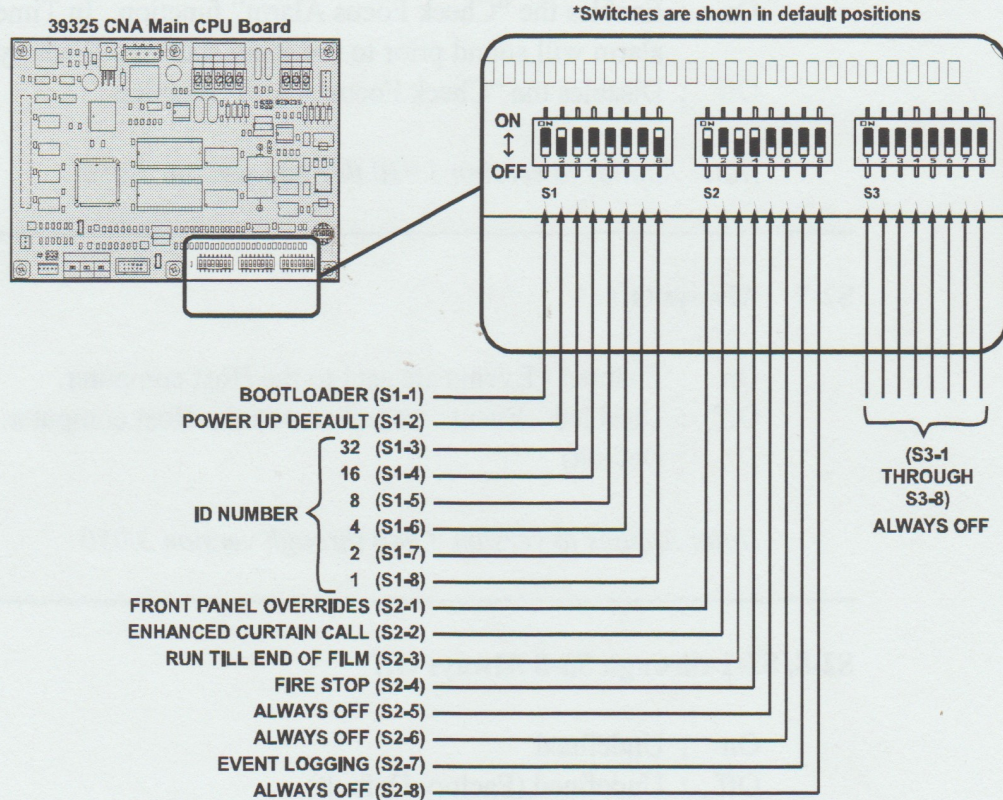    Off   : Disabled - Events are not sent to the Host computer. (Factory Default)

*Note: Applies to version 2.04 through version 2.05*

### S2-8, S3-1 through S3-8 Always Off

    On   : Undefined
    Off   : Undefined (Factory Default)

*Note: Applies to version 1.00 through version 2.05*

# System Block Diagrams

## P/N 39325 CNA Main CPU Board

**J1** — Display Board Connector
| Pin | Signal |
|---|---|
| 1 | Ground |
| 2 | Ground |
| 3 | +5 volts |
| 4 | +5 volts |
| 5-20 | Data (0-15) |
| 21-36 | Address (0-18) |
| 37 | SIZ0 |
| 38 | FPTYPE2 |
| 39 | FPRES |
| 40 | FPTYPE1 |
| 41 | FPRW |
| 42 | 8.3MHz Clock |
| 43 | /DSACK1 |
| 44 | /FPSEL |
| 45 | +24 volts |
| 46 | +24 volts |
| 47 | +5 volts |
| 48 | Ground |
| 49 | Ground |
| 50 | -24 volts |

**P3** — LSN Local Synchronous Network
| Pin | Signal |
|---|---|
| 1 | NET+ |
| 2 | NET- |
| 3 | Shield |

**P2** — LIN Local I/O Network
| Pin | Signal |
|---|---|
| 1 | NET+ |
| 2 | NET- |
| 3 | Shield |
| 4 | +VNET |
| 5 | NETRTN |

**P5** — P/N 35982 Alarm
| Pin | Signal |
|---|---|
| 1 | 24 AWG Blk (−) |
| 2 | |
| 3 | 24 AWG Red (+) |

**P6** — Spare Serial (Debug Port)
| Pin | Signal |
|---|---|
| 1 | +5 volts |
| 2 | Ground |
| 3 | RDA |
| 4 | TDA |
| 5 | NC |

**P7** — BDM Port (Background Debug Mode)
| Pin | Signal |
|---|---|
| 1 | NC |
| 2 | /BERR |
| 3 | Ground |
| 4 | DSCLK |
| 5 | Ground |
| 6 | FREEZE |
| 7 | /RESET |
| 8 | DSI |
| 9 | +5 volts |
| 10 | DSO |

**P4** — P/N 64009 5 Pin DIN Receptacle / P/N 39304 Network Interface Cable
| Pin | Signal | |
|---|---|---|
| 3 | Shield | 22 AWG Brn |
| 5 | NETRTN | 22 AWG Blk |
| 2 | NET- | 22 AWG Gry |
| 4 | +VNET | 22 AWG Red |
| 1 | NET+ | 22 AWG Blu |

**P1** — P/N 39309 DC Power Cable
| Pin | Signal | |
|---|---|---|
| 1 | +VNET (+18V) | 18 AWG Yel |
| 2 | LCD (-24V) | 18 AWG Blk |
| 3 | NETRTN | 18 AWG Wht |
| 4 | +VMAIN (+24V) | 18 AWG Red |

## P/N 64011 Transformer
| | P2 | |
|---|---|---|
| | 12 | 18 AWG Yel |
| 6 — 7 | 7 | 18 AWG Red |
| 5 — 2 | 1 | 18 AWG Wht |
| 2 — | 2 | 18 AWG Brn |
| 1 — 12 | 5 | 18 AWG Blu |
| | 6 | 18 AWG Blk |

P/N 39308 Transformer Cable

## P/N 39328 CNA Power Supply Board

**P2**
| Pin |
|---|
| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |
| 7 |
| 8 |

F1 — 120V/240V Power Fuse

F4 — Local I/O Network Power Fuse

**P3**
| Pin |
|---|
| 1 |
| 2 |
| 3 |
| 4 |

**P1** — Power In
| Pin | Signal |
|---|---|
| 1 | HOT |
| 2 | CHS GND |
| 3 | NUE |

| | |
|---|---|
| TAB1 | 18 AWG Blk |
| TAB2 | 18 AWG Blk |

P/N 39336 Power Switch

P/N 39307 Cable

CNA Main CPU Board and Power Supply

**P/N 39327**
**CNA-200 Display Board**

| P/N 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 Inverter Input Cable**

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

**CN2** | 1 | 2

**CN2** | 1 | 2

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

**P/N 64060**
**16 X 2 line Display**

| Display | Signal | J1 |
|---|---|---|
| 9 | DB0 | 15 |
| 10 | DB1 | 13 |
| 11 | DB2 | 11 |
| 12 | DB3 | 9 |
| 13 | DB4 | 7 |
| 14 | DB5 | 5 |
| 15 | DB6 | 3 |
| 16 | DB7 | 1 |
| 6 | RS | 21 |
| 7 | R/W | 19 |
| 8 | E | 17 |
| 4 | Vcc | 25 |
| 5 | VEE | 23 |
| 3 | Vss | 27 |
| 2 | Cathode | 29 |
| 1 | Anode | 31 |

**P/N 39324**
**CNA-150 Display Board**

| Signal | 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  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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X1 | | | PROG ▲ | PROG EDIT | CUE ▲ | CUE INPUT | INC. + | DEC. - | MENU | HOME | SYNC | X1 |
| X2 | | | PROG ▼ | | CUE ▼ | | SYNC ▲ | 1 | 2 | 3 | SYNC ▼ | X2 |
| X3 | NON SYNC | MONO | SVA | SR | DIG | AUX | MUTE | 4 | 5 | 6 | START | X3 |
| X4 | LIGHTS UP | LIGHTS MID 1 | LIGHTS MID 2 | LIGHTS DOWN | FLAT | SCOPE | SPEC | 7 | 8 | 9 | FAULT | X4 |
| X5 | OUT 1 | OUT 2 | OUT 3 | OUT 4 | INTER MISSION | CURT CALL | SHOW END | ENTER | 0 | CLEAR | ALARM CANCEL | X5 |
| X6 | | | | | | | SCROLL ▼ | SCROLL ◄ | SCROLL ▲ | SCROLL ► | STOP | X6 |

CNA-150 Keyboard and Display Block Diagram

**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 |

| | 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 |

**KEYPAD**

CNA-100 Keyboard and Display Board

## System Hardware Configuration

Automation ID No. _____

## Termination Panel Jumper Configuration

| SINGLE PANEL | | DUAL PANELS | | | |

### SINGLE PANEL

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

### DUAL PANELS

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

| BOOTH P/N 39331 | |
|-----------------|---------|
| JUMPER | SETTING |
| W1 | 1-2 UNDEFINED<br>☐ 2-3 UNDEFINED |
| W2 | 1-2 UNDEFINED<br>☐ 2-3 UNDEFINED |
| W3 | 1-2 UNDEFINED<br>☐ 2-3 UNDEFINED |

## CNA DIP Switch Configuration

### MAIN BOARD P/N 39325

| S1 | | | | | | | |
|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| ☐ ON<br>☐ OFF | ☐ ON<br>☐ OFF | ☐ ON<br>☐ OFF | ☐ ON<br>☐ OFF | ☐ ON<br>☐ OFF | ☐ ON<br>☐ OFF | ☐ ON<br>☐ OFF | ☐ ON<br>☐ OFF |

| S2 | | | | | | | |
|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| ☐ ON<br>☐ OFF | ☐ ON<br>☐ OFF | ☐ ON<br>☐ OFF | ☐ ON<br>☐ OFF | ☐ ON<br>☐ OFF | ☐ ON<br>☐ OFF | ☐ ON<br>☐ OFF | ☐ ON<br>OFF |

| S3 | | | | | | | |
|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| ☐ ON<br>OFF | ☐ ON<br>OFF | ☐ ON<br>OFF | ☐ ON<br>OFF | ☐ ON<br>OFF | ☐ ON<br>OFF | ☐ ON<br>OFF | ☐ ON<br>OFF |