

INSTRUCTION MANUAL

MODEL 162 Cue Trigger Switch

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All Cross Technologies, Inc. products are warranted against defective materials and workmanship for a period of one year after shipment to customer. Cross Technologies, Inc.'s obligation under this warranty is limited to repairing or, at Cross Technologies, Inc.'s option, replacing parts, subassemblies, or entire assemblies. Cross Technologies, Inc. shall not be liable for any special, indirect, or consequential damages. This warranty does not cover parts or equipment which have been subject to misuse, negligence, or accident by the customer during use. All shipping costs for warranty repairs will be prepaid by the customer. There are not other warranties, express or implied, except as stated herein.

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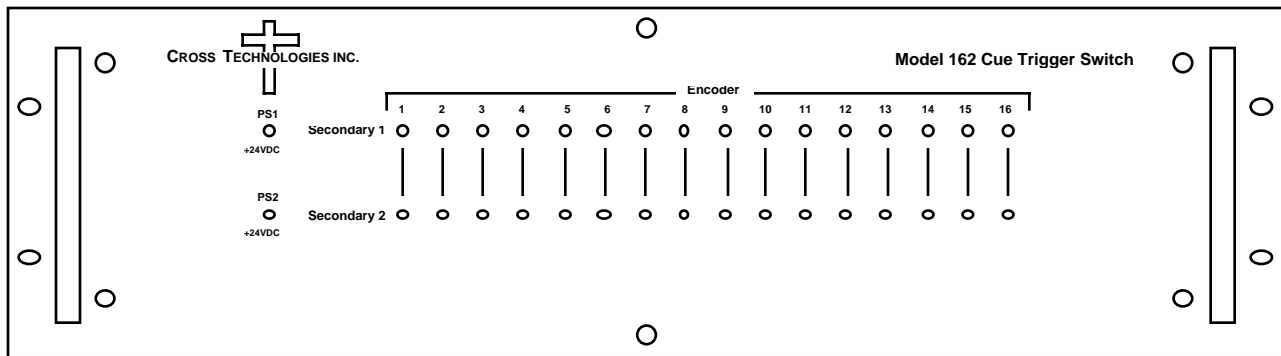
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MODEL 162 Cue Trigger Switch

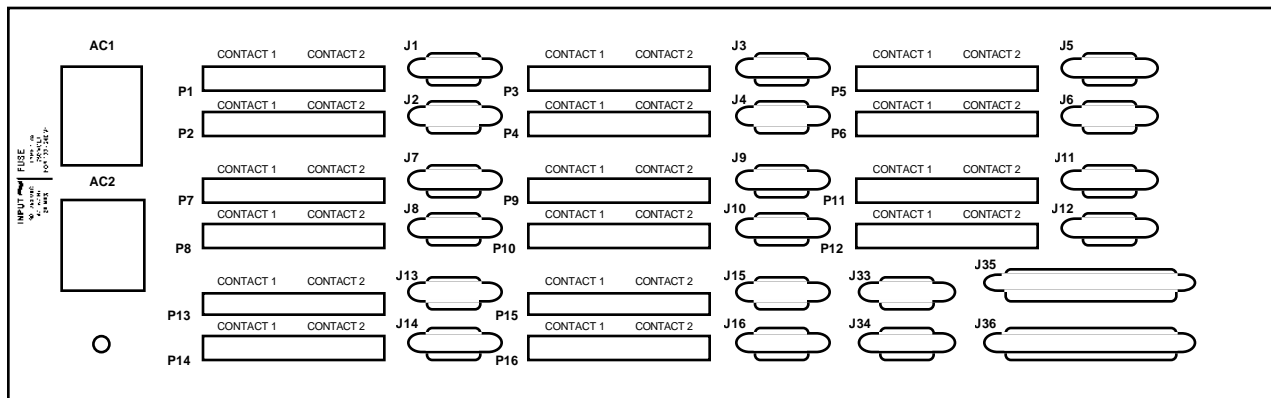
1.0 General

1.1 Equipment Description- The Model 162 Cue Trigger Switch provides switching of 8 contact closures from each of 16 on-line encoders to two separate 8 line outputs that can go to two different secondary encoders. Switching is determined by providing a closure to ground to the corresponding channel relay control input pin. On receipt of a switch contact closure input, two pairs of 4 Pole, double-throw high sensitivity relays switch 8 contact closures from one of 16 inputs to one of two secondary outputs. In the de-energized state, no signals are switched to the secondary outputs.

The 162 consists of two switch printed circuit boards (PCB), one interface PCB and one indicator front panel PCB housed in a 3 RU (5 1/4 inch high) by 20 inch deep chassis. Redundant, CE approved, covered, switching, +24 VDC power supplies with the DC output diode OR'd provide redundant power for the relays and LEDs. Connectors are terminal strip (a two section terminal strip with removable screw terminal mating connector) for the contact closure inputs from the on-line encoders, DB9, female, for the signal passed through to the online encoders, DB9, female, for the signals to the secondary encoders, and DB37, female, for the relay switch control closures. Front panel green LEDs indicate which signals are being switched to the secondary encoders and presence of DC power from each power supply.



FRONT PANEL



REAR PANEL

Figure 1.1 Model 162 Front and Rear Panels

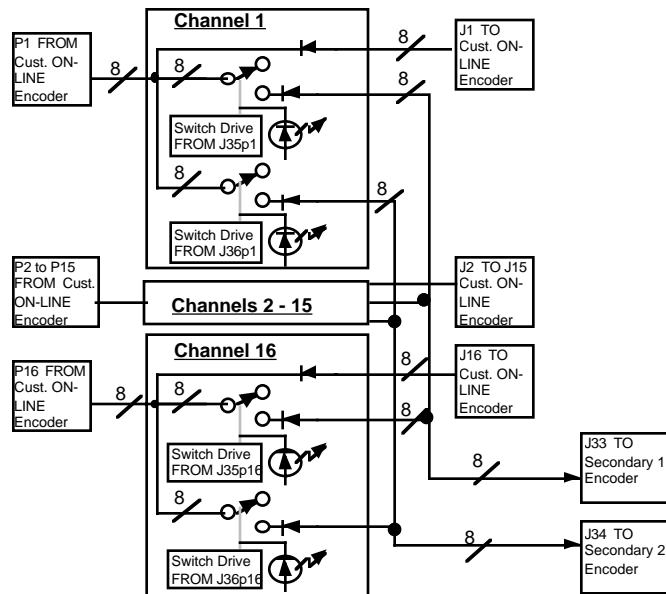


Figure 1.2 Model 162 Cue Switch Block Diagram

1.2 Technical Characteristics

TABLE 1.0 162 Cue Trigger Switch SPECIFICATIONS

<u>Characteristics</u>	<u>Specifications*</u>
Inputs	
From Online Encoders	16
Closures to ground per encoder	8
Polarity	If there is a voltage in the non-switched to ground state, it must be a positive voltage that is > or = to the voltage on the pass through output
Outputs	
To Online Encoders (pass thru)	16
To Secondary Encoders	2
Closures to ground per encoder	8
Polarity	Must be a positive voltage that is being switched to ground
Relay Specifications (Encoder closure switch)	
Contact current	500ma, max
Contact Voltage	50 volts DC, max
Control signal Specification (closure to ground to switch relays)	
Control current	30 ma, max
Voltage when open	25 volts DC, max
Indicators	
Power, Selection	Green LED indicate Power supply on, Channels selected for secondary 1, 2
Other	
AC Power, Input	90- 260 VAC, 47 - 63 Hz, 30 watts, max
AC Fuse	2 amp slow blow (Type T), 5 mm X 20 mm
Size	19" W X 5 1/4" H X 21" D

*+10 to +40 degrees C; 2000 meters max elevation; 80% max humidity; Pollution Degree 2; Specifications subject to change without notice.

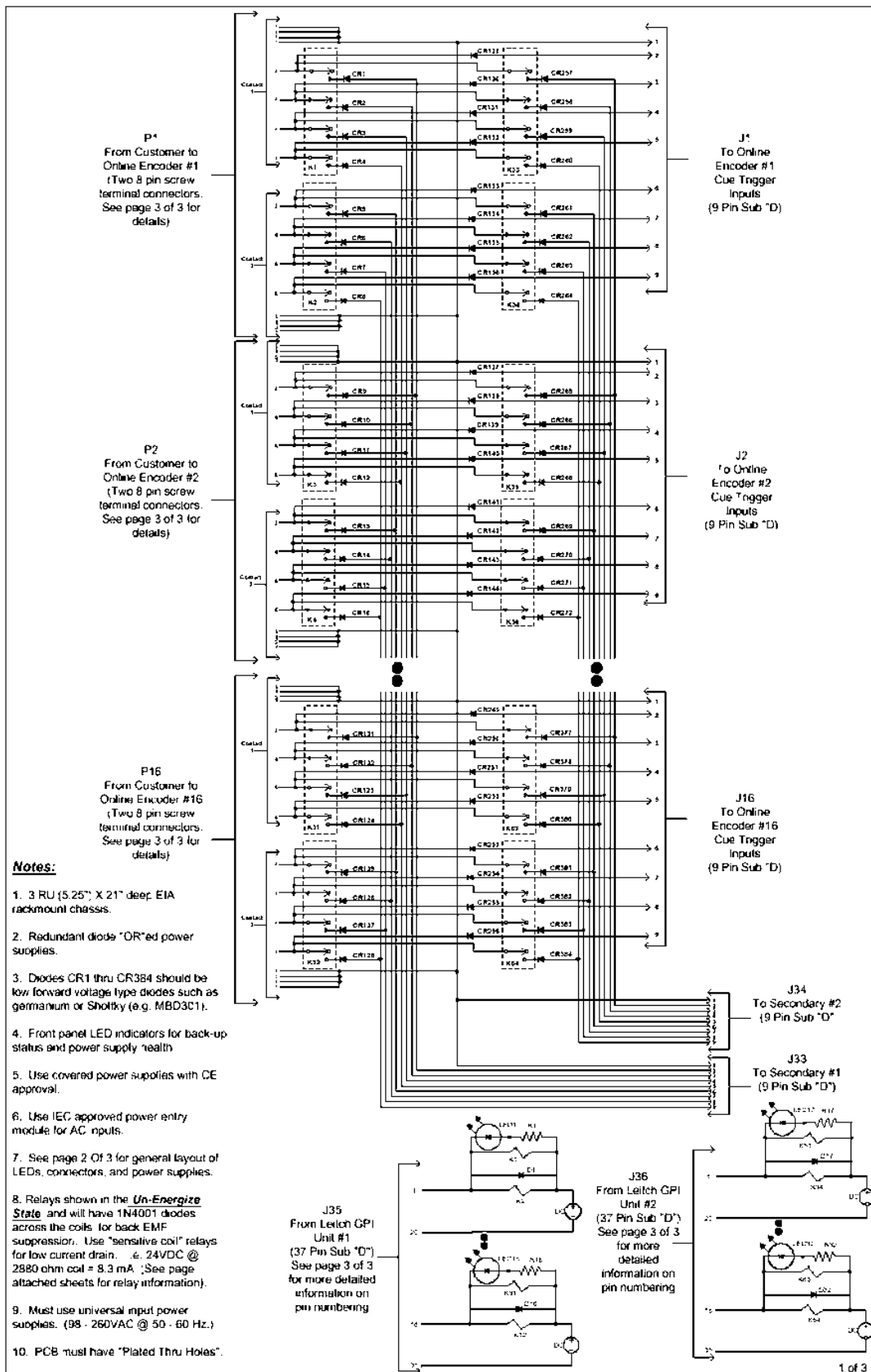


FIGURE 1.3 DETAILED BLOCK DIAGRAM

2.0 Installation

2.1 Mechanical - The 162 consists of two switch printed circuit boards (PCB), one interface PCB and one indicator front panel PCB housed in a 3 RU (5 1/4 inch high) by 20 inch deep chassis. Redundant, CE approved, covered, switching, +24 VDC power supplies with the DC output diode OR'd provide redundant power for the relays and LEDs. Connectors are terminal strip (a two section terminal strip with removable screw terminal mating connector) for the contact closure inputs from the on-line encoders, DB9, female, for the signal passed through to the online encoders, DB9, female, for the signals to the secondary encoders, and DB37, female, for the relay switch control closures. The 162 can be secured to a rack using the 4 holes on the front panel. Figure 2.1 shows how the 162 is assembled.

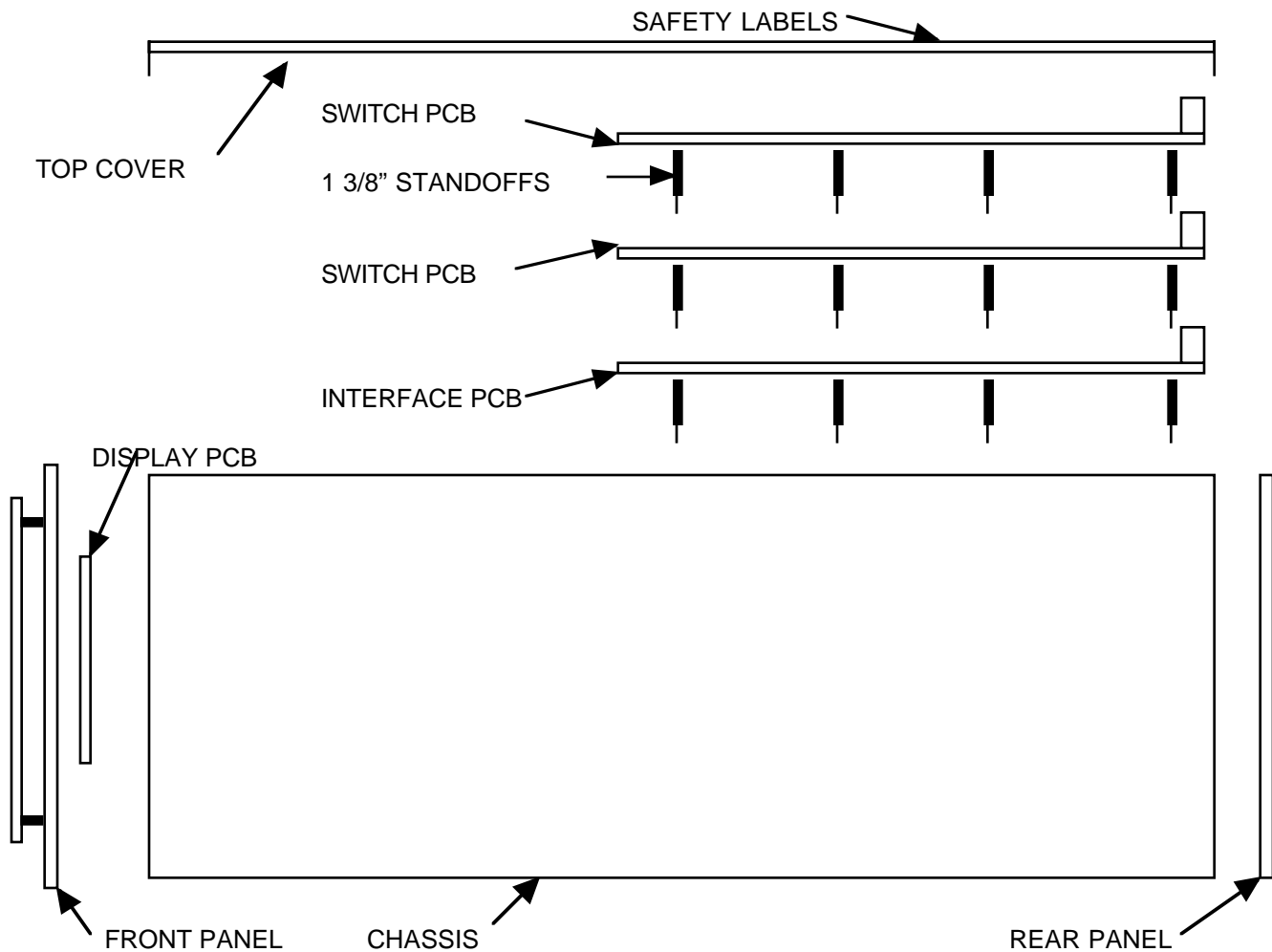


FIGURE 2.0 162 MECHANICAL ASSEMBLY

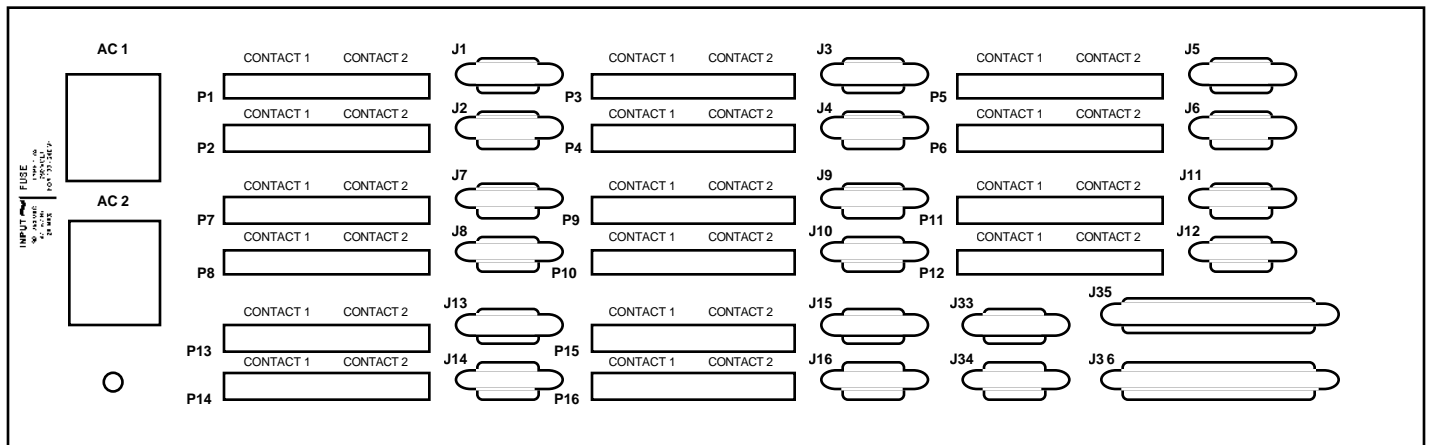


FIGURE 2.1 162 REAR PANEL

2.2 Input/Output Signals - The input and output connectors on the rear panel consist of the following:

A) **P1 - P16** Terminal Strip for the contact closure inputs from the on-line encoders number 1 (P1) through number 16 (P16). This is a two section terminal strip with removable screw terminal mating connector. Figure 2.2 shows the pin configuration.

B) **J1 - J16** DB9, female, for the signal passed through to online encoders number 1 (J1) to number 16 (J16). Figure 2.3 shows the pin configuration.

C) **J33, J34** DB9, female, for the signal passed to the secondary encoders number 1 (J33) or number 2 (J34). Figure 2.3 shows the pin configuration. Any input (P1 to P16) can be switched to either or both J33 and J34.

D) **J35, J36** DB37, female, for the contact closure control that selects which online encoder lines are switched to the secondary encoders. Control for number 1 is on J35 and control for number 2 is J36. Figure 2.4 shows the pin configuration.

CAUTION! ONLY ONE CONTROL PIN OF J35 AND ONE CONTROL PIN OF J36 CAN BE GROUNDED AT ONE TIME.

E) **AC1, AC2 - POWER IN** - Provides AC inputs for dual power supplies.

Figures 2.2, 2.3, 2.4 show the pinouts for the input and output connectors.

2.3 Indicators - The following are the indicators.

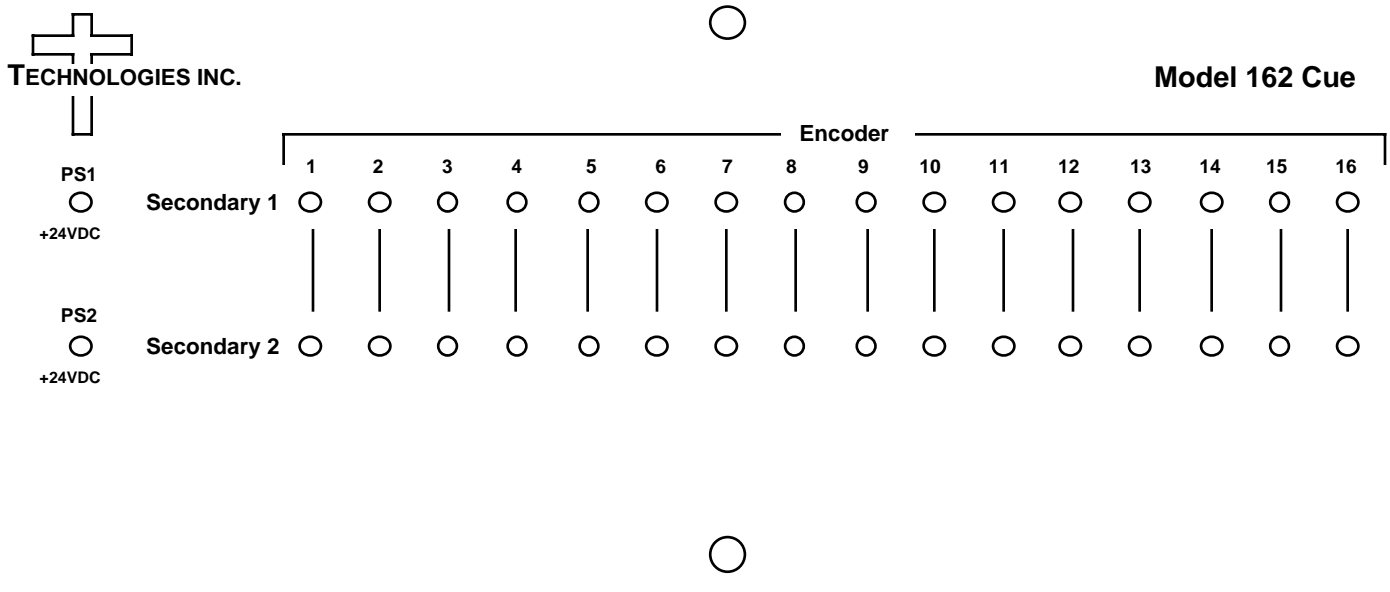


FIGURE 2.5 162 INDICATORS

TABLE 2.1 FRONT PANEL INDICATORS

<u>Item</u>	<u>Description</u>
SECONDARY 1 LEDs	Green LED indicates which Input Channel goes to the Secondary 1 output
SECONDARY 2 LEDs	Green LED indicates which Input Channel goes to the Secondary 2 output
PS1 LED	Turns green when power is applied to AC1 input on the rear panel
PS2 LED	Turns green when power is applied to AC2 input on the rear panel



2.4 Operation

- 1.) **CAUTION!** OBSERVE AND HEED SAFETY LABELS ON TOP COVER (see FIGURE 2.6).
- 2.) Connect interface cables to the 162 (See Section 2.2 for connector descriptions and pinouts).
- 3.) Connect 90- 260 VAC, 47 - 63 Hz to AC1 and AC2 on the back panel and observe PS1 and PS2 LEDs are lit.
- 4.) Apply one contact closure to the desired control pin of J35 and J36 and observe the proper switching of signals. Observe the corresponding LEDs on the front panels are lit.
- 5.) **AC Fuse** - The fuse is a 5 mm X 20 mm, 2 amp slow blow (Type T) and is inserted in the far slot in the drawer below the AC input as shown in Figure 2.7. There is a spare fuse in the near slot. If a fuse continues to open, the power supply is most likely defective.

This Class A digital apparatus meets all requirements of the Canadian interference causing equipment regulations.
 Cet appareil numérique de la classe A est respecte toutes les exigences du reglement sur le material broilleur du Canada.

CAUTION

TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVERS FROM THIS UNIT NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNELL. SEE ADDITIONAL SAFETY INSTRUCTIONS IN MANUAL.

Cross Technologies, Inc. Made in U.S.A.	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;"> <p>CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN</p> <p>ATTENTION RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR</p> </div> <div style="text-align: center;">  </div> </div>
<p>CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE REPLACE ONLY WITH SAME TYPE FUSE T 2A 250 VOLT FOR 100 - 240 V~</p>	

CAUTION: THIS EQUIPMENT MAY HAVE UP TO TWO POWER SUPPLY CORDS. TO REDUCE THE RISK OF ELECTRIC SHOCK, TWO POWER SUPPLY CORDS MAY HAVE TO BE DISCONNECTED BEFORE SERVICING.

FIGURE 2.6 SAFETY DECALS ON TOP COVER

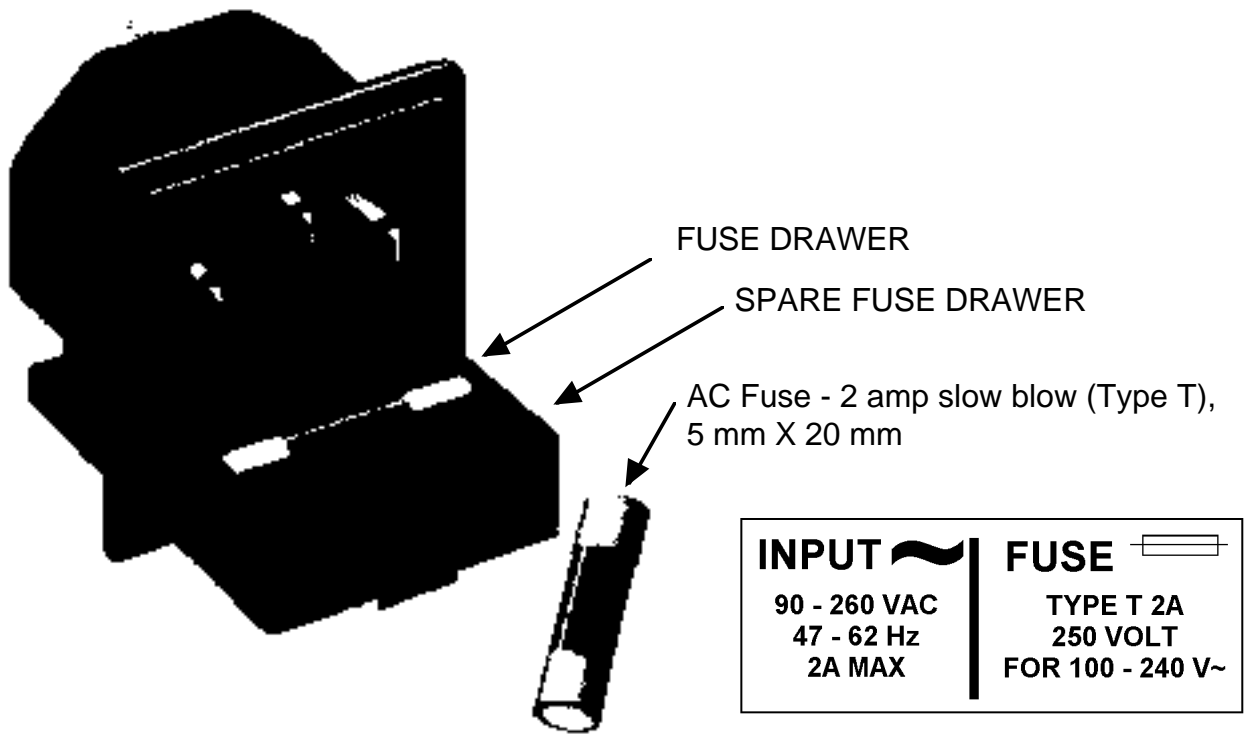


FIGURE 2.7 FUSE LOCATION AND SPARE FUSE

TABLE 2.2 SWITCH CONTROL TABLE			
GROUND ON J35, pin	SIGNAL THAT IS SWITCHED TO J33	GROUND ON J36, pin	SIGNAL THAT IS SWITCHED TO J34
1	P1	1	P1
2	P2	2	P2
3	P3	3	P3
4	P4	4	P4
5	P5	5	P5
6	P6	6	P6
7	P7	7	P7
8	P8	8	P8
9	P9	9	P9
10	P10	10	P10
11	P11	11	P11
12	P12	12	P12
13	P13	13	P13
14	P14	14	P14
15	P15	15	P15
16	P16	16	P16

2.5 Drawings - Table 2.3 shows the list of drawings for the 162.

TABLE 2.3 MODEL 162 Cue Switch DRAWINGS		
DRAWING NO.	DESCRIPTION	PAGES
70225	Schematic, Interconnect, Cue Switch	1
70226	Panel, Front, 162 Cue Switch	1
70227	Panel, Rear, 162 Cue Switch	1
70228	Chassis, bottom, 20"	1
70229	Chassis, cover, 20"	1
70230	Schematic, Display (front panel)	1
70231	PWB Display (front panel)	1
70232	PWB Assy, Display (front panel)	1
70233	Schematic, Switch (top/middle)	2
70234	PWB, Switch (top/middle)	1
70235	PWB Assy, Switch (top/middle)	1
70236	Schematic, Switch, Interface (bottom)	2
70237	PWB, Switch, Interface (bottom)	1
70238	PWB Assy, Switch, Interface (bottom)	1
70240	Plate, Power Supply	1