Service Manual

Classic Scorer

September 2001 / 57-900607-000

Brunswick®

CUSTOMER SERVICE

A tradition in excellence.

Statement of Intent

This manual is provided to be used by qualified bowling center personnel. Customer accepts responsibility for safety training of all personnel who service and maintain this product.

Classic Scorer Service Manual

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Notice: If available, updates to this manual can be found on-line at www.centermaster.com.

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Contents

Glossary of Terms

The following terms are used in this manual. To better understand the information presented in the manual you should familiarize yourself with these terms.

10Base-2 - 50 Ohm coaxial cabling used in an Ethernet network. This cable is used to connect the control desk computer to the lane server computer(s) located on the curtain wall.

Camera Image PCB - A circuit board located in a lane server that processes the images received from the pin cameras.

DIMM (Dual In-line Memory Module) - A small circuit board that is designed to plug into special connectors on the Motherboard in a computer to provide the system with RAM memory. DIMMs come in various storage capacities and speeds.

Distribution PCB - A circuit board located behind the pin camera on each lane pair that handles the camera power, machine on/off, machine reset, foul, automated bumper control, and ball detector signals.

Ethernet - One of many protocols developed that specifies how computers send information to one another.

I/O PCB - A circuit board located in a lane server that handles the overhead monitor's video and sound signals for 8 lanes.

ISA Bus - Industry Standard Architecture Bus - A design or protocol used in many computers that defines how circuit boards connect to one another. These are the large black colored slot connectors on the motherboard. Circuit boards such as the Camera Image, Serial, Video, plug into these slots.

Lane Server - Computer(s) located at the curtain wall that controls the scoring functions for up to 8 lanes.

Microprocessor - A circuit chip that performs most of the calculations and processing of information for a computer.

Motherboard - A circuit board inside the Lane Server or Control Desk Computer that contains the microprocessors and memory. The hard drives and all other PCBs in the computer connect to this board. (Also referred to as the System Board).

PCI Bus - Peripheral Component Interface Bus - A design or protocol used in many computers that defines how circuit boards connect to one another. These are the medium sized, white colored slot connectors on the motherboard. Circuit boards such as the Sound, VGA, and Ethernet connect to these slots.

RAM (Random Access Memory) - A short term storage area for information in a computer. Most computers have this type of memory installed on small circuit boards called Dimms.

Serial PCBs - Circuit boards inside a Lane Server that communicate to the Distribution PCBs and the console keyboards. The C168P serial board is used for the keyboards while the C104P is used for the Distribution PCBs

Sound PCB - A circuit board inside a Lane Server that converts the digitized sound exciter audio located on the hard disk so that it can be sent to the speaker in the overhead monitor. This PCB is used for the sound exciter feature.

Overview

The Brunswick Classic scoring system consists several pieces of equipment. A control desk computer provides the bowling center personnel with Point of sale (POS) capability and the ability to control lanes from a remote location. Lane Servers connects to bowler keyboards for each lane, overhead monitors for each lane, and a pin camera on each lane pair for a bank of 8 lanes. Additional equipment such as distribution PCBs or GS pinsetter controllers connect to the server as needed. Refer to *Figure 1.*

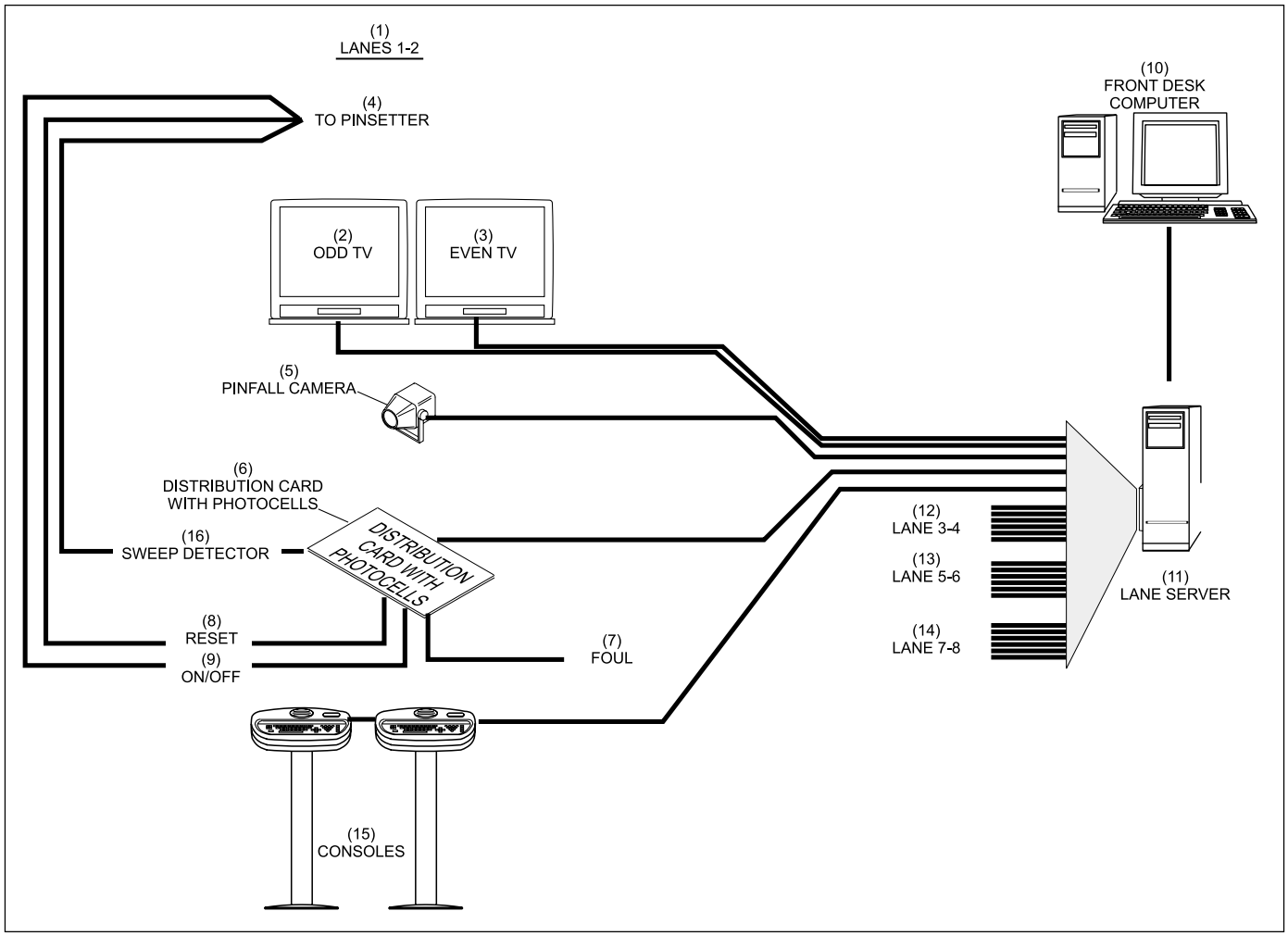


Figure 1. Classic Scoring System.

(1) LANES 1-2
(2) ODD TV
(3) EVEN TV
(4) TO PINSETTER
(5) PINFALL CAMERA
(6) DISTRIBUTION CARD WITH PHOTOCELLS
(7) FOUL
(8) RESET
(9) ON/OFF
(10) FRONT DESK COMPUTER
(11) LANE SERVER
(12) LANE 3-4
(13) LANE 5-6
(14) LANE 7-8
(15) CONSOLES
(16) SWEEP DETECTOR

Control Desk

The control desk system provides the bowling center personnel with the ability to control the pinsetters and lane servers from a remote location. The heart of the system is a computer using Microsoft's Windows NT operating system and program called Brunswick Classic to provide the center with lane, scorer, and cash control as well as the ability to interface leagues.

Other devices located at the control desk include typical point of sale (POS) devices such as a cash drawer, receipt printer, pole display and receipt printer. Refer to the *Figures 2* and *3.*

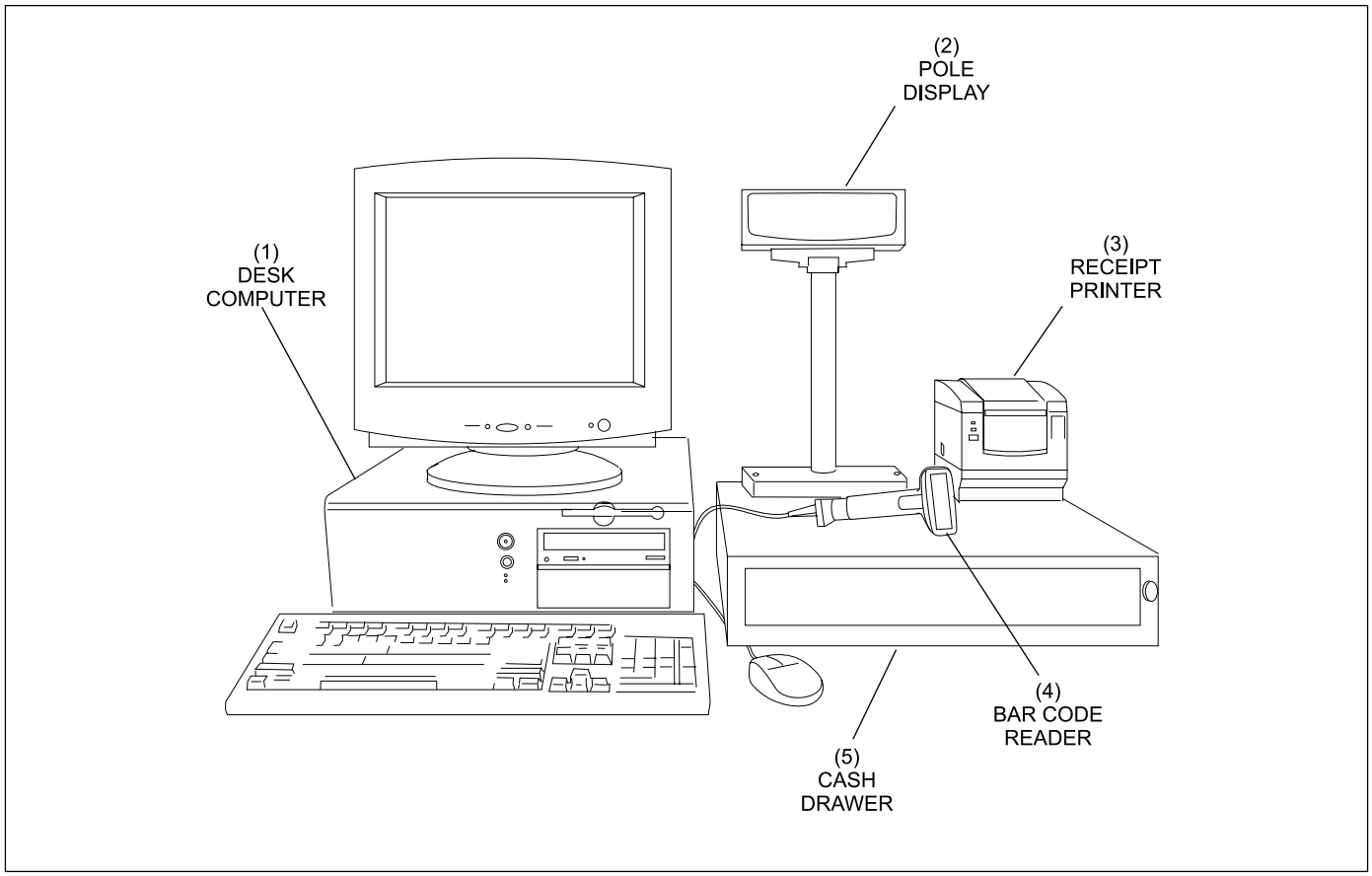


Figure 2. Brunswick Classic Scoring System Control Desk Overview

(1) DESK COMPUTER
(2) POLE DISPLAY
(3) RECEIPT PRINTER
(4) BAR CODE READER
(5) CASH DRAWER

Control Desk Computer

The control desk computer is the heart of the Classic Scoring system. The computer connects to the Lane Servers through an Ethernet networking system using 10Base2 coaxial cable. To identify it on the network, it is assigned the computer name DATOR, in the networking properties of the Windows NT system. All additional control desk equipment connect to the back of the computer through standard computer connections. Refer to *Figure 3.*

(1) POWER IN
(2) VOLTAGE SELECTOR
(3) PRINTER
(4) POLE DISPLAY
(5) MOUSE
(6) KEYBOARD
(7) BAR CODE READER
(8) MONITOR
(9) ETHERNET

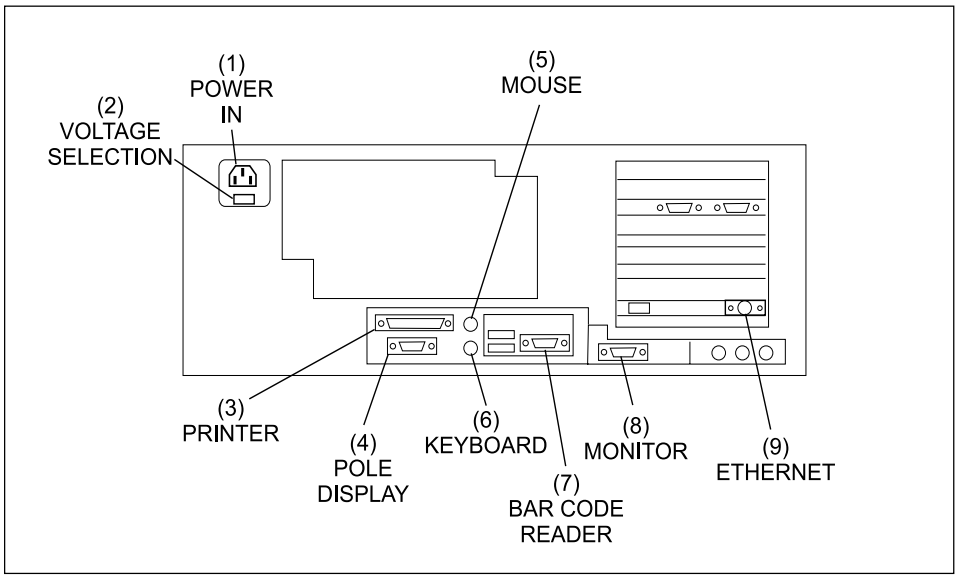


Figure 3. Brunswick Classic Scoring System - Control Desk Computer Connections

Control Desk Computer Utilities

Remote Reboot of the Lane Servers

The Reboot Function allows a user to shut down and restart the **Windows NT** system for one or all the lane servers.

To reboot the lane server click **Service** menu, then click **Reboot**.

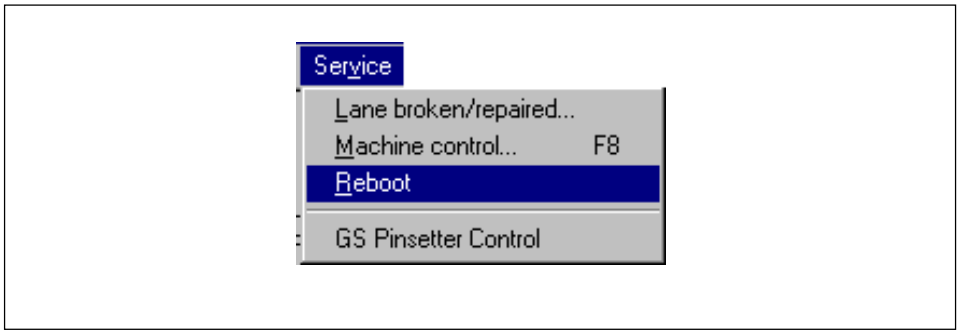


Figure 4. Service Menu

The Reboot Scorer window will open:

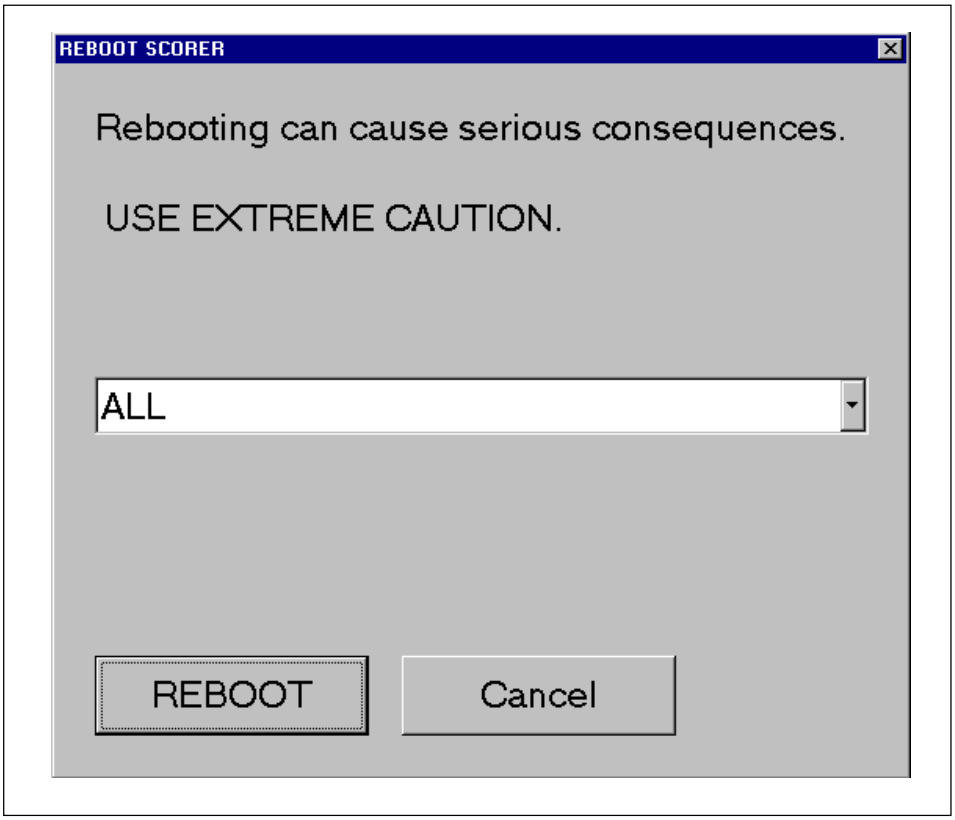


Figure 5. Reboot Scorer Window

Use the down arrow to select the **Lane Servers** to reboot, then select **Reboot.** To exit without rebooting select **Cancel.**

NOTE: *Before rebooting a lane server, make sure that all activity has stopped for the lanes connected to the server.*

Chkdsk

Chkdsk is a program used to check for errors on the hard drive. It will repair most damaged files.

Run Chkdsk whenever the computer has been shut down incorrectly , e.g. if the computer has been switched off or reset without the screen "*It's now safe to turn off your computer*" displayed.

Front Desk Computer

If it is available, Double-click the Windows desktop icon CheckDisk to run the program. Otherwise, click the Windows start button then on the Run menu option. Enter Chkdsk and click OK.

NOTE: *The program may take a while to run.*

Lane Servers

To shut down the Lane Servers, switch off the power. They are configured to run Chkdsk every time they are started.

NOTE: Never *switch off or reset any computer while it is running Chkdsk. This can corrupt the hard disk.*

Debug

The Debug option under the service menu becomes available when the Ctrl, Shift, and F12 buttons are pushed at the same time. Pressing these buttons, again, removes the option from the menu.

The debug utility is usually reserved for Brunswick testing, but can also be used by the bowling center to send keyboard commands to a lane. This can be helpful in the event that a keyboard for a lane is not working properly.

To open the Debug utility window, click the Service menu, then click Debug.

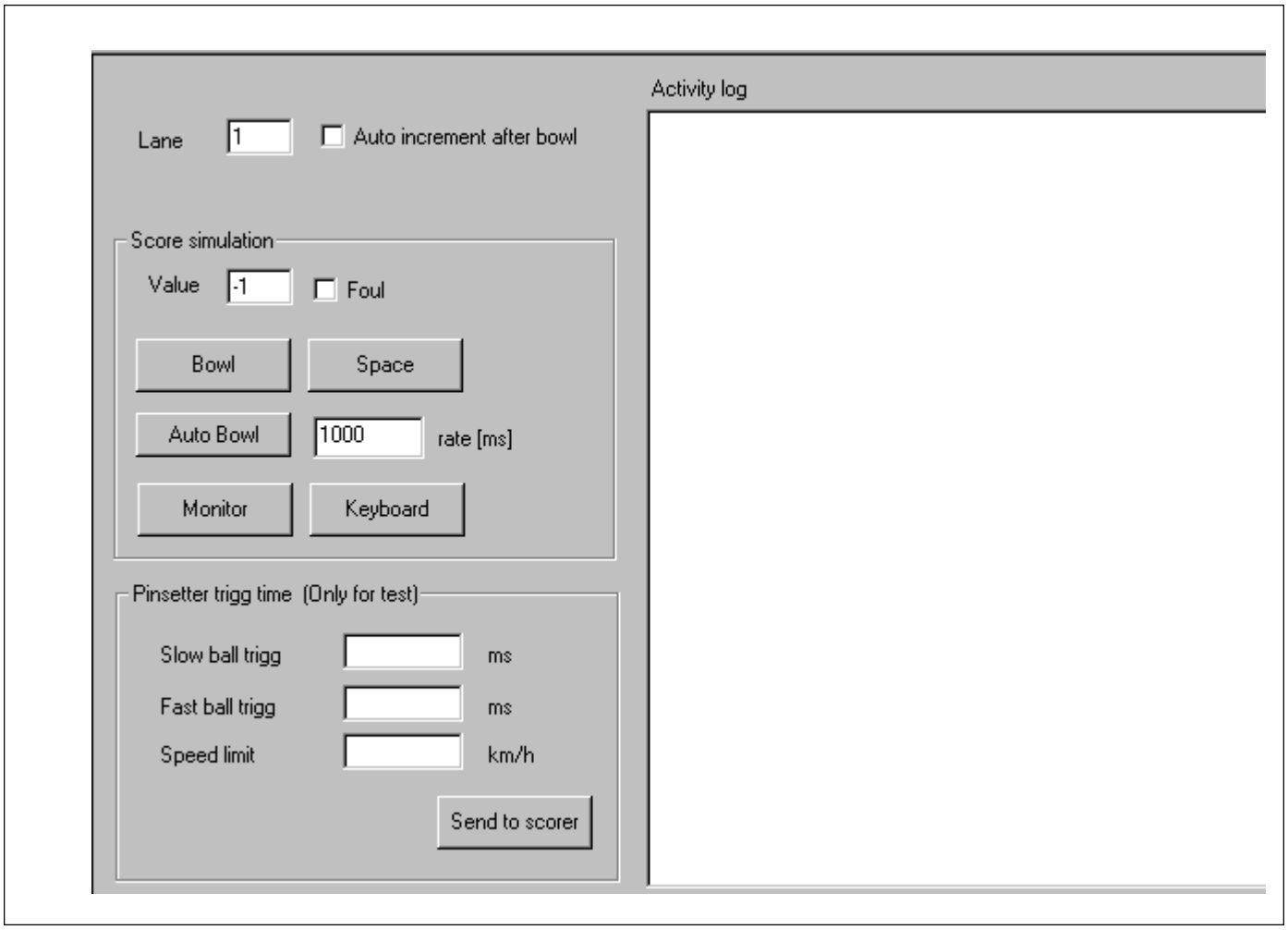


Figure 6. Debug Screen

In the Lane field enter the lane number that you wish to control. Select the Checkbox Auto increment after bowl to have the lane number advance to the next available lane after a score has been sent to the lane.

To send a score to the lane enter a value in the value field and click on the Bowl button. Use the value 10 for a strike. The value –1 sends a random score to the lane.

Click on the Foul checkbox to send a foul to the lane.

Click the **Auto Bowl** button to send continuous scores to the selected lane at the interval rate specified in the **rate (ms)** box. If the **Auto increment after bowl** checkbox is selected, each lane will receive scores in sequence. Clicking the **Auto Bowl** button again turns off the function.

The Space button sends a keyboard space to the lane. This is useful for starting a new game if the keyboard at a lane is not working.

The Monitor and Keyboard buttons are reserved for Brunswick testing.

The Pinsetter trigg time and Activity log areas are also reserved for Brunswick Testing.

Lane Server

A Lane Servers is a computer, located on the curtain wall, that controls the scoring and operation for up to 8 lanes. Connections to the server include the lane camera, overhead monitors, bowler keyboards, and distribution PCBs. Refer to *Figure 6.*

Like the control desk computer, the Lane Server uses Microsoft's Windows NT operating system and are connected each other and the control desk computer through an Ethernet networking system. To identify it on the network, a lane server is assigned the computer name Slave# (# represents the server number 1 = lanes 1-8, 2 = Lane 9 - 16 etc). This name must be programmed whenever the lane server is replaced. Refer to the Special Utilities area of this manual for information on setting the server name. Refer to *Figure 6.*

Figure 6. Lane Server - External

(1) FRONT
(2) BACK
(3) POWER ON/OFF SWITCH
(4) MAIN POWER SWITCH
(5) VOLTAGE SELECTION

Lane Server Connections

The Lane Server must connect to the control desk server and the lane pair equipment for up to 8 lanes. The connections on the lane server are located and the back or side of the unit. Refer to *Figures 7, 8,* and *9* .

(1) POWER SWITCH
(2) VOLTAGE SELECTOR
(3) POWER INPUT

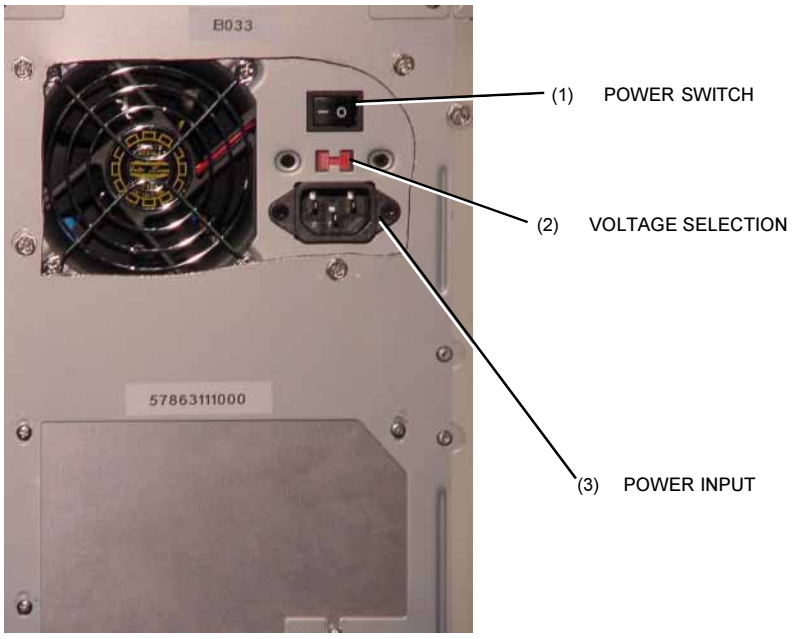


Figure 7. Lane Server Connections - Upper Back

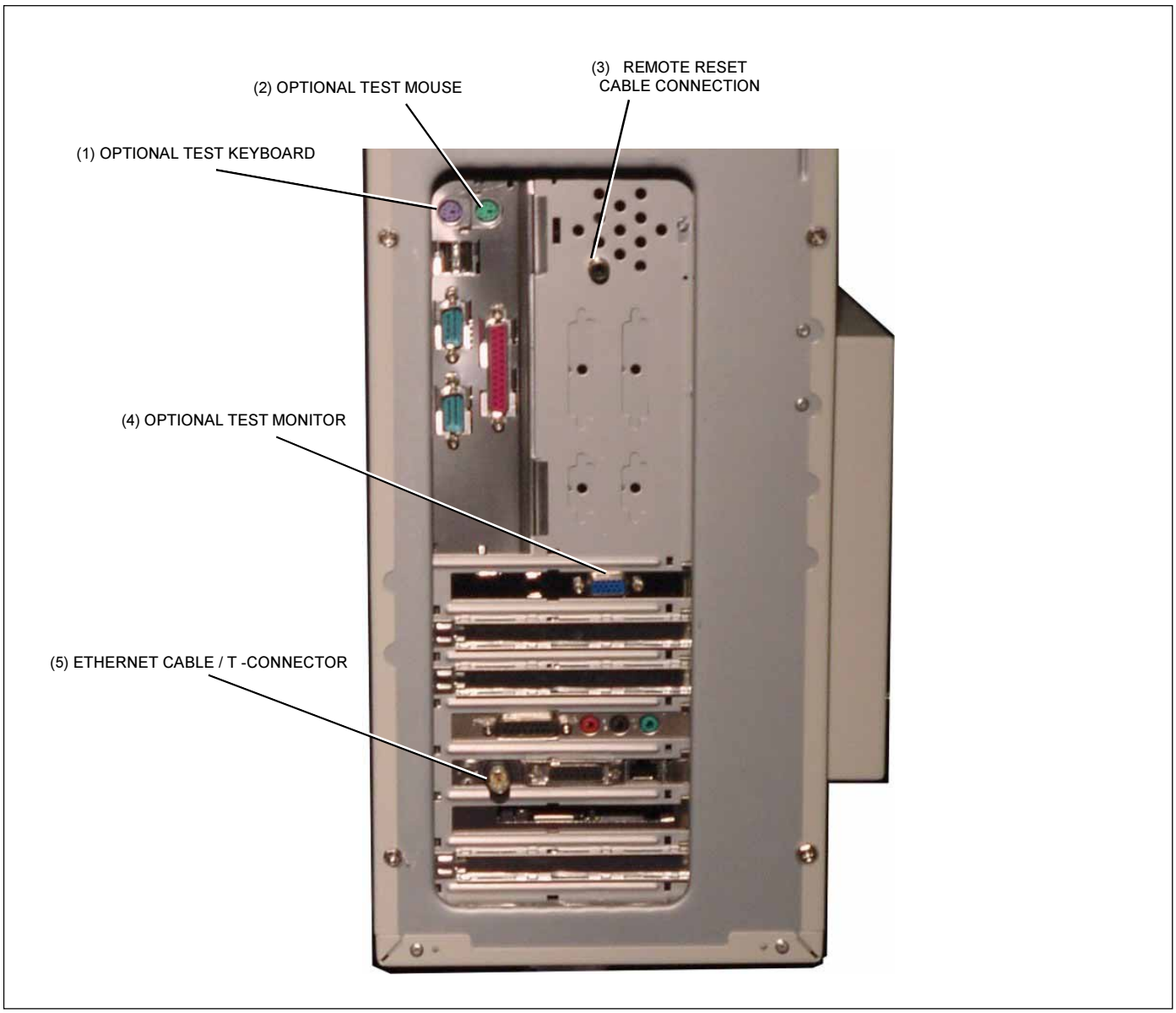


Figure 8. Lane Server Connections - Lower Back

(1) OPTIONAL TEST KEYBOARD

(2) OPTIONAL TEST MOUSE

(3) REMOTE RESET CABLE CONNECTION

(4) OPTIONAL TEST MONITOR

(5) ETHERNET CABLE / T-CONNECTOR

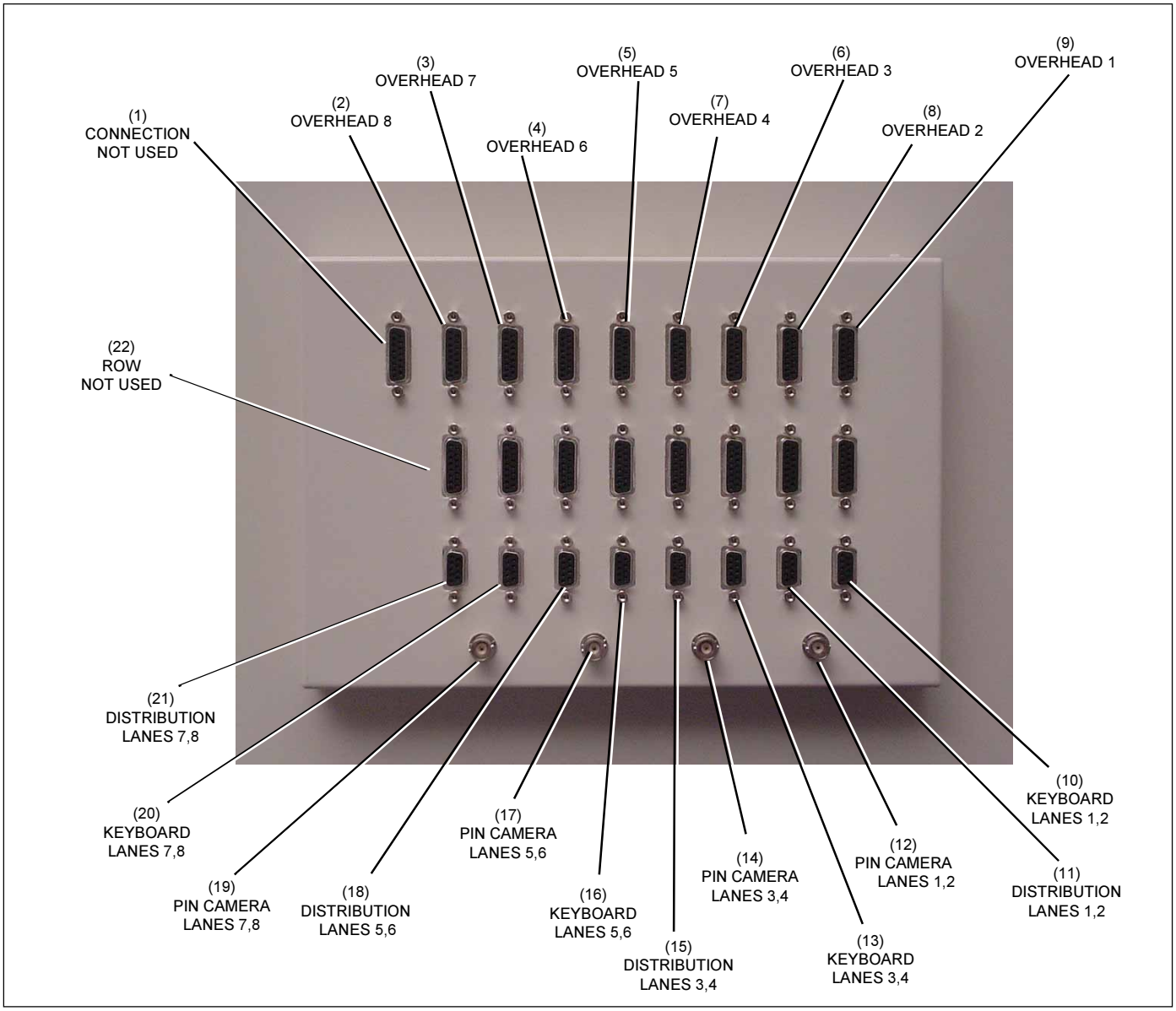


Figure 9. Lane Server Connections - Side

(1) CONNECTION NOT USED
(2) OVERHEAD 8
3) OVERHEAD 7
(4) OVERHEAD 6
(5) OVERHEAD 5
(6) OVERHEAD 3
(7) OVERHEAD 4
(8) OVERHEAD 2
(9) OVERHEAD 1
(10) KEYBOARD LANES 1,2
(11) DISTRIBUTION LANES 1,2
(12) PIN CAMERA LANES 1,2
(13) KEYBOARD LANES 3,4
(14) PIN CAMERA LANES 3,4
(15) DISTRIBUTION LANES 3,4
(16) KEYBOARD LANES 5,6
(17) PIN CAMERA LANES 5,6
(18) DISTRIBUTION LANES 5,6
(19) PIN CAMERA LANES 7,8
(20) KEYBOARD LANES 7,8
(21) DISTRIBUTION LANES 7,8
(22) ROW NOT USED

Lane Server - Internal

Internally, the Lane Server contains off-the-shelf components that are typically found in an IBM compatible computers as well as a few custom designed circuit boards. Refer to *Figure 10*.

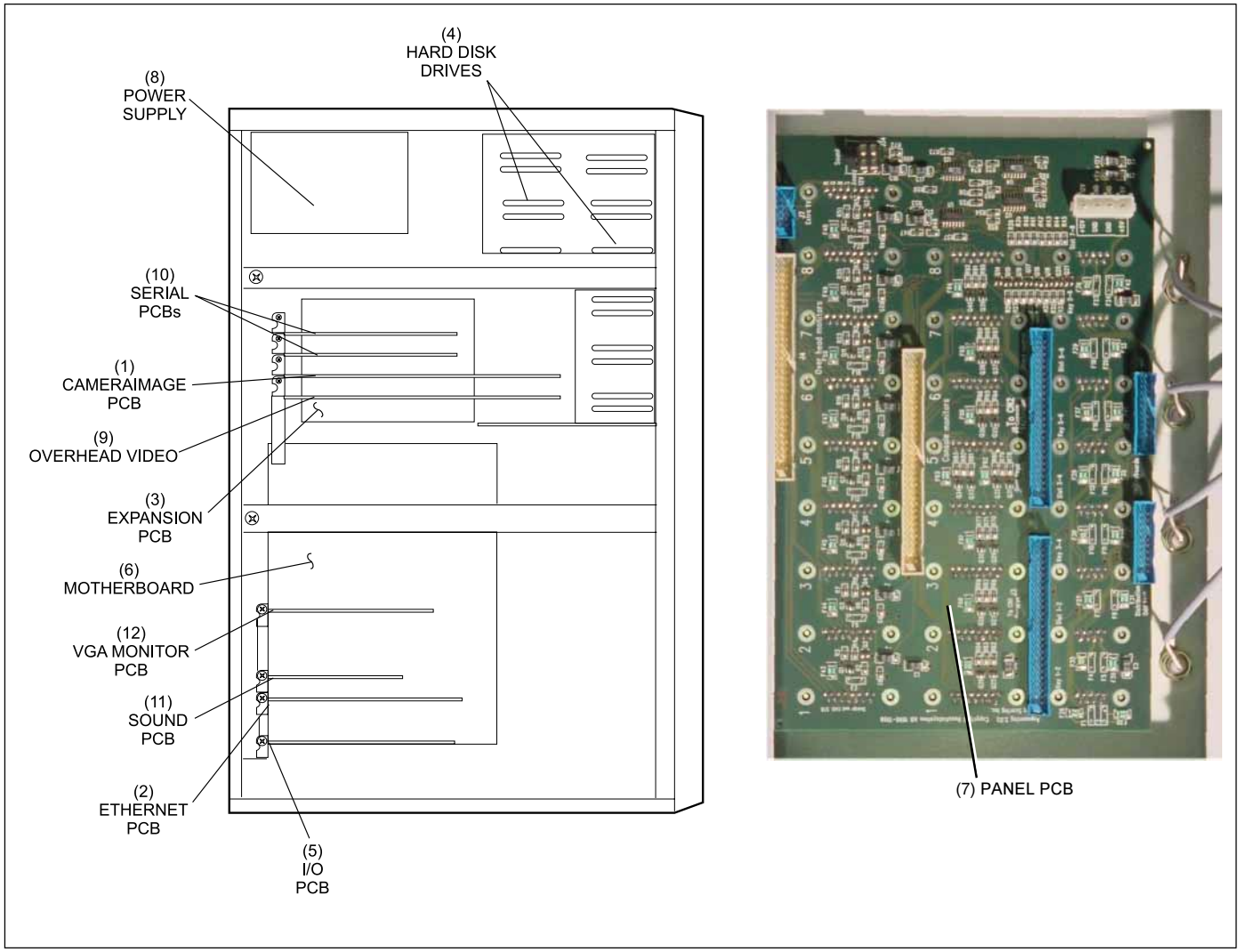


Figure 10. Lane Server Computer - Internal

(1) CAMERA IMAGE PCB
(2) ETHERNET PCB
(3) EXPANSION PCB
(4) HARD DISK DRIVES
(5) I/O PCB
(6) MOTHERBOARD
(7) PANEL PCB
(8) POWER SUPPLY
(9) OVERHEAD VIDEO
(10) SERIAL PCB's
(11) SOUND PCB
(12) VGA MONITOR PCB

Since the off-the-shelf components change frequently, the ones shown here may not look exactly like the ones in your lane server and may plug into the PCI slots instead of the ISA slots. Their function however will remain the same.

The functions of the internal components of the Lane Server are:

(1) Camera Image PCB - The Camera Image PCB is a custom made PCB that analyzes the video signal from up to 4 pin cameras to determine the scores for the lanes. When replacing this board make sure that the pin camera cables from the panel PCB are connected as shown below. The only adjustment or setup to this board is a contrast control which changes the light level for the pin cameras. Refer to the Pin Camera section of this manual for further details.

(1) LANES 7,8
(2) LANES 5,6
(3) LANES 3,4
(4) LANES 1,2
(5) CONTRAST CONTROL

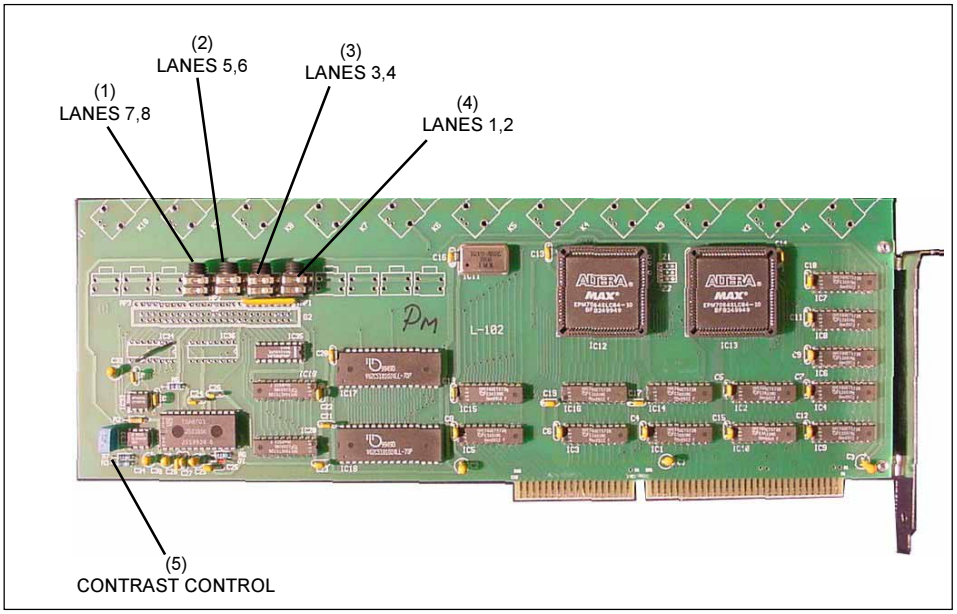


Figure 11.

(2) Ethernet PCB - This off-the-shelf circuit board that allows the Lane Server to send and receive information to the Control Desk Computer and to other Lane Servers. No setup is required for this PCB.

(1) BNC INPUT

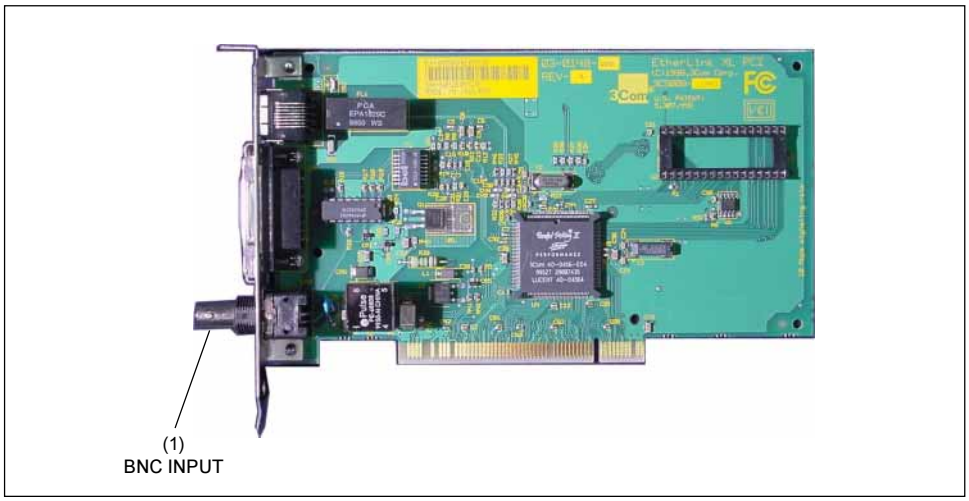


Figure 12. Ethernet PCB

(4) Hard Disk Drive - The hard disk drive contains the program for the Lane Server. Although there are two drives located in the server, only one is used at a time. In the event of a failure of one drive the second drive may be put into service by selecting the drive using the hard drive toggle switch and rebooting the server.

(1) HARD DRIVE TOGGLE SWITCH
(2) HARD DRIVE 1
(3) HARD DRIVE 2

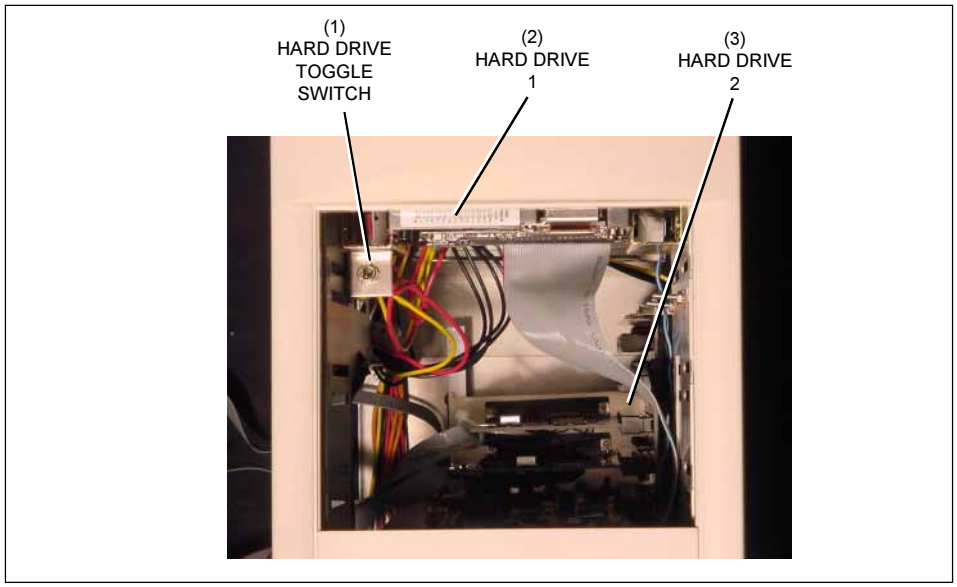


Figure 13. Hard Drive Disks

5) I/O - The I/O PCB is an 48 Channel off-the-shelf digital I/O PCB that allows the Lane Server to efficiently handle the overhead monitor's video and sound signals for 8 lanes. Set the jumpers and switches on the PCB as follows: JP1, JP2, JP3, JP4, JP8, - Short pins 2 and 3 ; JP5, JP6, JP7, JP9 - Short pins 1 and 2 ; SW1 - 1, 7, 8, - Set to OFF , 2, 3, 4, 5, 6, 7 - Set to ON, 10 - NC

(1) JP3 JUMPER
(2) JP1 JUMPER
(3) JP2 JUMPER
(4) JP6 JUMPER
(5) JP7 JUMPER
(6) JP8 JUMPER
(7) JP10 JUMPER
(8) JP11 JUMPER
(9) JP12 JUMPER
(10) JP13 JUMPER
(11) JP14 JUMPER
(12) TO PANEL BOARD J6
(13) JP9 JUMPER
(14) JP5 JUMPER
(15) NOT USED
(16) JP4 JUMPER
(17) SW1 SETUP SWITCH

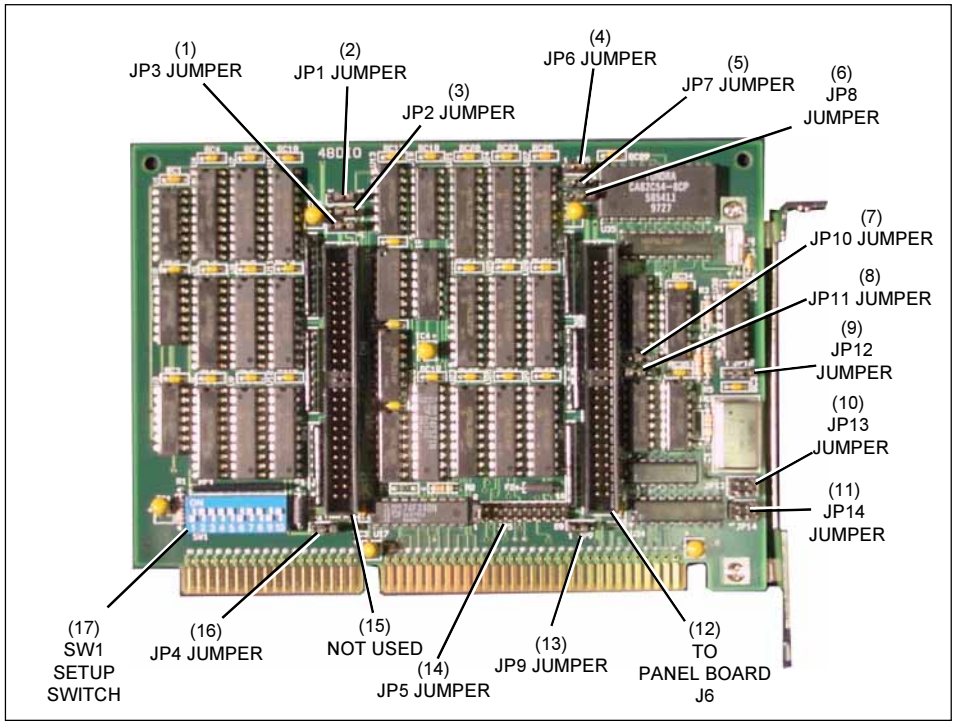


Figure 14. The I/O PCB

(3) Expansion PCB - The Expansion PCB provides expands the capabilities of the motherboard by adding 8 additional ISA Bus slots to the server. No setup is required for this PCB.

(6) Motherboard - The main system board. This PCB connects all components in the Lane Server together and provides the access to the processor and system memory.

(7) Panel PCB - The Panel PCB provide connections for the 8 lanes that the Lane Server controls. Connections include console keyboards, distribution PCBs, overhead monitors, sound exciter audio, and pin cameras.

(1) TO SOUND PCB
(2) POWER CONNECTION
(3) TO CAMERA IMAGE PCB
(4) TO SERIAL BOARD CP104
(5) TO SERIAL BOARD CP168
(6) NOT USED
(7) TO PET48DIO BOARD (CN2)
(8) TO OVERHEAD VIDEO PCB (J10)

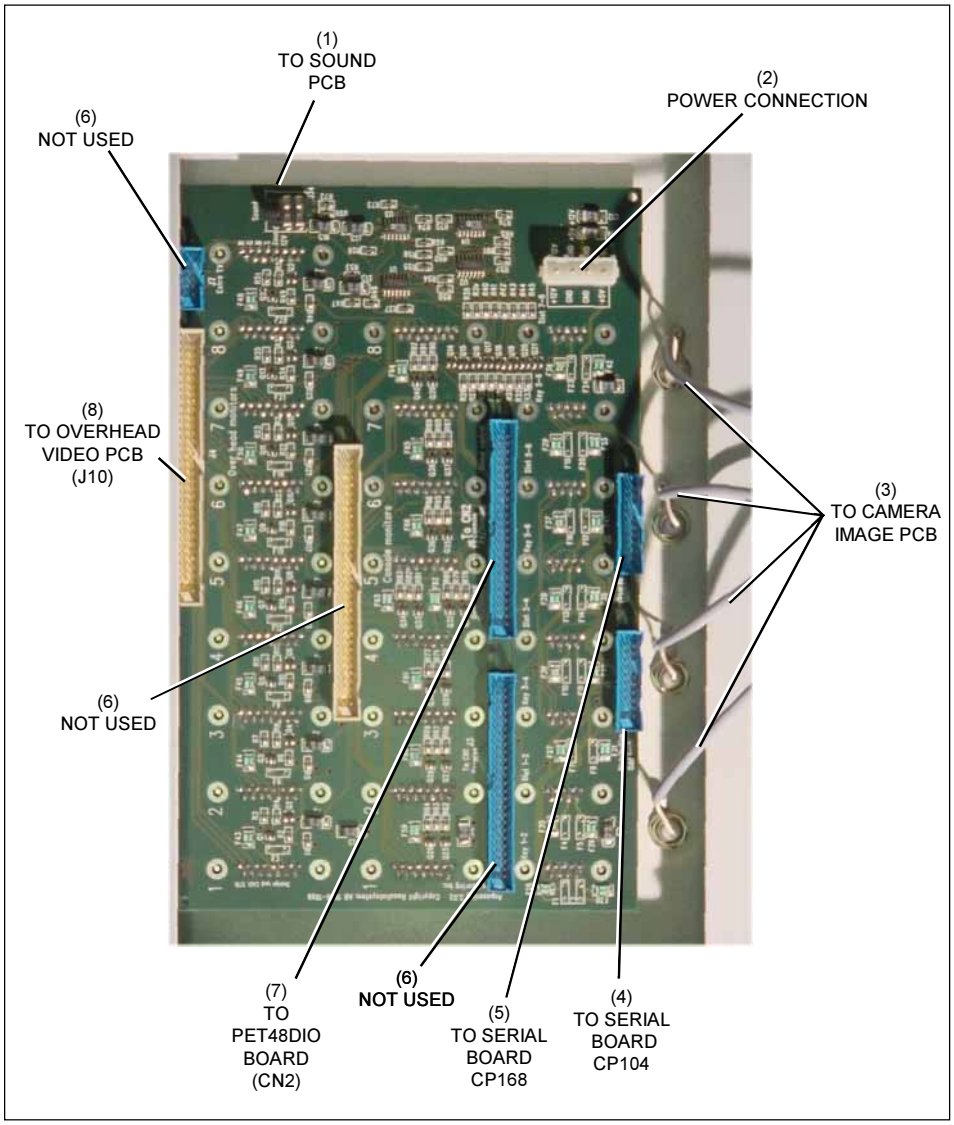


Figure 15. Panel PCB

(8) Power Supply - An assembly that provides the circuits in the LGP with DC power. Input to the power supply can be 115 VAC or 230 VAC. The unit must be set to the appropriate voltage setting using the selector switch located at the rear of the lane server Its output is 5 VDC and +/- 12 VDC.

(1) POWER SWITCH
(2) VOLTAGE SELECTOR
(3) POWER INPUT
(4) COOLING SUPPLY

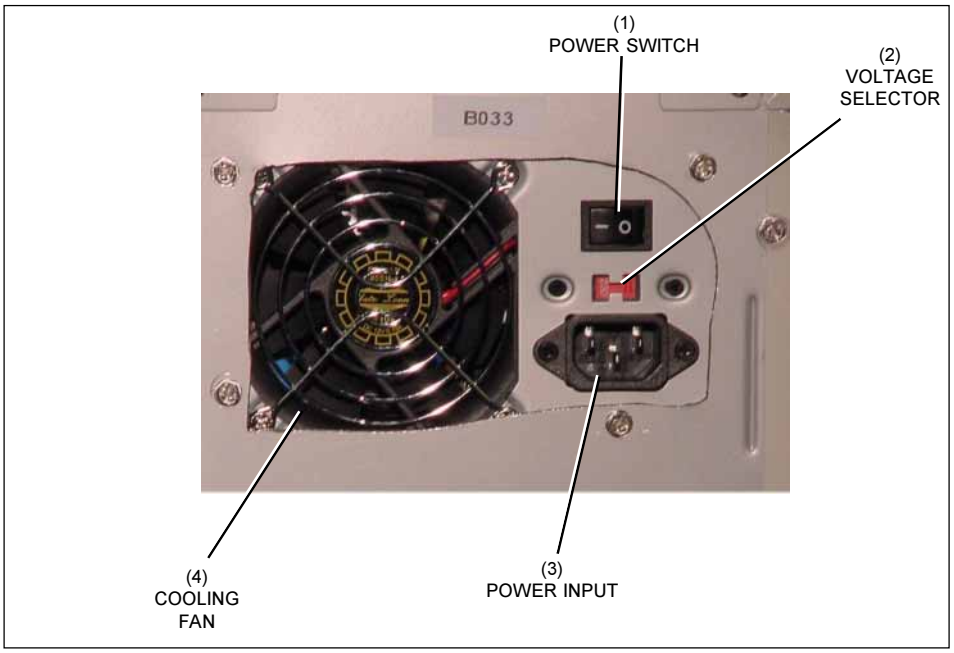


Figure 16. Power Supply

(9) Overhead Video PCB - The Overhead PCB is a custom made board that controls the video for up to 8 lanes. When replacing the PCB remove all jumpers from the board.

(1) NOT USED
(2) VIDEO INPUT
(3) REMOVE ALL JUMPERS

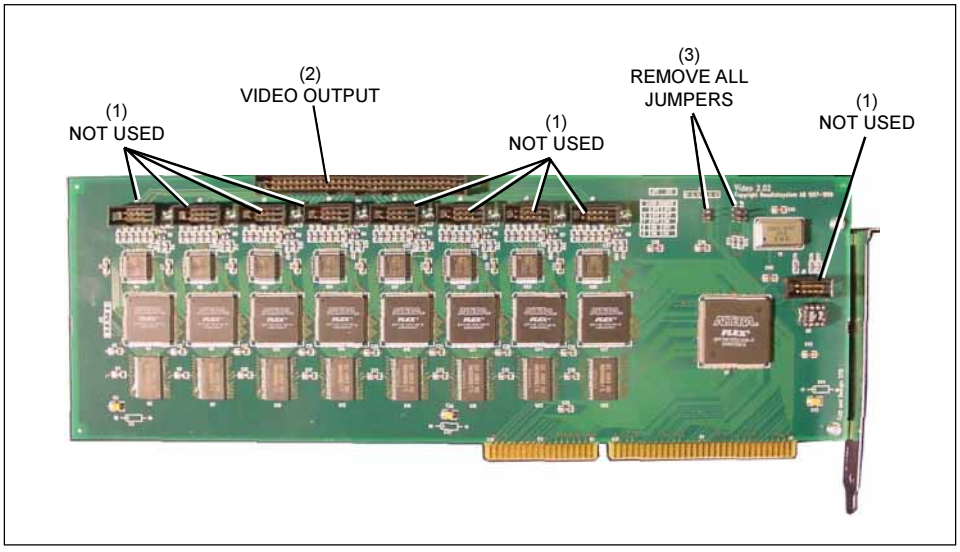


Figure 17. Overhead Video PCB

(10) Serial PCBs - The off-the-shelf Serial PCBs provide communication to the Distribution boards and the console keyboards. Currently serial board C168P is for the console keyboards, while serial board C104P is used for the distribution PCBs. No setup is required when replacing these boards.

(1) TO PANEL BOARD

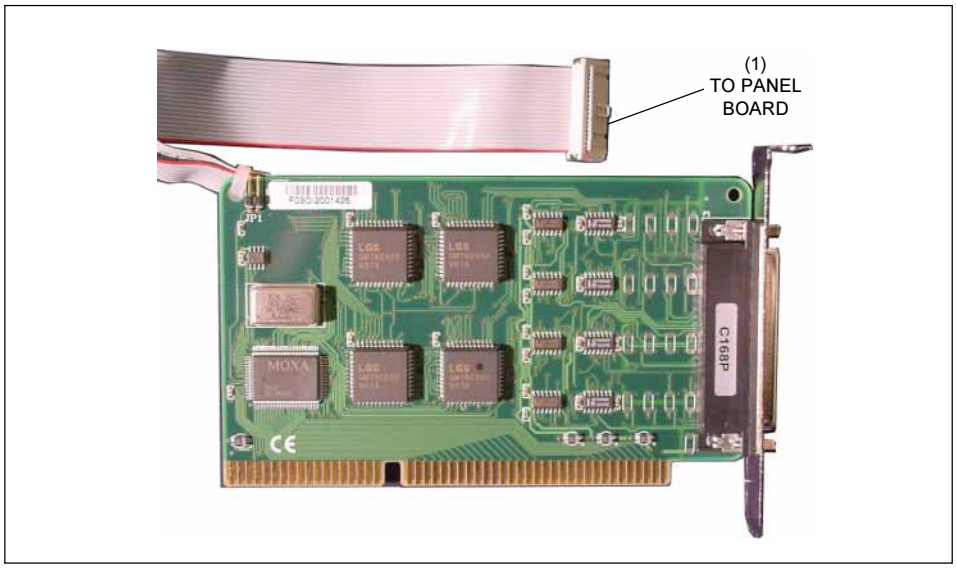


Figure 18. Serial PCBs

(11) Sound PCB - An off-the-shelf circuit board that processes the sound for the sound exciter option. This board converts the digital sound files located on the hard drive to analog signals that can be used by the speaker in the overhead monitors. No setup is required when replacing this board.

(1) TOPANEL BOARD
(2) NOT USED

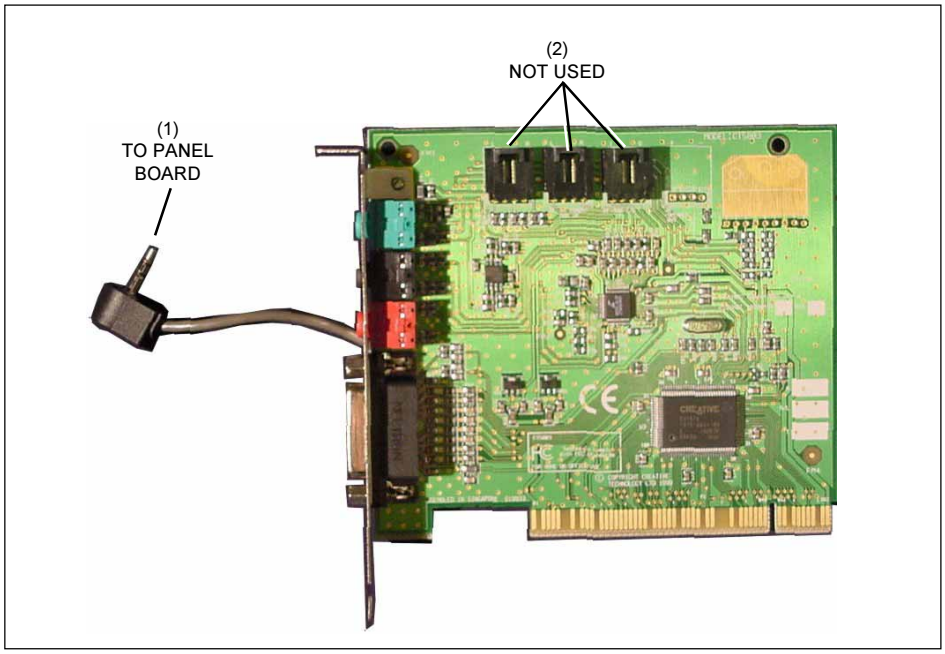


Figure 19. Sound PCB

Replacing The Lane Server

If a Lane Server computer is replaced or if the hard drive is changed on any Lane Server computer, the configuration and programming for the computer must be configured. Access the configuration utility as listed below.

1. Disconnect all other Lane Servers from the Network leaving the new server connected to the LAN.

2. At the **Front Desk computer** select the **File** menu and then **Update.** Click on each part to be updated (software, commercials, and multimedia). When finished, re-boot the scoring computer.

3. Disconnect the LAN from the new Lane Server and reconnect the LAN to other Lane Servers.

4. Reboot the new Lane Server.

5. After the new Lane Server is back up, press **ENTER** and follow the prompts to enter at least one bowler name.

6. Once the scoresheet appears, press **ENTER** to enter the menus.

7. Type **/classic** (be sure to include the Slash (Spare) first). A menu will appear, showing the current configuration.

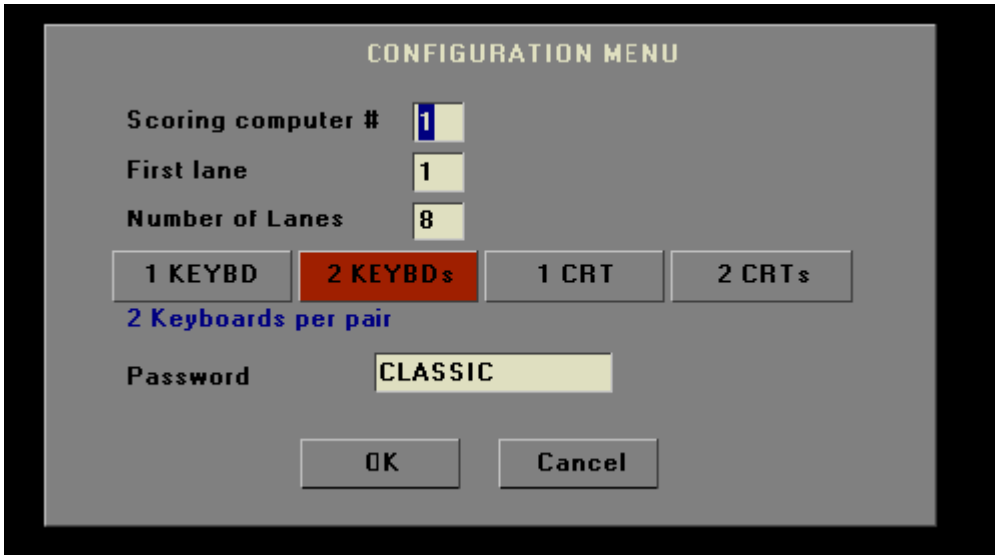


Figure 20. Lane Server Configuration

8. Configure the lane server using the following settings:

Scoring computer # - The value entered in this field depends on where the Lane Server is located in relationship to the other Lane Servers. To determine the number, simply count the number of Lane Servers in the system, starting at Lane 1.

First lane – Enter the first lane that is controlled by this lane server. (Usually, the number entered here will be 1,9,17,25 etc.)

Number of Lanes – Enter the total number of lanes controlled by this Lane Server. The maximum number that can be entered is 8.

Configuration Buttons - The four buttons below the number of lanes field determines the lane console configuration. Use the 2 Keybds button to set the configuration to 2 keyboards per pair.

Password - The **Password** field is not editable.

9. Once the desired changes have been made, select **OK** and press, **ENTER**.

The Lane Server computer will restart automatically. This should take about five to ten minutes. After the Lane Server has been restarted, the programming of the hard drive must be updated.

10. Reconnect the new Lane Server to the LAN.

11. Finally, update the pin settings and the lane settings for the Lane Server as follows:

    A. Select **Settings** and then **Pin Settings**. Save the settings for each lane to the Lane Server computer.

    B. Select **Settings** and then **Setup**. Press **OK**.

    C. Select **Settings** and then **Lane Settings**. Press **OK**.

(12) VGA PCB - The VGA PCB is an off-the-shelf circuit board that handles the video for the test monitor. No setup is required when replacing this board.

(1) TO TEST MONITOR

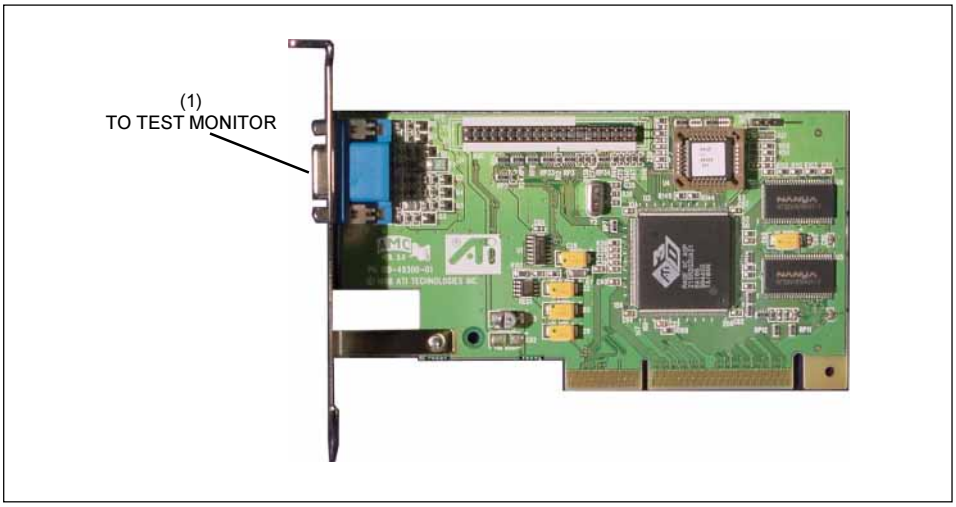


Figure 21. VGA PCB

Camera Assembly

The camera assembly contains a camera, ball sensor and a distribution PCB. Refer to the *Figure 22.*

(1) CAMERA
(2) DISTRIBUTION PCB
(3) BALL DETECT

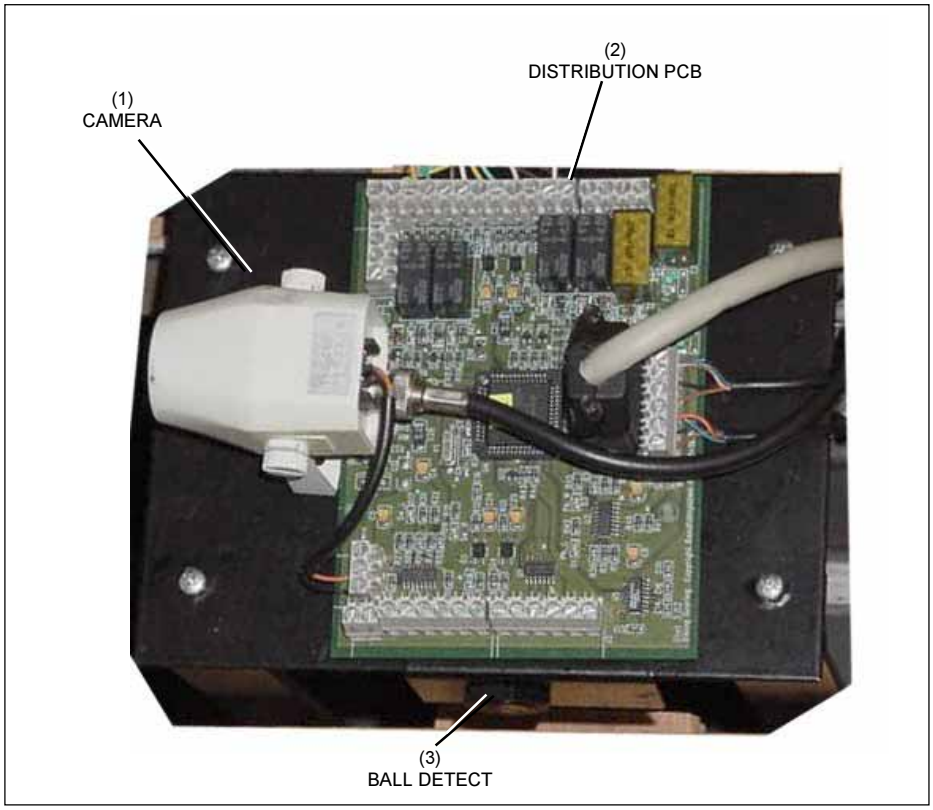


Figure 22. Camera Assembly

Distribution Board

The Distribution PCB interfaces the pinsetter on/off, pinsetter reset, foul unit, automated bumpers, and AMF Smart functions (if needed), to the lane server. It also supplies power to the Pin camera. Refer to *Figure 23.*

(1) AMF PINSETTER CONNECTIONS
(2) CAMERA POWER
(3) NOT USED
(4) MACHINE ON/OFF, RESET, FOUL
(5) BUMPERS
(6) BALL SENSOR
(7) LANE SERVER

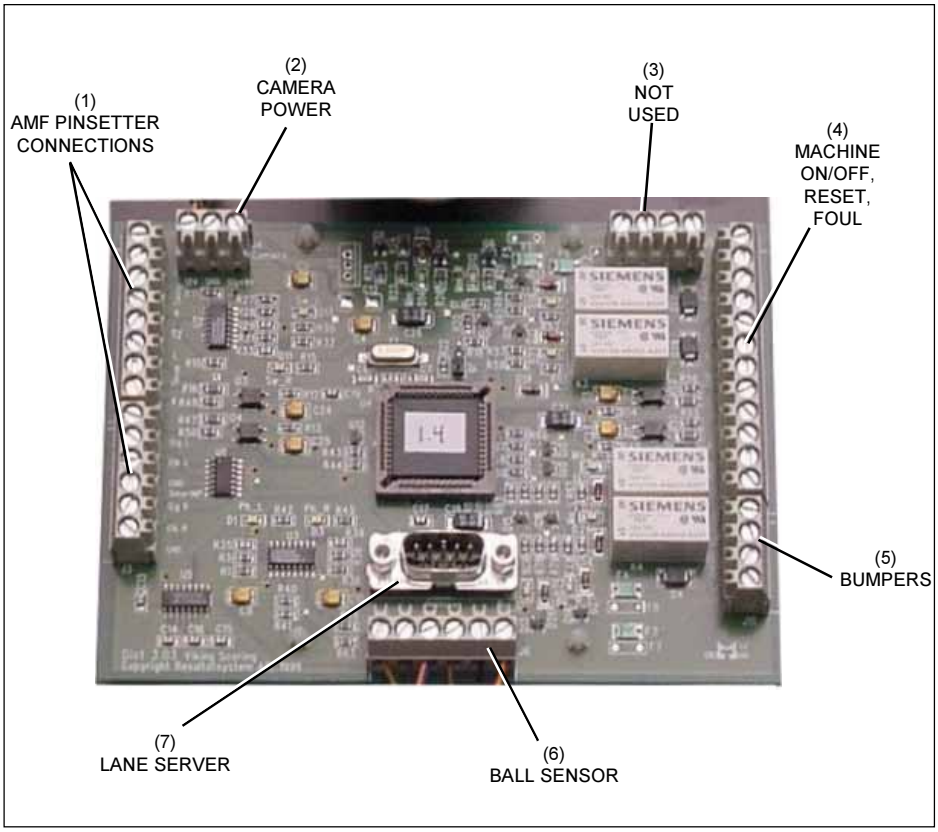


Figure 23. Distribution Board

(1) DISTRIBUTION PCB

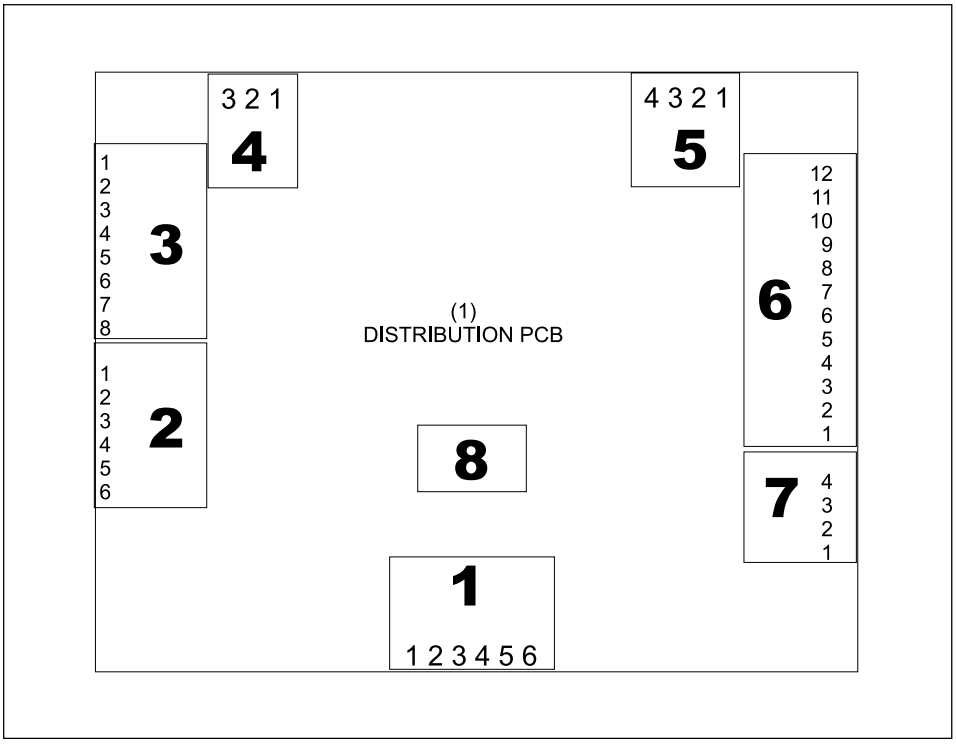


Figure 24. Distribution Board Diagram

The function of the distribution board connectors are:

Terminal block 1: Photo cells

Pin	Signal name
1	+12V
2	Photo cell Left
3	GND
4	+12V
5	Photo cell Right
6	GND

Terminal block 2: AMF Smart functions

Pin	Signal name
1	Data Left
2	Clk Left
3	GND
4	Data Right
5	Clk Right
6	GND

Terminal block 3: Sweep detector, Second throw (AMF)

Pin	Signal name
1	Sweep detector Left A
2	Sweep detector Left B
3	Sweep detector Right A
4	Sweep detector Right B
5	Second throw Left A
6	Second throw Left B
7	Second throw Right A
8	Second throw Right B

Terminal block 4: Camera power

Pin	Signal name
1	+ 9V
2	GND
3	+ 12V

Terminal block 5: Back end motor (Not Used)

Pin	Signal name
1	
2	
3	
4	

Terminal block 6: Machine On/Off, Reset, Foul

Pin	Signal name
1	Machine Left A
2	Machine Left B
3	Machine Right A
4	Machine Right B
5	Foul Left A
6	Foul Left B
7	Foul Right A
8	Foul Right B
9	Reset Left A
10	Reset Left B
11	Reset Right A
12	Reset Right B

Terminal block 7: Bumper (Not Used)

Pin	Color	Signal name
1		
2		
3		
4		

Ball Sensor

The Ball Sensor is used by the system to determine when to score and to calculate the ball speed. Refer to *Figure 24.*

To adjust the ball sensor perform the following steps:

1. Check the alignment of the photocell with it's reflector.

2. Position the photocell so that the line on the lens is vertical and the yellow adjustment potentiometer at the back of the photocell is accessible.

3. Turn the yellow potentiometer until the yellow LED turns on. Then, turn it back the opposite direction until the LED turns off.

***NOTE**: The red LED will light indicated when the signal is too low.*

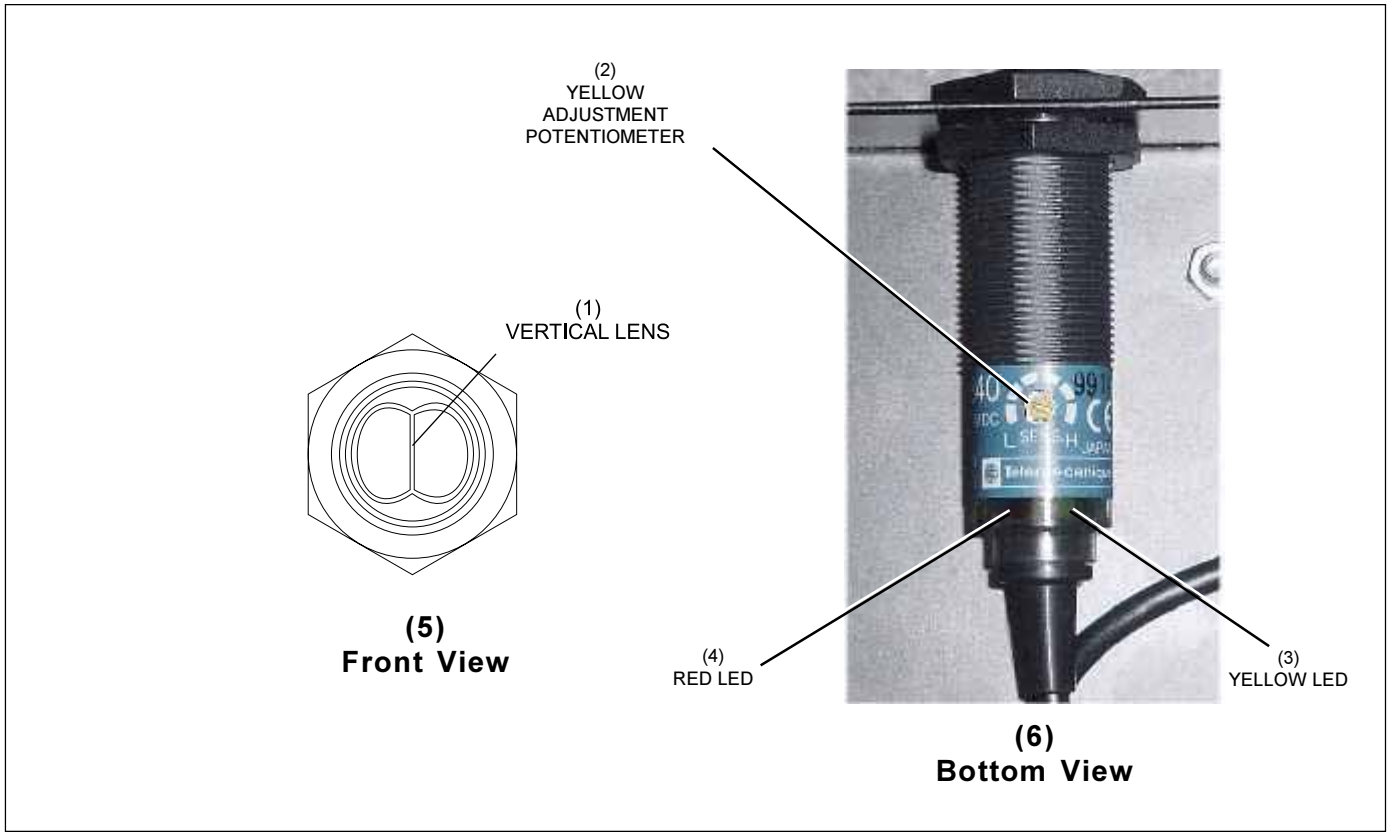


Figure 24. Ball Sensor

(1) VERTICAL LENS
(2) YELLOW ADJUSTMENT POTENTIOMETER
(3) YELLOW LED
(4) RED LED
(5) FRONT VIEW
(6) BOTTOM VIEW

Ball Speed Adjustment

Use the following steps to adjust the ballspeed:

1. Go to the Front desk computer and start Regedt32 by clicking Start and Run, and then type Regedt32. Click OK.

2. Select the Register menu and click Close until all windows have disappeared.

3. Select the Register menu, click on Select computer, and select the desired Scoring computer.

4. Select the window called HKEY_USERS.

5. Open the folder with lots of numbers in the name.

6. Open the folders Software, then Resultatsystem, and then Viking2001

7. If a value called ISABusSpeed can not be found, it must be added by:

   A. Opening the Edit menu.
   B. Select Add Value.
   C. Type in ISABusSpeed as the name of the new value and select DWORD.

8. Double-click on the ISABusSpeed line to edit the value.

9. To decrease the speed visible on the TV type in a value lower than 18123. This is a decimal number. Be sure to have the Decimal radio button selected.

10. Use the Shutgui file to re-boot the scoring computer and activate the changes.

Pin Camera

The Pin Camera takes a picture of the pins for both lanes of a lane pair. Connections include 12VDC power and Video Out.

When replacing the camera make sure that the 12VDC power supply is connected with the proper polarity and that the camera is positioned so that it is level. Additional adjustments impact the camera include the Pin Settings setup at the control desk and the Contrast adjustment on the Camera image PCB in the Lane Server.

(1) LEVEL ADJUSTMENT
(2) CAMERA POWER
(3) CAMERA VIDEO

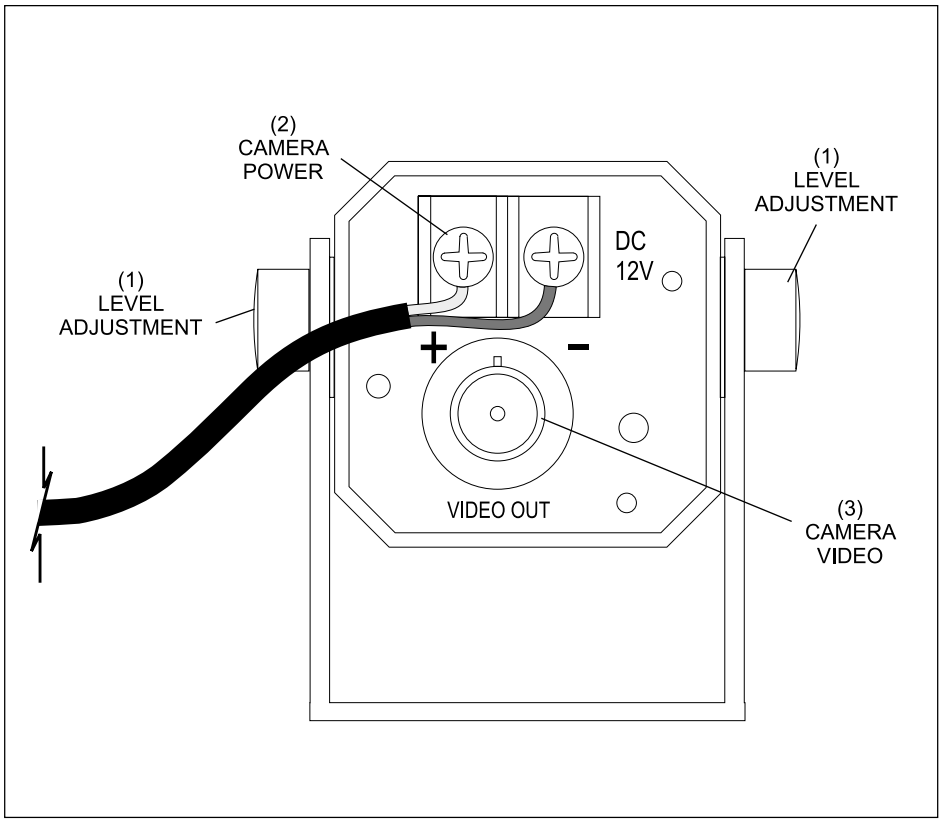


Figure 25. Pin Camera

PinsettingAdjustment

To adjust the CCD camera pin pictures, click Settings menu, then click Pin settings at the control desk to open the Pin Setting window. Refer to *Figure 26.*

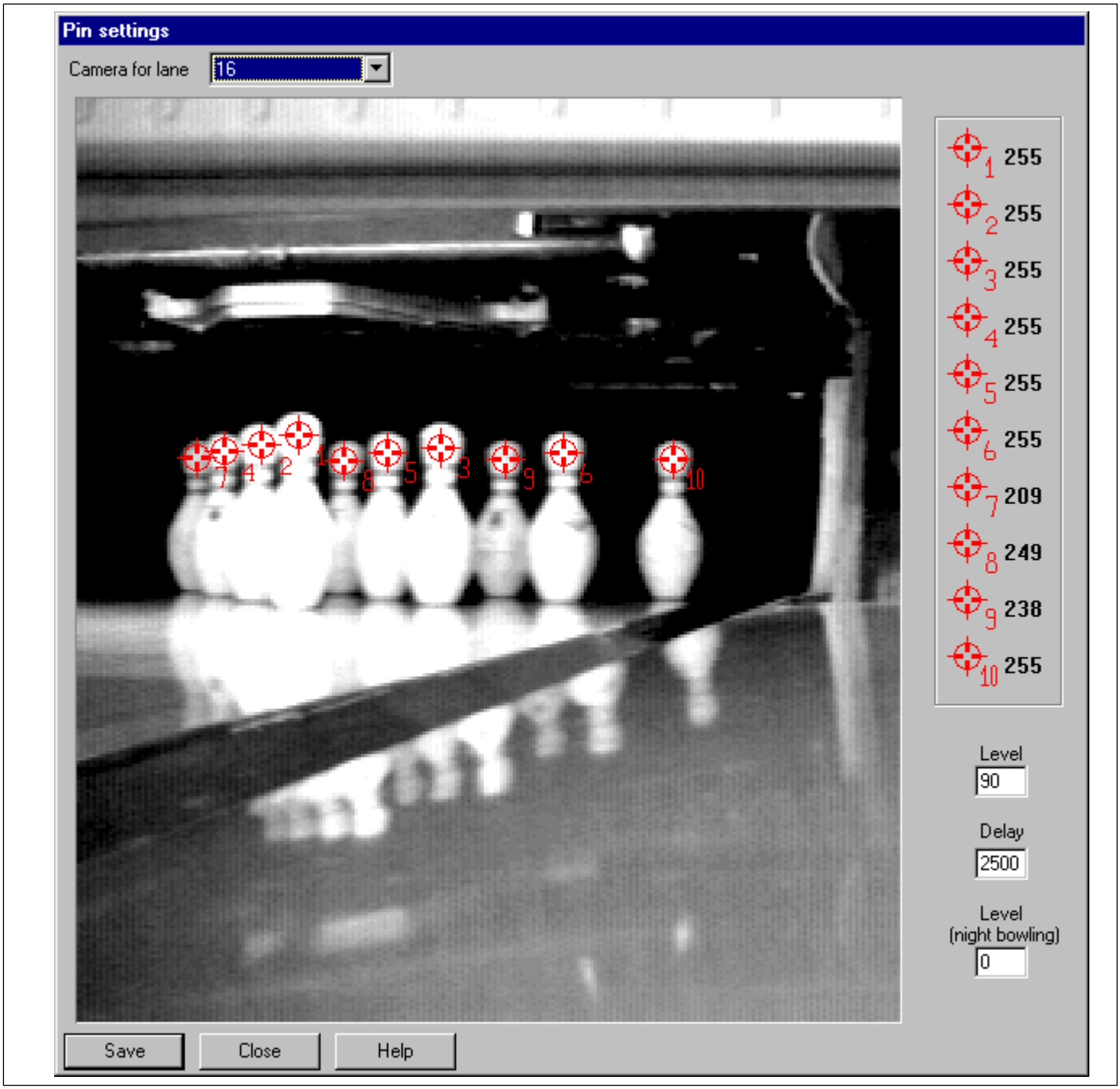


Figure 26. Pin Settings Window

Select the desired lane in the **Camera for lane** drop down box.

NOTE: *The pinsetter must be turned on to provide enough light for the camera shot, otherwise the picture will be too dark and it will give incorrect results.*

The camera shot is black-and-white, with grayscale settings from 0 (total black) to 255 (bright white). The picture displays ten markers, numbered 1 through 10. To adjust the picture, place the marker in the middle of the top portion of each pin.

NOTE: *It is important to place the correct marker on the corresponding pin; if not, the overturned pins will be incorrectly marked and scored. To the right of the picture is a column showing the brightness of each marker's center. To measure the light at different locations, move the marker and watch the displayed number at right. Placing the marker on the top of the pin is a good place to start, but may not be the optimum position for every pin.*

The **Level** setting is very important because it marks the border between black and white. If the value for a certain area is below the preset level, it is counted as black, otherwise as white. It is very important to preset the level to a suitable value. *A good rule of thumb is to place it in the middle between the level of light in the darkest pin top and the background.* Normally the preset level will be in the 80 to 100 range, but if the lighting is fainter or brighter than normal, it may fall outside these values.

The **Level** should be set to a substantially lower value than the light level for all pins, particularly pins in the back rows, where there is less lighting. For example, two camera shots of the same lane, taken immediately after each other, can have different lighting levels. For this reason it is a good idea to take several shots, in order to see how much the light can vary. Also remember that the camera shots are taken when the sweep is down. This makes live shots somewhat darker than the settings. It is important to allow for this when setting the levels.

The **Delay**, given in milliseconds, refers to the interval between when the sweep board starts to go down and the camera takes a shot. 2500 ms is an average settings. If the interval is too short it may include pins just about to fall. If it's too long, the sweep board may be down far enough to block some pins from the camera. The optimal interval would allow the camera to take a shot just before the sweep board blocks the pins. This setting can vary from pinsetter to pinsetter.

Set the **Level (night bowling)** lighting conditions to an optimal value for **night bowling**. In order to use night bowling its box must be marked in **Setup**.

NOTE: *Once all settings have been made for a lane, click* ***Save****,* before *switching to another lane, or the changes will not be saved.*

Camera Image Contrast Adjustment

The camera image contrast adjustment, located on the Camera Image PCB determines how bright the pins will appear when processed by the Camera Image PCB. This will impact all cameras attached to the Lane Server and have a direct impact on how well the cameras score. Use the following procedure to adjust the contrast.

1. Knock down all of the standing pins on the pin decks for the lanes controlled by the Lane Server.

2. Click on the green bar to turn all of the pinsetters on. Using the mouse, click on <settings> on the top menu bar. Select <pin settings> and select the first lane in the Lane Server's range. You will see the snap-shot picture of the pindeck of the selected lane with no pins on the lanes.

3. Verify the background for the first lane and the remaining 7 lanes of the server are black. The levels on the right should preferably be 0, and no greater than 10. This is accomplished by turning the blue potentiometer on the camera image PCB in the lane server. Access the adjustment by removing the 5-1/4" drive bay covers on the front of the Lane Server with the thin bladed screwdriver.

   Turning the potentiometer counterclockwise to the lower values, clockwise to raise the values. Close the window when complete.

***NOTE**: Do not try to adjust out reflection from oil on the pit curtain or whiteness (wear) on the out curtain. Clean or replace pit curtain.*

***NOTE:** The adjustment pot is very sensitive! This adjustment can be done without powering down the Lane Server.*

***NOTE:** Select a new lane at the desk to get a new snapshot and see the result of the adjustment.*

***NOTE:** It is more important to have the lowest possible value for the background that the higher value for the standing pins.*

4. Reset the pins from the desk. Select <SERVICE> then <MACHINE CONTROL> from the top menu bar. Select the lane range and click on <RESET>. All the pinsetters in the range should cycle.

5. Adjust the red targets for all 8 lanes as described in the Pin Setting Adjustment section of this manual.

Consoles

The consoles provide the bowler with the capability of entering names and making score correction. The consoles are connected to the Lane Server with a serial cable. Internally, a single circuit board called a Keyboard Controller is used to provide the interface between the keyboard and the Lane Server. No setup is required when replacing the board. Refer to *Figures 27 and 28.*

(1) LANE SERVER
(2) CONSOLES
(3) SERIAL CABLE

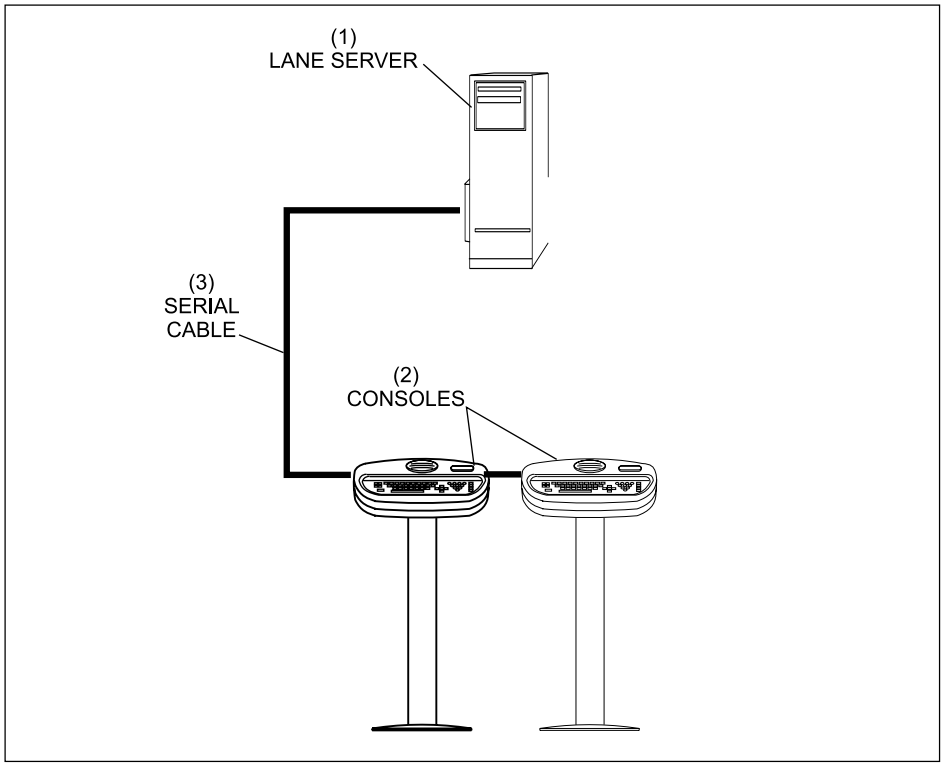


Figure 27. Console Connections

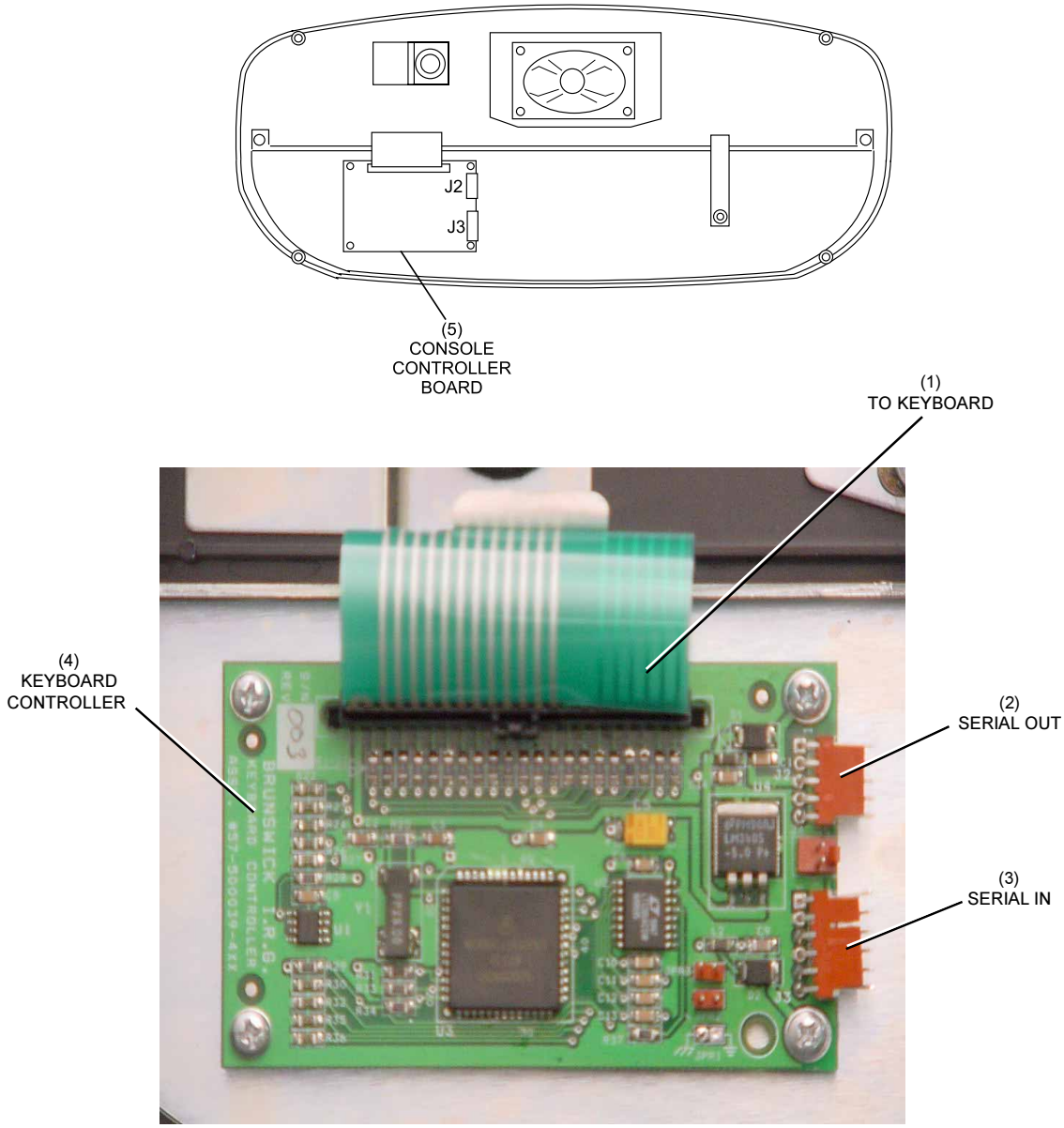


Figure 28. Console - Internal

(1) TO KEYBOARD
(2) SERIAL OUT
(3) SERIAL IN
(4) KEYBOARD CONTROLLER
(5) CONSOLE CONTROLLER BOARD

Overhead Monitors

The overhead monitors used in the Classic system are made by Grundig. Two sizes are currently available, 28" and 33". Because these monitors are off-the shelf they have no user serviceable part internally. The units are configured during installation and only may require only occasional adjustment using the provided remote control. Refer to Grundig supplied user manual for further information.

NOTE: *If an overhead monitor is replaced an initial setup must be performed so that the unit display TV video properly. Refer to Overhead Monitor Configuration for further details.*

Overhead Monitor Configuration

When replacing an overhead monitor, the unit must be configured to properly receive the video from the NTSC/PAL converter located at the front desk. The procedure differs depending on which Grundig monitor is being installed.

Grundig 28 inch 100 HZ Model (ST70284/8)

1. Connect all cabling to the overhead.

2. Make sure that the TV video system is on and the signal is being sent to the overhead monitor.

3. Turn the monitor on.

4. When the MENU LANGUAGE screen appears, use the up arrow (+P) and the down arrow (-P) to select the fifth item from the list shown in the first column. Press OK on the remote control when English is highlighted. This will select English as the language to display the instructions.

5. On the COUNTRY screen using the right arrow key to move the cursor beyond the right side of the screen until page 2 appears. Select the option OTHER and press the OK key on the remote.

6. On the RECEPTION VIA screen, select the option CABLE (FREQUENCY SEL. / MHZ).

The unit will display the ATS EURO PLUS screen and automatically start looking for TV stations. This may take up to 10 - 15 minutes.

When finished the EASY DIALOG TIPS screen will appear.

7. On the EASY DIALOG TIPS screen, select menu item 3, PRESET LIST.

8. Select channel 1 and press OK on the remote. If the picture looks good select menu item 3 again. If the picture quality is poor, the video source is bad or the unit will have to be tuned manually.

Manually Tuning

A. On the PRESET LIST Screen highlight channel 1 and press the green button on the remote. (Edit).

B. Select the EDIT FREQUENCY SETTINGS option. There are two pages to this screen. Use the cursor to the bottom of the page to see additional setting. The screen will list the available settings (at the left) along with their preset values (on the right). The expected values are:

Type: = Frequency
Freq. Entry: = 0xx.xxxx (The actual frequency setting will vary slightly from monitor to monitor.
Fine Tuning
TV Standard = B?G (Universal)
Color Standard = PAL 60
Sound Channel = Automatic (This is on page 2)
Control = Off (This is on page 2)

If any of these items are not correct, edit them. The Type, TV Standard, Color Standard, Sound Channel, and Control are edited by highlighting them and pressing OK on the remote. This will bring up a sub-menu. Press OK to select a new value.

The frequency entry is edited by highlighting it and pressing OK. This brings up the frequency with a cursor beneath the first character. Move the cursor to the desired character and enter a number from the remote control number pad. when finished press OK. The frequency should be between 52MHZ and 58MHZ.

The fine tuning entry works by highlighting it and pressing the right or left arrow keys on the remote. This changes the frequency by fixed amounts.

C. When finished editing, press the "|" button on the remote. Then, from the EASY DIALOG TIPS screen select #4 TO TV STATION.

Grundig 33 Inch 50/100 HZ Models and 28 Inch 50 HZ Model

1. Connect all cabling to the overhead.

2. Make sure that the TV video system is on and the signal is being sent to the overhead monitor.

3. Turn the monitor on.

4. When the MENU LANGUAGE screen appears, each available language will be highlighted in sequence and the language for all the selections on the screen will change to the highlighted language. . Press OK on the remote control when GB English is highlighted. This will select English as the language to display the instructions. You can also use the up and down arrows on the remote to highlight your selection.

5. On the ADJUST COUNTRY, Select the option *OTHERS and press the OK key on the remote.

6. On the RECEPTION VIA screen, select the option CABLE (FREQUENCY SEL. / MHZ).

The unit will automatically start looking for TV stations. This may take up to 10 - 15 minutes.

7. Press OK to select the program list, then select channel 1. Press OK to show the TV picture.

NOTE: *You should see a good TV picture. I the picture quality is bad then you will need to manually tune the monitor.*

8. Press the | button on the remote, then press OK.

9. On the DIALOG CENTER screen select the option TV-PROGRAM-CHART. This will list all the channels that were found and the frequency of each.

10. Highlight the channel 1 listing.

    If the channel 1 picture looks OK and the channel 1 frequency is between 52Mhz and 58Mhz, press OK, then press the TXT button.

    If the picture quality is poor or the frequency is out of the range 52Mhz - 58Mhz, manually tune the monitor.

Manually Tuning

A. On the TV-PROGRAM-CHART screen, highlight channel 1 and press the green button on the remote. A three digit frequency with several digits after the decimal point will appear on the screen. The first digit will have a cursor under it.

B. Slowly enter the number 052. After each digit is accepted, it will appear on the screen and the cursor will move to the next digit. If you make a mistake, use the left or right arrows on the remote to move the cursor to the desired digit. After entering the last digit, make sure that the cursor is under the first digit of the number.

Tip: *If the other monitors in the center are adjusted and working, obtain the frequency for channel 1 from one of the monitors and enter that number instead of 052.*

C. Fine tune the monitor using the up or down arrows to increment (or decrement) the digits after the decimal point until you see the TV picture.Continue fine tuning until the picture suddenly breaks up. Decrement the fine tuning about .5Mhz.

D. Move the cursor to the right side of the screen, under the block labeled NORM. Make sure that the option B/G FM 5.5 (A2 STEREO) is highlighted.

When done, press OK to lock the channel. Press TXT on the remote to leave the menu.

Type: = Frequency
Freq. Entry = 0xx.xxxx (The actual frequency setting will vary slightly from monitor to monitor.
Fine Tuning
TV Standard = B?G (Universal)
Color Standard = PAL 60
Sound Channel = Automatic (This is on page 2)
Control = Off (This is on page 2)

If any of these itemms are not correct, edit them. The Type, TV Standard, Color Standard, Sound Channel, and Control are edited by highlighting them and pressing OK on the remote. This will bring up a sub-menu. Press OK to select a new value.

The frequency entry is edited by highlighing it and pressing OK. This brings up the frequency with a cursor beneath the first character. Move the curso to the desired character and enter a nunber from the remote control number pad. when finished press OK. The frequency should be between 52MHZ and 58MHZ.

The fine tuning entry works by highlighting it and pressing the right or left arrow keys on the remote. This changes the frequency by fixed amounts.

C. When finished editing, press the "|" button on the remote. Then, from the EASY DIALOG TIPS screen select #4 TO TV STATION.

Overhead Monitor Size/Position Adjustment

The screen adjustments for the Grundig monitors are performed through on screen menus using the monitor's remote control.

Caution: *Improper adjustment of the monitors can result in a damaged or unreadable monitor. Do not change any setup parameter other than those detailed in this adjustment procedure.*

Adjust the image's position on the monitor as follows.

1. Turn the monitor to be adjusted "On".
2. Using the remote control, access the Dialog Center screen by pressing the key **[I]** then **[OK].**
3. Use the **P- and P+** keys until the menu option **"Service"** is highlighted. Press **[OK]** to select service.
4. Use the **P- and P+** keys until the menu option **"For authorized dealer"** is highlighted.
5. Enter the password **8500** to enter the dealer menu.
6. Use the **P- and P+** keys until the menu option **"Geometry"** is highlighted. Press **[OK]** to select geometry.

Caution: *Select the option, "Geometry." Selecting any other option may cause damage to the monitor.*

7. Use the **P- and P+** keys until the the height, width, line shift (horizontal centering), or verical shift (vertical centering) option is highlighted. Press **[OK]** to enter the change screen for the selected adjustment.
8. Use the **<- and +>** keys to alter the settings for the adjustment. Press **[OK]** when finished.
9. Repeat steps 7 and 8 to perform other adjustments as needed.
10. When finished with all adjustments, use the **P- and P+** keys until the menu option "End" is highlighted. Use the **<- and +>** keys to select the desired exit option. ("With Memory" saves your changes on exit. "Without mem." exits without saving changes.) Press **[OK]** to exit.

Daily

Lane Servers

Restart (Reboot) the Lane server.

Weekly

Ball Sensor and Reflectors

The photocells can be cleaned with a damp rag. Consider all parts out at the lanes to be sensitive to moisture. The cameras also require cleaning periodically. Use special optic cleaning cloth to clean the lenses. After cleaning photocells or cameras bowl on the lane to verify proper scoring.

Quarterly

Overhead Monitors

Clean and adjust the overhead monitors as needed

Clean Lane Server Power Supply Fan

Clean the dust from the Lane Server power supply fan using a moderately powered vacuum.

Semi-Annually

Inspect Cables

Inspect cables and connectors on the circuit boards to verify they are in good condition. Repair as needed.

Annually

Clean Connections

Reseat the circuit boards in the Lanes Server. Clean the edge connectors on the boards as needed using a soft cloth and electrical contact cleaner.

Rotate Spare Parts

Install the circuit boards and components located in the spare parts kit to verify their functionality. Uuse the boards removed from the lane as your spares. Doing this will keep the integrity of the kit at its optimal level.

Lane Server Setup

If a Lane Server computer is replaced or if the hard drive is changed on any Lane Server computer, the configuration and programming for the computer must be configured. Access the configuration utility as listed below.

1. Disconnect all other Lane Servers from the Network leaving the new server connected to the LAN.

2. At the **Front Desk computer** select the **File** menu and then **Update.** Click on each part to be updated (software, commercials, and multimedia). When finished, re-boot the scoring computer.

3. Disconnect the LAN from the new Lane Server and reconnect the LAN to other Lane Servers.

4. Reboot the new Lane Server.

5. After the new Lane Server is back up, press **ENTER** and follow the prompts to enter at least one bowler name.

6. Once the scoresheet appears, press **ENTER** to enter the menus.

7. Type **/classic** (be sure to include the Slash (Spare) first). A menu will appear, showing the current configuration.

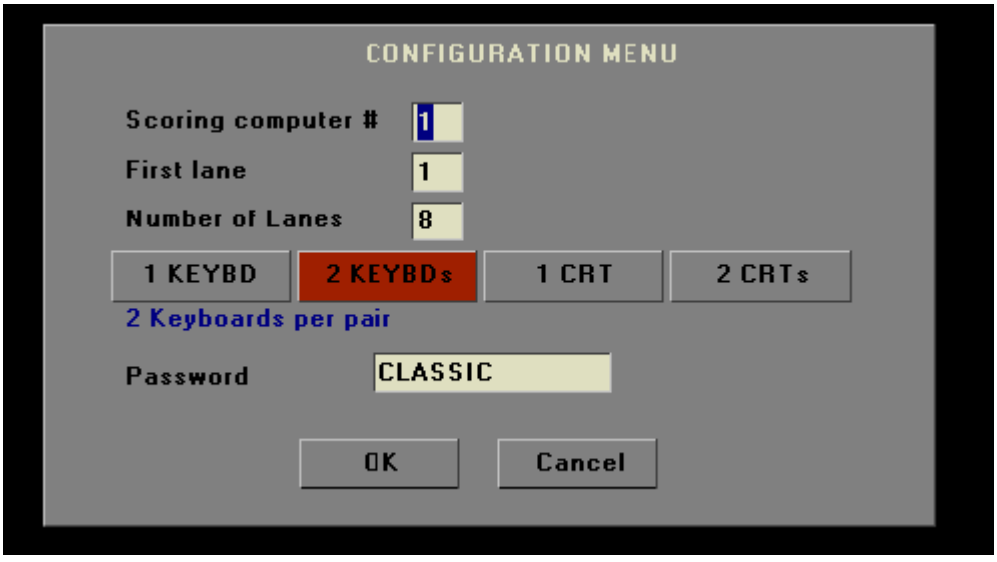


Figure 28. Lane Server Configuration

8. Configure the lane server using the following settings:

Scoring computer # - The value entered in this field depends on where the Lane Server is located in relationship to the other Lane Servers. To determine the number, simply count the number of Lane Servers in the system, starting at Lane 1.

First lane – Enter the first lane that is controlled by this lane server. (Usually, the number entered here will be 1,9,17,25 etc.)

Number of Lanes – Enter the total number of lanes controlled by this Lane Server. The maximum number that can be entered is 8.

Configuration Buttons - The four buttons below the number of lanes field determines the lane console configuration. Use the 2 Keybds button to set the configuration to 2 keyboards per pair.

Password - The **Password** field is not editable.

9. Once the desired changes have been made, select **OK** and press, **ENTER**.

The Lane Server computer will restart automatically. This should take about five to ten minutes. After the Lane Server has been restarted, the programming of the hard drive must be updated.

10. Reconnect the new Lane Server to the LAN.

11. Finally, update the pin settings and the lane settings for the Lane Server as follows:

    A. Select **Settings** and then **Pin Settings**. Save the settings for each lane to the Lane Server computer.

    B. Select **Settings** and then **Setup**. Press **OK**.

    C. Select **Settings** and then **Lane Settings**. Press **OK**.

Control Desk Computer Utilities

Remote Reboot of the Lane Servers

The Reboot Function allows a user to shut down and restart the **Windows NT** system for one or all the lane servers.

To reboot the lane server click **Service** menu, then click **Reboot**.

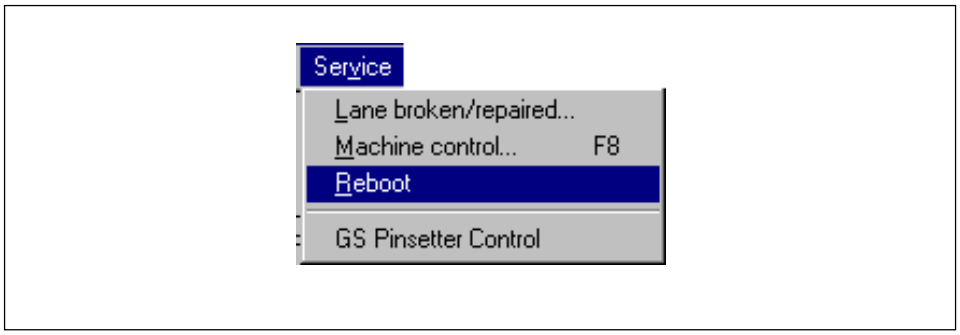


Figure 29. Service Menu

The Reboot Scorer window will open:

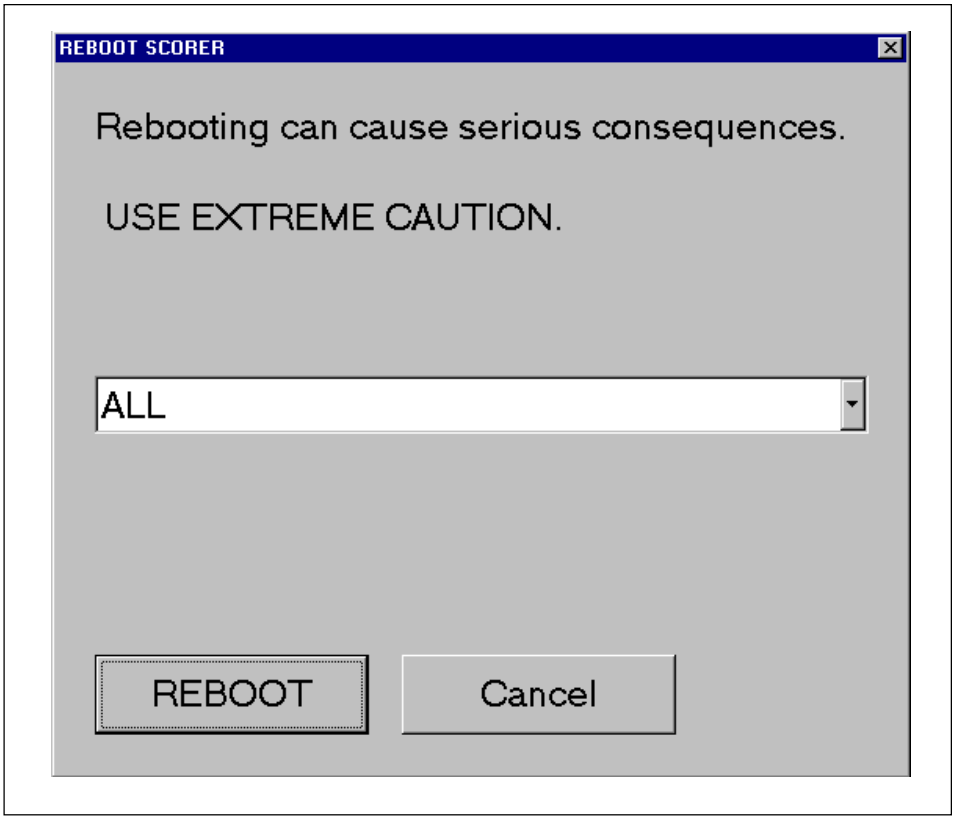


Figure 5. Reboot Scorer Window

Use the down arrow to select the **Lane Servers** to reboot, then select **Reboot.** To exit without rebooting select **Cancel.**

NOTE: *Before rebooting a lane server, make sure that all activity has stopped for the lanes connected to the server.*

What's The Problem?

If an error does occur the first step is to use the help function. Often the problem is easy to fix.

Unfortunately, computerized scoring system errors will occur at times. They may be the result of faulty hardware or software, or can be caused by incorrect use or handling. Because the system is partitioned into modules, some parts can be closed down without affecting others. If, for example, something goes wrong with the **front desk program**, it can be restarted without affecting the **scoring**.

A common error is a fault in the sensor at the **CCD-camera** or the **machine**. These faults are often caused by build-up of dust or dirt, or by someone pushing the **photocell** or the camera out of alignment. Simple hardware faults, like e.g. misaligned photocells, are easy to fix, while others may require a little more effort. Also make sure that all cables and connectors are tight and properly connected.

Some of the more common problems are:

- The Front Desk Computer Doesn't Start
- A Lane Server Computer Doesn´t Start
- The Front Desk Program Doesn't Start
- Programs Are Hung-Up
- Programs Crash
- The Computer Scores Incorrectly
- The Computer Triggers The Machine Unexpectedly
- Keyboard On Lane Console Doesn't Work
- TV-Set Shows No Or Erroneous Image
- Other Errors

The Front Desk Computer Doesn't Start

The computer not starting up when you turn the power switch on can be caused by many different things; some very simple faults, or much more serious errors. Messages that have an **OK**-button are usually harmless to press.

Symptom	Cause/remedy
The computer does not start at all.	• Check that all power cords are connected.
Windows NT doesn't start.	• Remove possible floppy disk in drive. • Check that the monitor, mouse, and keyboard are properly connected to the computer.
Blue screen with some text is shown. At least one line is changed continuously.	• **Checkdisk**. This is a normal check of the computer´s hard drive and may take some time to complete. **NOTE:** Do not switch off or restart the computer while **Chkdsk** is running. If it takes more than half an hour call **Brunswick.**
Blue screen with a lot of numbers. The screen does not change at all in several minutes.	• The operating system has crashed. Restart the computer and try running **Chkdsk**. If it isn´t possible or doesn´t help: contact **Brunswick.**

The Scoring Computer Doesn't Start

The **scoring computers** normally take about 8 to 10 minutes to start-up, and can take even longer in some cases. Particularly if the **Save camera images** option in **Setup** is or has been marked, it may take some time. If they do not start-up properly, refer to the chart below.

Symptom	Cause/remedy
The computer does not start at all	• Be sure to wait at least 20 minutes to allow time for the scoring computers to boot-up. • Check that all power cords are in, and that the LEDs on the front are lit. • Connect a computer monitor (keyboard and mouse too, if necessary) to the scoring computer. Observe exactly what is displayed on the screen.
Blue screen with some text is shown. At least one line is changed continuously.	• **CheckDisk.** This is a normal check of the computer´s hard drive and may take some time to complete. **NOTE:** Do not switch off or restart the computer while **Chkdsk** is running. If it takes more than half an hour, call **Brunswick.**
Blue screen with a lot of numbers. The screen does not change at all in several minutes.	• The operating system has crashed. Restart the computer and try running **Chkdsk**. If it isn´t possible or doesn´t help: contact **Brunswick.**

The Front Desk Program Doesn't Start

The front desk program (Reception) not working when the front desk computer is started up, could be caused be several different things. The database may be damaged, see **Other errors**, or it could be caused by **other installed programs**. **Brunswick** is not responsible for errors caused by user installed third party software applications.

NOTE: *Play can be started from the lane consoles, but this only applies to* ***Open play*** *as a temporary solution. In order to start bowling from the console, the Front desk computer must be shut down completely, or the network connection must be removed. When a lane is started in this manner, the pinsetter must be turned on manually.*

Programs Are Frozen

Sometimes a program freeze up may occur. There can be several different reasons for this: errors in the program, interference from other programs etc. If a program freezes, terminate it with the **task manager** (and then, if you need to use the program, restarting it).

If the program does not let itself be closed from the task manager you should close **Windows NT**. As a last resort there are the **reset button** and the **power switch**. In this case you should run a **Chkdsk** to check the health of the hard disk. Most often the program functions properly again after a restart. If it does become frozen again, there probably is something wrong with it.

If the frozen program is a part of **Brunswick Classic**: contact **Brunswick Bowling** (see **Reporting errors**). **Brunswick** accepts no responsibility for problems in other programs, whether the operating system or possible other installed programs. Contact the third part software maker.

Programs Crash

When serious errors occur, programs may crash. This can expressed in different ways. Sometimes a "**Dr Watson**"-window appears. On other occasions the program simply closes. If a program crashes, try to start it again. If it crashes again, in the same manner, there is something wrong with it. If the crash is serious enough that a **blue screen** with a lot of numbers is displayed you should run **Chkdsk** to check the hard disk.

If the crashed program is a part of **Brunswick Classic**: contact **Brunswick** (see **Reporting errors**). **Brunswick** takes no responsibility for malfunction in other programs, including the operating system or other installed programs. Contact the third party software maker.

The Computer Scores Incorrectly (General)

Incorrect scoring can be expressed in several ways. Most often the cause is erroneous **settings** or **hardware faults**. If incorrect scoring problems occur at all lanes at the same time, it may be due to **software errors**.

Brunswick recommends that a printout be made of the pin camera shots, in order to see what the computer sees, whenever incorrect scoring occurs. This is done by marking the **Save camera images** box in **Setup**, and then **print out the game** with the **Include photos** box marked.

NOTE: *Only games played after the* ***Save camera images*** *option was marked can be printed out with camera shots.*

- The computer scores specific pins incorrectly.
- The computer scores all pins incorrectly.
- The computer does not score at all.

The Computer Scores Specific Pins Incorrectly

Brunswick recommends that a printout be made of the pin camera shots, in order to see what the computer sees, whenever incorrect scoring occurs. This is done by marking the **Save camera images** box in **Setup**, and then **print out the game** with the **Include photos** box marked.

NOTE: Only games played after the **Save camera images** option was marked can be printed out with camera shots.

Symptom	Cause/remedy
The computer scores specific pins incorrectly (general).	• Open **Pin settings** and check that all **markers** are in the right places for the lane in question. • While in **Pin settings**, press **Save** to ensure the front desk and scoring computers are the same. • Check that the **Level** value is correct.
The computer scores too low	• The camera sees one or more pins too much. Raise the **Level** value in **Pin settings** for the desired lane. • Ensure that **Delay** is not set too low. Late-falling pins could be counted. • Curtain reflections behind the pins could be so bright that the computer thinks pins are left. Clean the curtain of oil and possibly raise the **Level** value. • Check that **Night bowling** is not selected in **Setup**.
The computer scores too high	• The camera sees less than the correct number of pins. Lower **Level** value in **Pin settings** for the desired lane. • Ensure **Delay** is not set too high. The table could shade the back pins so that they aren't counted. • When playing **Night bowling**: Check that it is selected in **Setup**.

The Computer Scores All Pins Incorrectly

Brunswick recommends that a printout be made of the pin camera shots, in order to see what the computer sees, whenever incorrect scoring occurs. This is done by marking the **Save camera images** box in **Setup**, and then **print out the game** with the **Include photos** box marked.

NOTE: *Only games played after the* ***Save camera images*** *option was marked can be printed out with camera shots.*

Symptom	Cause/remedy
The computer scores totally incorrectly.	• Check that the CCD-camera's lens isn't dirty. If so, clean it (see **Photocells and CCD-cameras**). • Open **Pin settings** for the lane in question and check on the image that the CCD-camera isn't askew. If the camera has been moved, you must aim it so it sees all the pins for both lanes. After that the pin settings for those lanes must be redone. • While in **Pin settings**, press **Save** to remove possible difference between front desk and scoring computers. • Check that **Delay** is not set too low or high. With a too small value late-falling pins could be counted in, and with a value too high the table could shade the back pins so that they weren't counted in.
The computer scores too late, and it doesn't help to set down the time.	• The microswitch that senses when the sweep starts may be faulty. This is called sweep detector and is mounted on the pinsetter. Contact **Brunswick.**

The Computer Does Not Score At All

If the computer does not score at all on any lane, the **photocells** are probably not working properly. To check, place a hand in front of the photocell. If it is working correctly, the sweep should go down. If it doesn't, take the cover off and take a closer look at the photocell. On the backside there is an **LED** (Light-Emitting Diode) that glows when the photocell is blocked. Some newer photocells have two LEDs, one red and one green.

Symptom	Cause/remedy
The LED(s) on the photocell glows all the time.	• The photocell is misaligned. For a photocell with two LEDs red light means that the photocell is slightly misaligned, green that it is severely misaligned. Align it towards the reflector until the LED(s) goes out. If any LED still glows when the photocell is straight, turn down the adjustment screw until the LED goes out. Take the opportunity to tighten the mounting screw as well.
The LED(s) on the photocell never glows, not even when you put your hand in front of it.	• The photocell doesn't get any power. Check the connections at the Distribution board for that lane pair. Contact **Brunswick**.

The Computer Triggers The Machine Unexpectedly

If the computer suddenly triggers the machine (apparently for no reason), the cause is most likely a broken or misaligned **photocell**. Photocells can be jolted out of alignment if the platform is hit by a bowling ball.

To check, place a hand in front of the photocell. If it is working correctly, the sweep should go down. If it doesn't, take the cover off and take a closer look at the photocell. On the backside there is an **LED** (Light-Emitting Diode) that glows when the photocell is blocked. Some newer photocells have two LEDs, one red and one green.

Symptom	Cause/remedy
The LED(s) on the photocell glows all the time.	• The photocell is misaligned. For a photocell with two LEDs red light means that the photocell is slightly misaligned, green that it is severely misaligned. Align it towards the reflector until the LED(s) goes out. If any LED still glows when the photocell is straight, turn down the adjustment screw until the LED goes out. Take the opportunity to tighten the mounting screw as well.
The LED(s) on the photocell never glows, not even when you put your hand in front of it.	• The photocell doesn't get any power. Check the connections at the Distribution board for that lane pair. Contact **Brunswick.**

Keyboard On Lane Console Does Not Work

If a **lane console** keyboard doesn't work it could be frozen. Pull out and reinsert the connector to the lane console to verify connection.

NOTE: This refers to the console connector, not the computer connector. Or try to **recover** the lane.

TV-Set Shows No or Erroneous Image

If the TV is totally black it may have entered into **standby**-mode. This can happen if the TV hasn't received image information for a few minutes. Some TV-sets can be reactivated by simply turning them off, then on. For other models, the remote control is used to reactivate.

If the correct picture is displayed but it rolls or flickers sideways, the TV-set must be set in **extern-mode** with the remote control. If TV programs are shown on the screen, instead of scoring information, it could be caused by the wrong **Lane settings**. Remove the mark from the square in the **TV/Scoring** column.

It is possible for the TV-sets to start in the wrong mode. This can be caused by voltage fluctuations on the power grid. Sometimes the picture will have strange colors around the edges. If that happens, cut the power to the sets, let them rest for about 20 minutes, and then switch the power on again. Also, if the TV-sets are started before the computer they may not be in **extern-mode**. Use the remote control to correct this problem.

Other Errors

Other errors can happen to the computer, e.g. under certain circumstances the database can be damaged. It is also possible to have unknown errors or bugs in the software.

Symptom	Cause/remedy
The computer behaves strangely: The Front desk refuses to start, or Some functions don't work well.	• Could indicate damaged database; can happen if the computer is switched off without Windows NT having been closed properly. • If you suspect a damaged database replace it with the latest backup file *Safe.mdb* in the *C:\\Gameware\Database\Backup* directory. A copy of the database is created after every successful start of the **front desk**. The backups are named after the current weekday, hence you have up to seven backups stretching back a week in time. **NOTE:** All reservations and all statistics, etc. that have been input after the latest start of the front desk will be lost.
Errors appearing in such a way that you suspect program errors.	• In order for us to be able to correct errors we need to know what happened when the error was detected, and what happened just *before* the error arose. • Program errors usually result in an error message, which is important to save. Error messages that show addresses and/or a line of numbers are most interesting. It is advisable to save or print these messages. • Since it is easy to inadvertently enter incorrect values or texts in the dialog windows there are **error checks** to avoid serious consequences. Because they are large programs with many complex functions there could still exist certain values that, when entered, cause serious errors to occur e.g. the **scoring** ceases to function. Notify **Brunswick** as soon as possible so it can be fixed. • Contact **Brunswick** (see **Reporting errors**).

Reporting Errors

If a major error does occur, notify **Brunswick** to correct the problem. An **error report** must be completed with as much accurate and detailed information as possible.

It is important to note exactly what happened. Which error message(s) were displayed on the screen, if any? Which lanes were in use? What was showing on the overhead monitors when the error occurred?

If the error has occurred more than once look for commonalities. Were the same lanes in use each time? Did someone use the same lane console? Be sure to include as much information as possible in the **error report**. Fax the complete report to **Brunswick** as soon as possible. The goal is to get the center management system operating error free as quickly as possible.

Error report

Which center:..... Name:..... Date:.....

Program version:.....

Which lanes were active at the time? ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8

☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16

Which lane(s) did the error occur on? ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8

☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16

Error description: .....

.....

.....

.....

How often does the error occur?.....

Which forms of play were running when the error occured?.....

Was a lane console used at the same time? ☐ **Yes** ☐ **No** If **Yes**, which?.....

Were sound effects on where the error occured? ☐ **Yes** ☐ **No**

Were there pictures on where the error arose? ☐ **Yes, stills** ☐ **Yes, animations** ☐ **No**

Did anyone work at the front desk? ☐ **Yes** ☐ **No**

Were any error messages displayed? ☐ **Yes** ☐ **No** If **Yes**, what did it say?

.....

You could also fax in the error message, as described in **reporting errors**.

What happened at the same time the error arose? (Strike picture on lane 2, the TV flashed etc.)

.....

Have you had problems earlier during the day? ☐ **Yes** ☐ **No** If **Yes**, what problems?

.....

Send to **Brunswick**: Fax 231-725-4667, Telephone 800-323-8141, or International 231-725-3220.

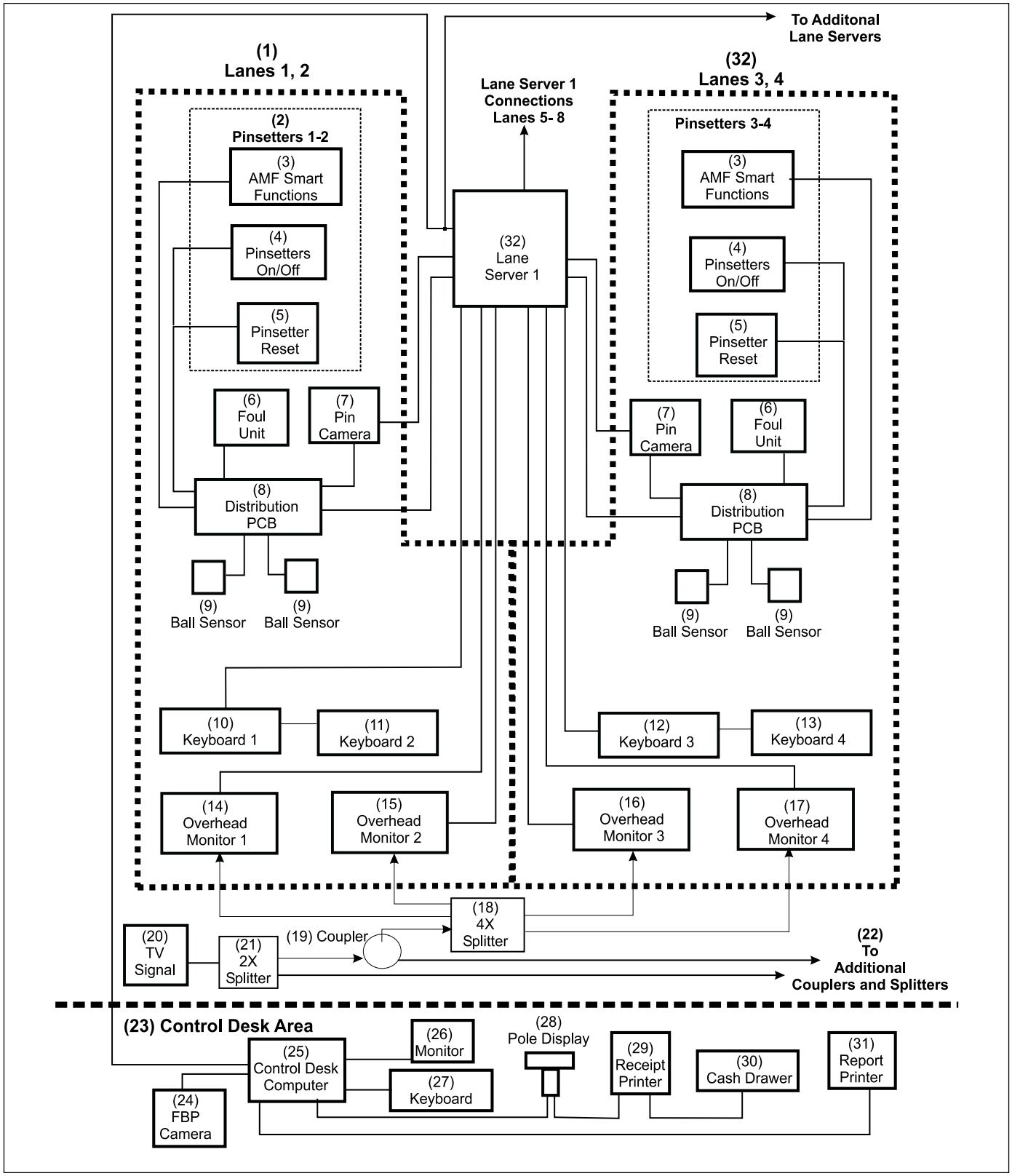
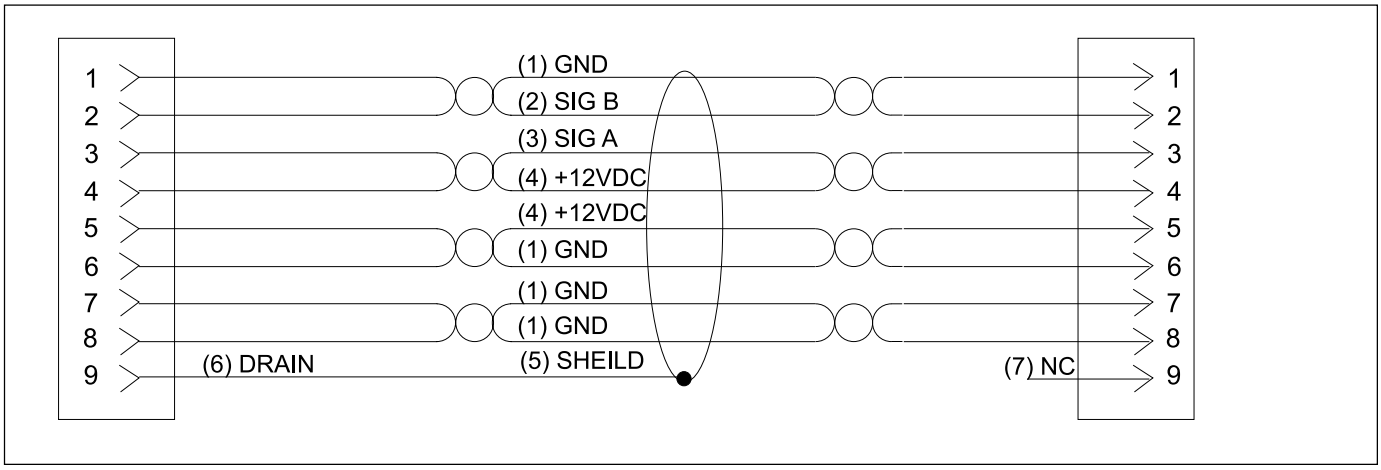


Figure 31. Classic System Layout - See Next Page for Callouts

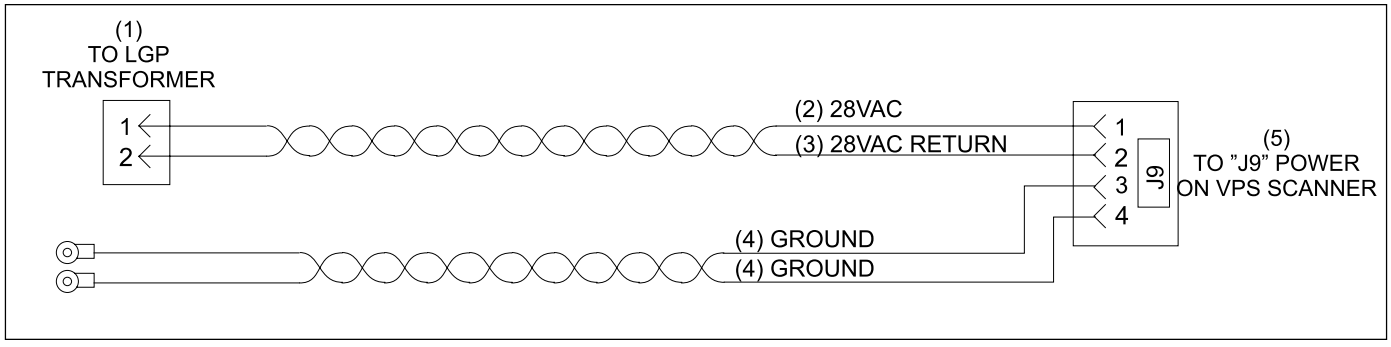
Call outs for Figure 31 - on previous page

(1) LANES 1,2
(2) PINSETTERS I,2
(3) AMF SMART FUNCTIONS
(4) PINSETTER ON/OFF
(5) PINSETTER RESET
(6) FOUL UNIT
(7) PIN CAMERA
(8) DISTRIBUTION PCB
(9) BALL SENSOR
(10) KEYBOARD 1
(11) KEYBOARD 2
(12) KEYBOARD 3
(13) KEYBOARD 4
(14) OVERHEAD MONTOR 1
(15) OVERHEAD MONITOR 2
(16) OVERHEAD MONITOR 3
(17) OVERHEAD MONITOR 4
(18) 4X SPLITTER
(19) COUPLER
(20) TV SIGNAL
(21) 2X SPLITTER
(22) TO ADDITIONAL COUPLERS AND SPLITTERS
(23) CONTROL DESK AREA
(24) FBP CAMERA
(25) CONTROL DESK COMPUTER
(26) MONITOR
(27) KEYBOARD
(28) POLE DISPLAY
(29) RECEIPT PRINTER
(30) CASH DRAWER
(31) REPORT PRINTER



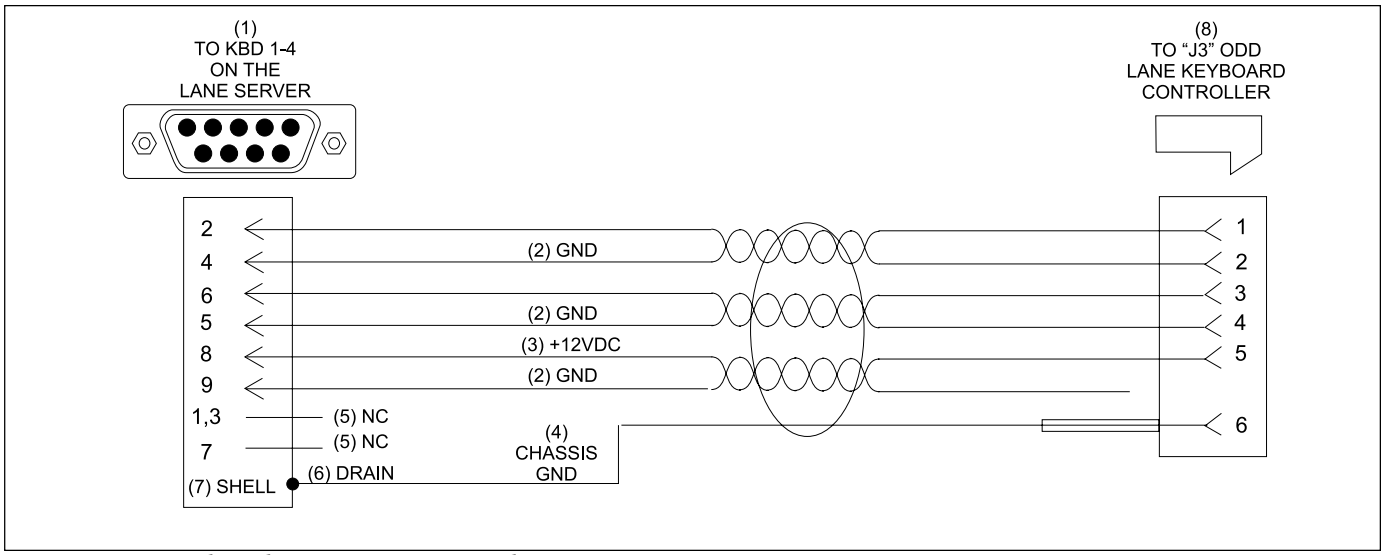
57-300148-000 Pinsetter Interface to GS-92

(1) GROUND
(2) SIG B
(3) SIG A
(4) +12VDC
(5) SHIELD
(6) DRAIN
(7) NC



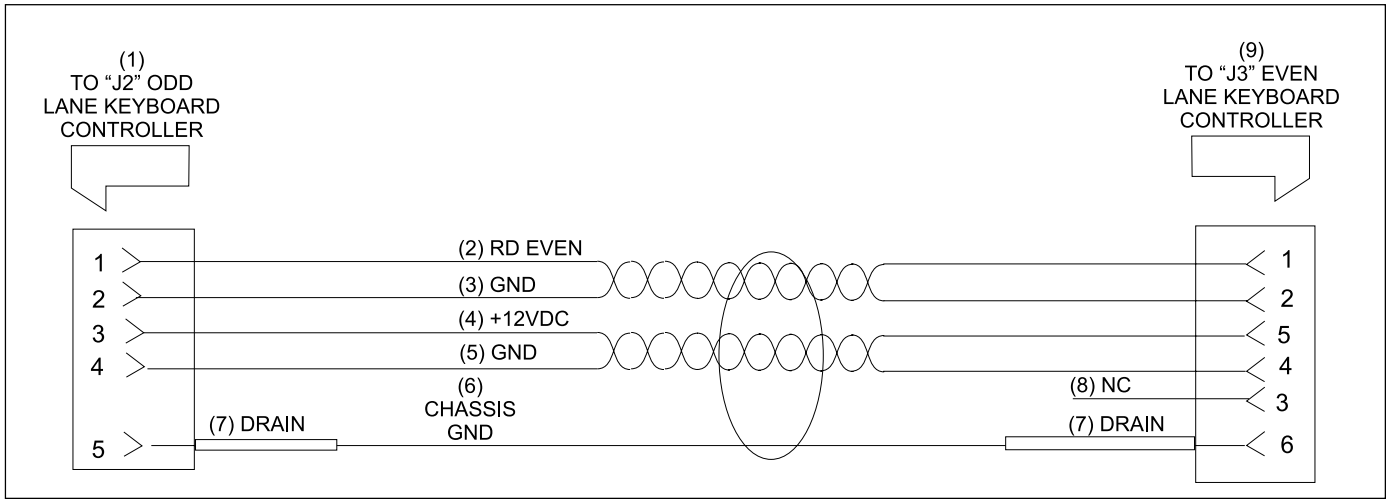
57-300662-000 VPS Power Touchworx/Teamworx

(1) TO LGP TRANSFORMER
(2) 28VAC
(3) 28VAC RETURN
(4) GROUND
(5) TO "J9" POWER ON VPS SCANNER



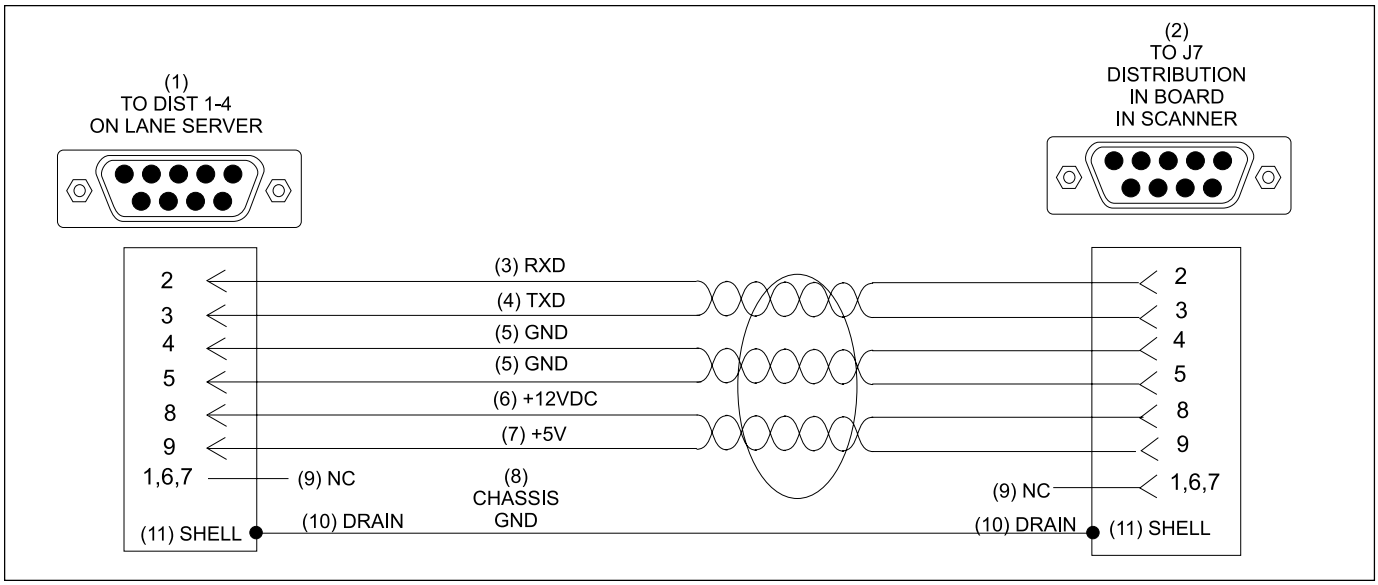
57500042-000 Keyboard Lane Server to Console

(1) TO KDB 1-4 ON THE LANE SERVER
(2) GROUND
(3) +12VDC
(4) CHASSIS GROUND
(5) NC
(6) DRAIN
(7) SHELL
(8) TO "J3" ODD LANE KEYBOARD CONTROLLER



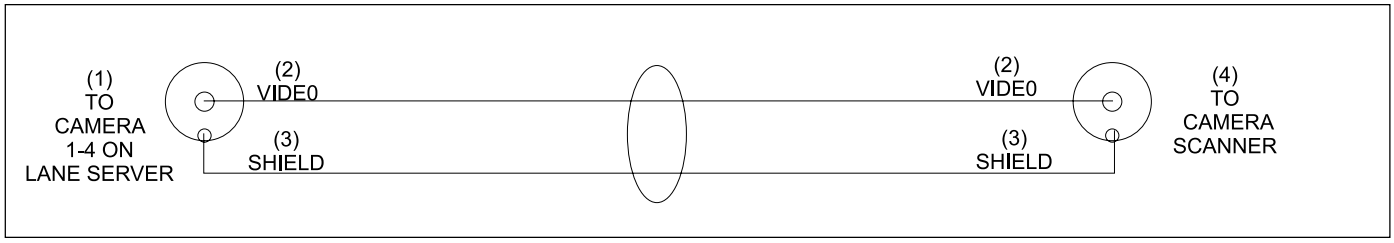
57-500043-000 Keyboard Console to Console

(1) TO "J2" ODD LANE KEYBOARD CONTROLLER
(2) RD EVEN
(3) GROUND
(4) +12VDC
(5) GROUND
(6) CHASSIS GROUND
(7) DRAIN
(8) NO CONNECTION
(9) TO "J3" EVEN LANE KEYBOARD CONTROLLER



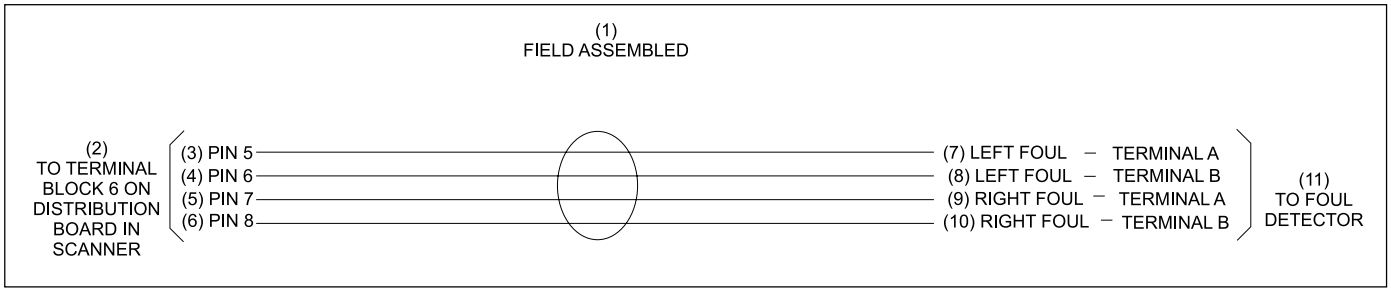
57-500045-000 Scanner Data

(1) TO DIST 1-4 ON LANE SERVER
(2) TO J7 DISTRIBUTION BOARD IN SCANNER
(3) RDX
(4) TXD
(5) GND
(6) +12VDC
(7) +5V
(8) CHASSIS GROUND
(9) NC
(10) DRAIN
(11) SHELL



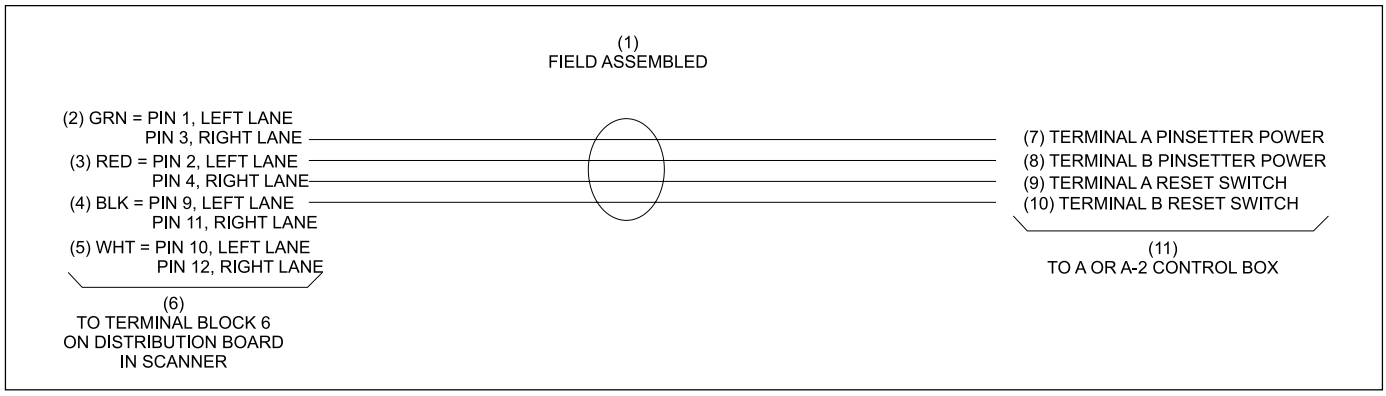
57-500050-000 Scanner Video

(1) TO CAMERA 1-4 ON LANE SERVER
(2) VIDEO
(3) SHIELD
(4) TO CAMERA SCANNER



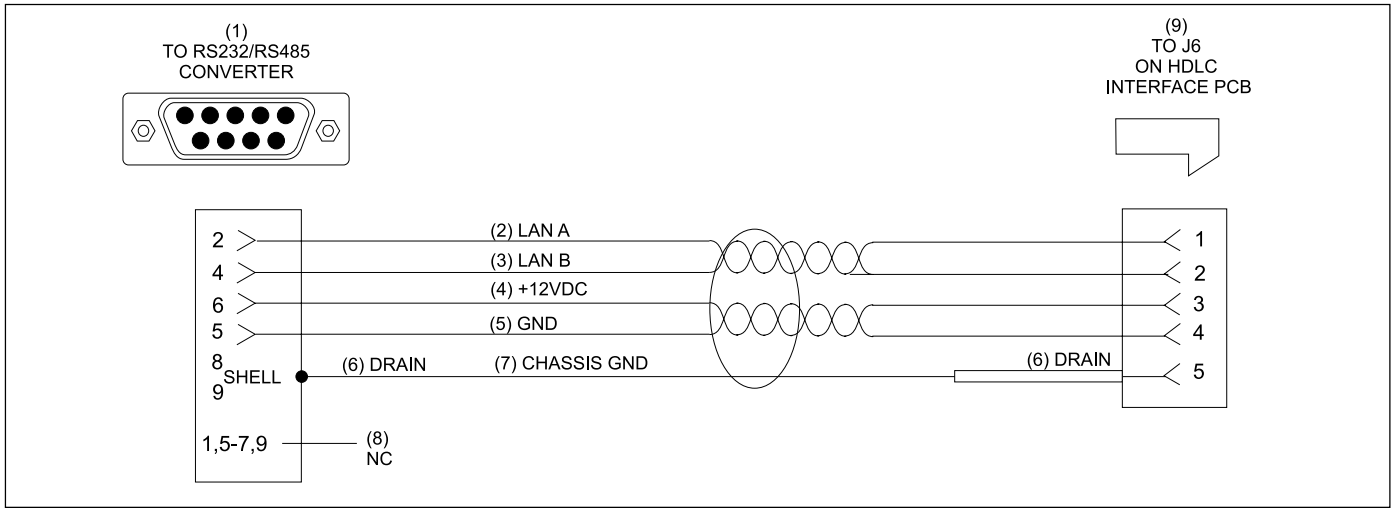
57-500054-000 Foul Distribution PCB to Foul Detector

(1) FIELD ASSEMBLED
(2) TO TERMINAL BLOCK 6 ON DISTRIBUTION BOARD IN SCANNER
(3) PIN 5
(4) PIN 6
(5) PIN 7
(6) PIN 8
(7) LEFT FOUL - TERMINAL A
(8) LEFT FOUL - TERMINAL B
(9) RIGHT FOUL TERMINAL A
(10) RIGHT FOUL TERMINAL B
(11) TO FOUL DETECTOR



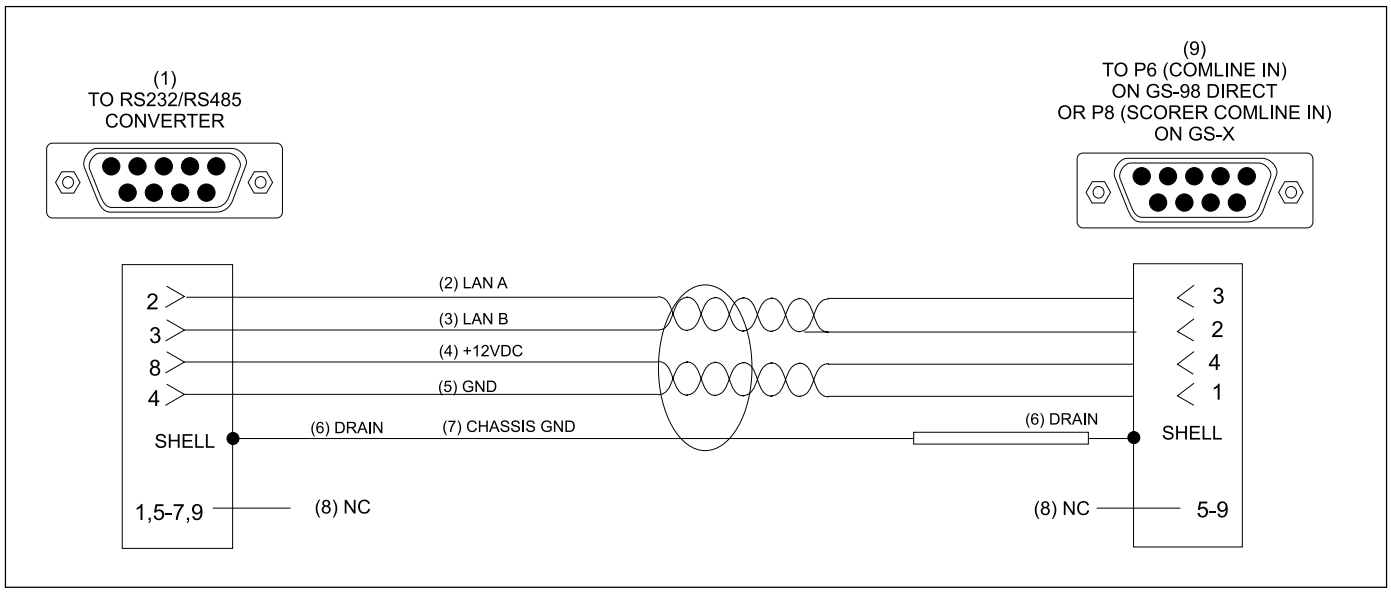
57-500056-000 Distribution PCB to A/A2 Control Box

(1) FIELD ASSEMBLED
(2) GRN = PIN 1 LEFT LANE, PIN 3 RIGHT LANE
(3) RED = PIN 2 LEFT LANE, PIN 4 RIGHT LANE
(4) BLK = PIN 9 LEFT LANE, PIN 11 RIGHT LANE
(5) WHT = PIN 10 LEFT LANE, PIN 12 RIGHT LANE
(6) TO TERMINAL BLOCK 6 ON DISTRIBUTION BOARD IN SCANNER
(7) TERMINAL A PINSETTER POWER
(8) TERMINAL B PINSETTER POWER
(9) TERMINAL A RESET SWITCH
(10) TERMINAL B RESET SWITCH
(11) TO A OR A2 CONTROL BOX



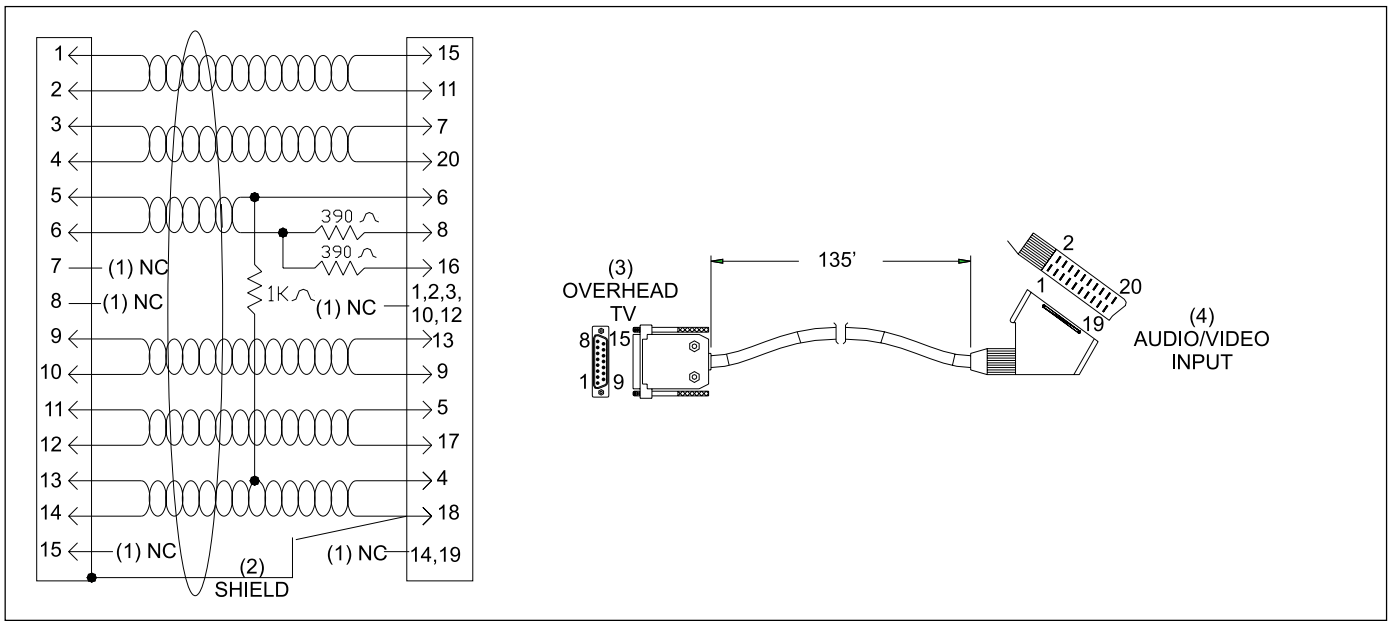
57-500061-000 RS232/RS485 Converter to HDLC Interface

(1) TO RS232/RS485 CONVERTER
(2) LAN A
(3) LAN B
(4) +12VDC
(5) GROUND
(6) DRAIN
(7) CHASSIS GROUND
(8) NC
(9) TO J6 ON HDLC INTERFACE PCB



57-500063-000 RS232-RS485 Converter to GS-X Pinsetter

(1) TO RS232/RS485 CONVERTER
(2) LAN A
(3) LAN B
(4) +12VDC
(5) GROUND
(6) DRAIN
(7) CHASSIS GROUND
(8) NC
(9) TO P6 (COMLINE IN) ON GS98 DIRECT OR P8 (SCORER COMLINE IN) ON GS-X



57-500110-000 Lane Server TV, Grundig Overhead

(1) NC
(2) SHIELD
(3) OVERHEAD TV
(4) AUDIO/VIDEO INPUT