TD™61

USER'S GUIDE

InFocus®

Contents

1 Introduction

1.1 About the TD61

The InFocus TD61 is a 61" rear-projection display in a native 16x9 format, designed to outperform large format plasma displays. It combines ultra-thin (6.5" deep) rear projection, DLP technology and rugged reliable design for outstanding performance in digital signage applications.

Scale

TD61 will up sample resolutions up to a resolution of 1280 x 720 (720p), and will downsample resolutions up to 1600 x 1200.

Video inputs

A standard 15-pin VGA connector accepts computer pictures up to 1600 X 1200. It also accepts video RGB with separate H&V Sync, composite sync and sync on green.

An M1 connector accepts computer images as well as Digital Video.

An S-Video input is available using a standard 4-pin Din connector.

A component video input is available as Y, Pb, Pr on three RCA connectors color coded green, blue and red.

A composite video input is available on a yellow RCA connector.

Audio

There are three stereo audio inputs using RCA connectors. There is an output connection for external stereo speakers as well as a line out to be used as an input to an external stereo amplifier.

Communication

Communicating with the TD61 will be done via an RJ45 RS232 input or an RJ45 RS485 input. Loop through from either source will be via an RJ45 RS485 output.

Display Technology

The display technology is single chip DLP.

Service

The TD61 is completely serviceable from the front. All parts replacement should be performed at the module level by a qualified service technician.

1.2 Accessories for TD61

The accessory kit for the TD61 contains the following items.

Each TD61 comes with (quantity)
- AC power cable (1)
- VGA cable (1)
- 8-32x3/8 Pan Head Phillips #2 screw (4)
- Wall Mounting Bar (1)
- Lower Retaining Bracket(1)
- Remote Control with batteries(1)
- Quick Start Card
- T25 L-Key Torx Wrench
- Removable I/O cover

Customer furnished parts
   If you will be controlling the TD61 via RS232 or RS485, you will need CAT-5 cables with straight through wiring and RJ45 connectors on each end.
   .

Wall Mounting Bracket

Lower Retaining Bracket

VGA Cable

T-25 L-Key Torx Wrench

8-32x3/8 pan head screws

Removable I/O Cover

Remote Control

Power Cable

DB9-RJ45 Adapter

1.3 Using the Remote Control

Most original setup operations are performed with the remote control. Later, RS232 control may be used.

The remote control, shown below, lets you control the TD61 and get it setup and adjusted initially.

For a complete description of remote control functions. See 6.1 "Remote Control Functions" on page 56.
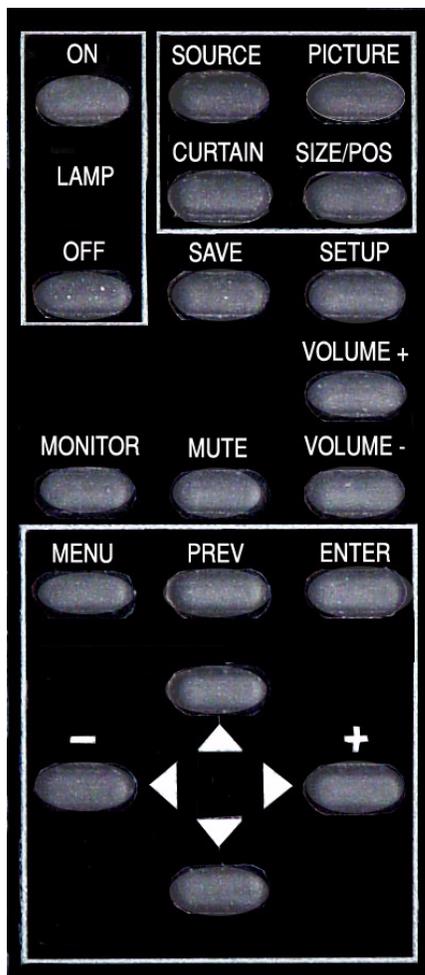
1.4 Your Safety is Important

The TD61 produces UV (ultra-violet) radiation (internally), and some parts are very hot. For your continued health and safety we strongly suggest you read this section carefully.

The fully assembled display weighs about 106 lb. (48.08kg). When unpacking and installing the TD61, you will need two people to handle it.

⚠ **WARNING**
The lamp gets very hot. Allow it to cool for 15 minutes before removing it.

⚠ **WARNING**
Hot surface located behind the TD61, on the lower right side next to the exhaust vent. Do not touch during operation.

⚠ **WARNING**
There is no electrical interlock on the screen. Removing the screen does *not* turn off the high voltage to the lamp.

⚠ **WARNING**
Possible UV exposure. Use protective eye wear while operating with viewing screen removed.

⚠ **CAUTION**
There are no user serviceable parts inside. Refer all repair and maintenance to a qualified service technician.

⚠ **WARNING**
There are protective electrical interlocks behind the left and right access panels. Removing the access panels will cause the lamp to turn off. Defeating these interlocks will risk exposure to UV.

Static electricity can damage sensitive electronic components.

• Always use a grounding strap when handling the electronics module or the optical engine if there are exposed components.

• When shipping these parts, *do not* use styrofoam "peanuts." These carry static electricity and can damage the parts. Use an anti-static bag, or, if that is not available, wrap the electronics module in aluminum foil.

WARNING

Hazardous voltage inside. Can shock, burn or cause death.

Disconnect power cord before servicing this unit.
Refer to service manual for details.

No user serviceable parts inside. Refer all service to qualified serviceman.

334-0100-00

WARNING

High intensity light.
Do not look into the projection lens when the viewing screen is removed

WARNING

Possible UV Exposure
Use protective eye wear while operating with viewing screen removed.

334-0077-00

Hot Surface

WARNING
TURN OFF POWER SWITCH BEFORE OPENING COVER. HOT LAMP INSIDE. ALLOW AT LEAST 15 MINUTES FOR LAMP TO COOL BEFORE REPLACING. RISK OF EXPLOSION. HANDLE BULB WITH CARE. SEE USER'S MANUAL FOR LAMP REPLACEMENT.

AVERTISSMENT
COUPER L'ALIMENTATION ELECTRIQUE AVANT OUVERTURE DE LA FACE AVANT. ATTENTION, LA LAMPE EST CHAUDE. LAISSER REFROIDIR AU MOINS 15 MINUTES AVANT SON REMPLACEMENT. RISQUE D'EXPLOSION. MANIPULER L'AMPOULE AVEC PRECAUTION. SE REFERER AU MANUEL DE L'UTILISATEUR POUR TOUT REMPLACEMENT DE LA LAMPE.

WARNUNG
DEM ÖFFNEN DES DENKELS-STROM ABSCHALTEN. VORSICHT-EXPLOSIONS GEFAHR-LAMPE IST HEIß. WARTE WENIGSTENS 15 MIN. FÜR DIE LAMPE ZUM ABKÜHLEN. VORSICHT MIT DER LAMPE BEIM HANTIEREN. FOLGE ANWEISUNGEN FÜR DEN LAMPEN WECHSEL IM REPARATUR MANUAL.

334-0078-00

2 Installation

2.1 What You Will Do

This is an overview of the entire installation and setup process. The numbers in parentheses are page numbers in this User Guide where more detailed information is available.

Installation

1. Unpack the TD61 carefully (16).
2. Hang the TD61 on a wall or optional stand (16). DO NOT lay the TD61 on its back or face.
3. Connect the source cables (Data, Video, Audio) (20).
4. Connect control cables if needed (RS232,RS485) (22).
5. Connect Power (20).
6. Turn on power switch (24).
7. Press the on button on the remote control (44).
8. Press the source button to select source (56).

Configuration

1. Align the image (24).
2. Adjust data input levels (30).
3. Adjust frequency and phase (31).
4. Adjust for video source (32).
5. Adjust the image size (38).
6. Save your settings (40).

2.2 Unpacking the TD61

To avoid damaging the TD61 during unpacking, it is advisable to read this section carefully.

1. Remove the plastic plugs on either side of the bottom of the box.

2. Open the box top and find the accessories inside. Remove the accessories and the carboard accessory holder. You may want to install the wall mounting bracket, from the accessory kit , on a wall or optional stand before unpacking the rest of the way. This would provide a safe place for the TD61 once

3. Remove the three foam pieces from the top of the TD61.

4. Slide the box sleeve up and off of the TD61

5. Lift the TD61 out of the box and remove the plastic.
Be sure that you have a safe place to stand the unit up. It cannot be placed on its back or on its face.

2.3 Installing the TD61

The TD61 is meant to be installed on a wall or on an optional stand. It is not designed to sit on its own.

Introduction

The TD61 can be attached to a wall or to an optional stand. Hardware for mounting is provided in the accessory kit. Included in the accessory kit are two mounting bars. The larger of the two is the main wall mounting bracket. The smaller one is used as a spacer to keep the TD61 vertical when mounted on a wall or attached to a stand.

Mounting on a wall

The TD61 weighs about 106 pounds (48.08kg). The mounting method that you use must be able to support five times this weight (530lbs., 240.4kg). Make sure that the wall can support it. Dry wall may not be sufficient to handle the weight.

The illustration on the right shows the wall mounting bracket installed on a wall. The wall mounting bracket is firmly attached to the studs in the wall. To prevent the wall mounting bracket from bending, due to the weight of the TD61, there must be bolts placed within 7.5 inches from each end.

The inset on the illustration highlights a pin on the main wall mounting bracket that mates with a hole in the slot on the back of the TD61.

⚠ **CAUTION**
> Do not lay the TD61 on its face or on its back. It must be kept upright at all times.

Mounting TD61 on a wall.

1. Install wall mounting bracket bar on wall. Make sure the wall mounting bracket is straight and level. If the wall is uneven, use shims to insure the wall mounting bracket is straight. Be sure to attach to studs in the wall.

2. Hang the TD61 on the wall mounting bracket bar. Make sure the holes in the TD61 wall mounting bracket slot mate with the pins on the hangar bar.
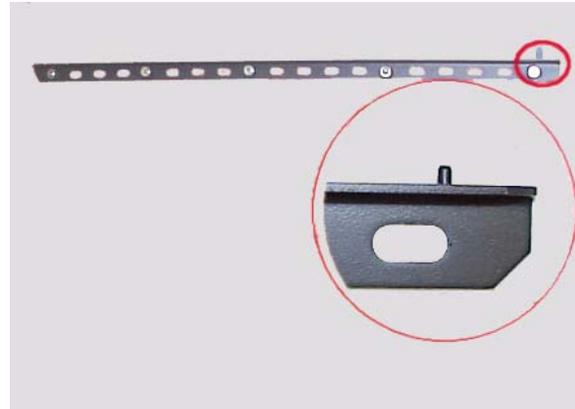
Wall mounting bracket installed. Inset shows one of the two pins that mate with the holes in the slot in the back of the TD61.

Back of TD61 showing wall mounting bracket slot. Inset shows one of the two holes that mate with the pins on the wall mounting bracket.

Wall mounting bracket on wall
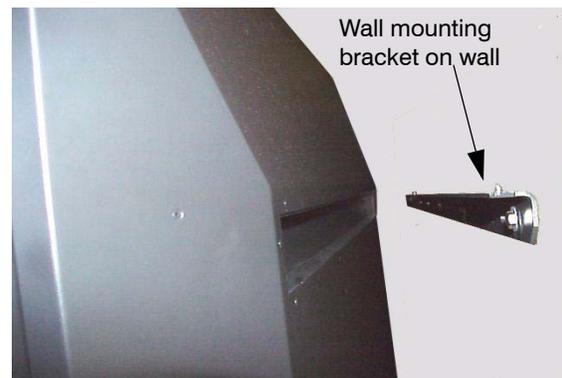
TD61 being lifted in to place on the wall. The slot fits over the wall mounting bracket and is fitted onto the mating pins.

Installing the Lower Retaining Bracket

The lower retaining bracket is not designed to hold the weight of the display. Its function is to hold the bottom of the display securely to the mounting surface and to allow adjustment of the display to insure perpendicularity.

- Attach the lower retaining bracket to the bottom of the display with the side of the angled bracket with the 4 slotted holes against the bottom of the display and the other side between the display and the mounting surface.
- Mark on the mounting surface to locate the bottom and ends of the retaining bracket. Remove the retaining bracket from the display.
- Remove the display from the mounting bracket.
- Install the Lower retaining Bracket to the mounting surface with appropriate hardware and slots. Locate the bracket on the mounting surface using the locating marks made when it was on the display.
- Hang the display on the mounting bracket.
- Secure the display to the lower retaining bracket, leave the screws a little loose to allow for adjustment. Use the hardware provided.
- Do not push or pull the display to align it with the slotted holes in the lower retaining bracket. If the holes do not align, remove the retaining bracket and repeat the steps to locate the bracket on the mounting surface.
- Use a level or plumb bob to determine perpendicularity. Move the bottom of the display either in or out till the display hangs perfectly straight. Tighten the screws on the lower retaining bracket.
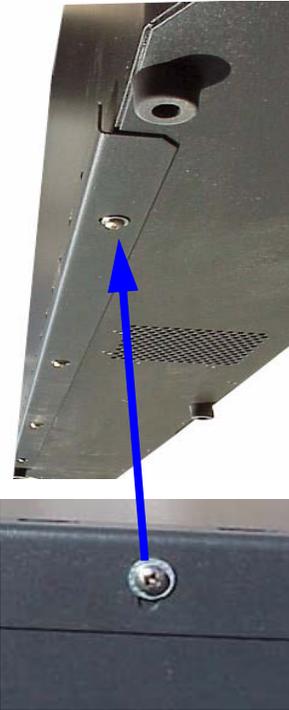
Lower retaining bracket installed on the bottom of the TD61. The adjustment slot is shown in the blow-up picture.
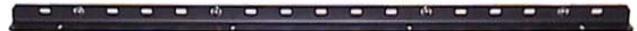
Lower retaining bracket attached to mounting surface.

2.4 Connecting Source Cables

All of the TD61 signal inputs are on input modules housed in an electronic cage assembly accessible from the left side of the TD61.

Analog and Digital Connectors

There is one analog 15-pin VGA type connector and one standard M1 connector as data inputs to the TD61. The M1 connector also doubles as a second analog connector when used with a VGA to M1adapter.

The TD61 will accept a wide range of computer resolutions up to UXGA (1600x1200). These connectors are also used for RGB video with separate H&V sync, composite sync, or sync on green and HDTV.

Video Connections

The TD61 has three video inputs: Composite video on a yellow RCA connector, S-Video on a 4-pin DIN connector and Component video on red (Pr), green (Y) and blue (Pb) RCA connectors.

All three are compatible with NTSC, PAL and SECAM.

Audio Connections

There are three stereo audio inputs using RCA connectors. There is one stereo audio (line out) output using RCA connectors and one pair of switchable 3.5mm monaural audio connectors for external speakers. When external speakers are used the internal speakers are switched off.

Control Connections

There is one RS232 input and one RS485 input for controlling the TD61. There is one RS485 loop through output that is used as the loop through for both RS232 and RS485.

Power Connection

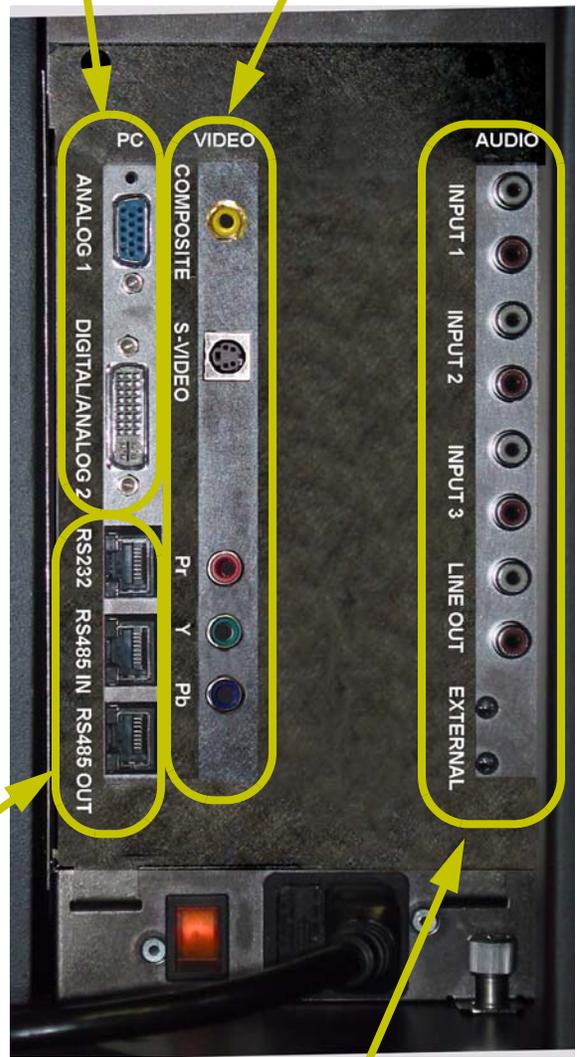AC power is connected to the TD61 at the bottom left side of the display. An AC power cord is provided in the accessory kit.

Data Inputs

Video Inputs

TD61 Signal Input Panel, Left Side View

Control Inputs and Loop-thru

Audio Inputs and Outputs

2.5 Connecting RS232/RS485 Cables

With serial control, you can control one TD61 or several TD61s at the same time.

Connect to the computer
Connect the TD61 to the serial out port of a computer or another type of controller, such as a video controller. Connect with twisted pair computer serial cable, such as Cat-5, using straight-thru cable.
 An RJ45-DB9 adapter is included in the accessory kit. If you lose or need extras, you can convert the 9-pin serial port to RJ45 with an adapter, which you can buy in most electronic stores.

Wiring the adapter
To go from 9-pin D-sub serial connector on the back of the ccomputer to an RJ45 connector, use a standard RJ45-to-9-pin adapter. Wire it internally as shown. The wiring shown for this adapter is correct for *straight-thru* cables. Straight-thru cables are wired 1-to-1, 2-to-2, etc

.

Yellow wire	pin 3
Black wire	pin 2
Green wire	pin 5
RJ45	**9-pin**
6	3
5	5
3	2

The *last* display in a group should not usually need termination, however, if you are experiencing problems try terminating the last display by going to MAIN MENU>ADVANCED OPTIONS>SERIAL PORT SETTINGS and checking the TERMINATE RS485 box at the bottom of the menu.
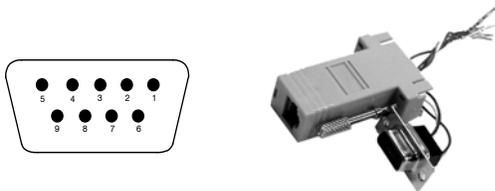
 If you are connecting to more than one TD61, connect from the computer or controller to the first TD61. It doesn't matter which unit this is.
Connect this first TD61's RS485 Out to the next unit's RS485 In.

Start with RS232 and loop all the rest with RS485.

3 Adjusting

3.1 Aligning the Image

Aligning the image will probably not be necessary. However should there a be a slight misalignment, it is important that you do this before you use the Position controls. Adjust the image so that it covers the entire screen.

What is effective resolution?

The TD61 is the thinnest rear projection DLP product available. This thin technology comes with some trade-offs. The ultra wide-angle lens that allows it to be so thin causes the image to be distorted and undisplayable at the edges. As a result, the native 1280x720 engine resolution is not viewable on the screen. The effective resolution of the display (i.e. the number of pixels visible on the screen) is about 1232x693 pixels, but may vary slightly from unit to unit. Because the position of internal mirrors and lenses may shift very slightly during shipment of your TD61, the effective resolution window may also shift. The Image Alignment menu allows adjustment of the effective resolution in order to compensate for any minor variations that may occur after factory alignment.

Aligning the Image

1. Turn on the AC power to the display. On first turn on, the lamp will power up automatically. (You may choose later to turn off the "auto lamp on" in the menu. See "Advanced Options: Lamp Settings" on page 77).
2. Press MENU on the remote control.
3. Select ADVANCED OPTIONS and press ENTER.
4. Select IMAGE ALIGNMENT.
5. Select TEST PATTERN and use the +/- keys to select GRID and check ILLUMINATE BORDER

Use the test pattern to align the image to the screen. The GRID pattern is good for general alignment.

ILLUMINATE BORDER will allow you to see just how far from the edge of the screen the active image will be by turning the background green. The green background will appear outside the edges of the test pattern. It will turn to black once you exit the menu.
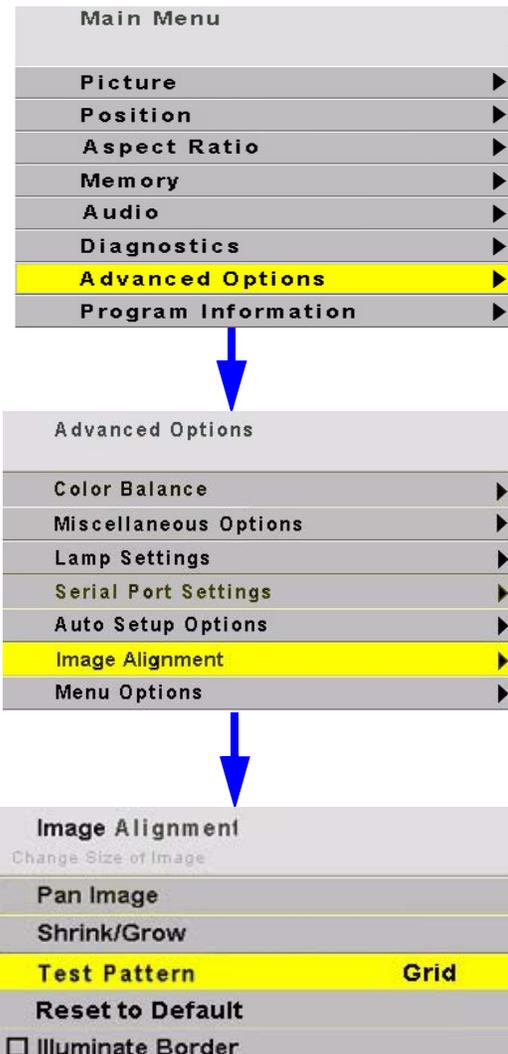
Remove screws

To access the adjustments on the small mirror, remove two screws under the center access panel and remove the panel.
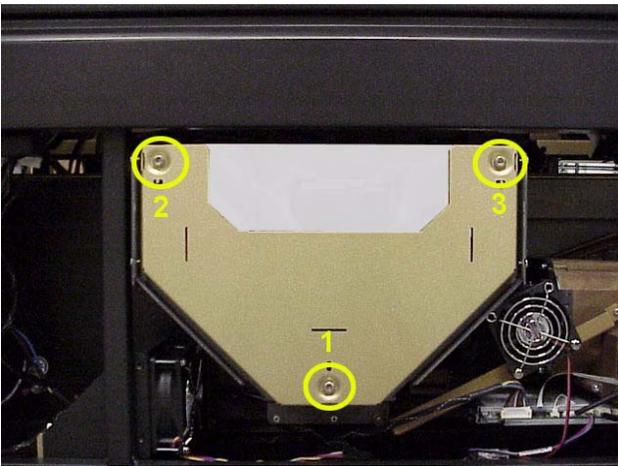
Small mirror showing three image adjustment screws

If initial inspection shows that the image is square, skip this section and go to Electronic alignment on page 27.

Squaring the image is be done by adjusting the small mirror behind the center access panel.

Use the supplied Torx wrench to make the adjustments

Loosening all three screws exactly the same amount will make the image bigger. Adjusting them in will make it smaller.

Adjusting screws 2 and 3 the same amount will adjust the width of the top of the screen.

Adjusting screw 1 will adjust the width of the bottom of the screen.
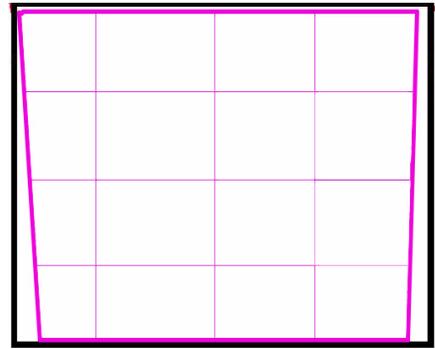
Loosen screw #1 to widen the bottom of the image.
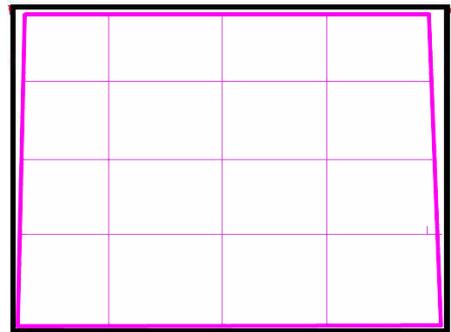
Loosen screws #2 and #3 to widen the top of the image.
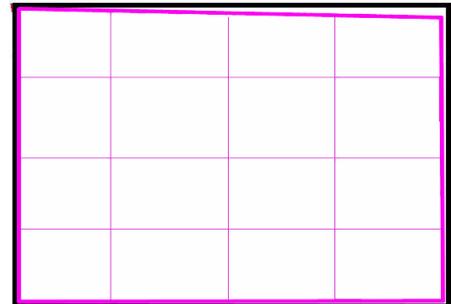
Adjust screw #3 to square up the top right.
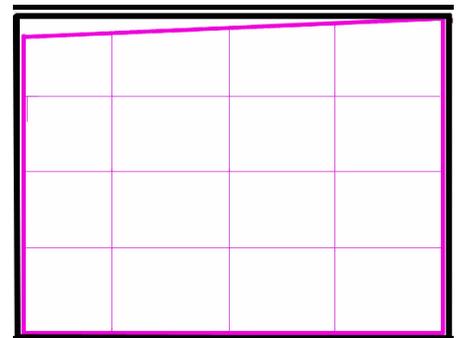
Adjust screw #2 out to square up the top left.

25

Aligning the Image continued

Bowing

Because the screen is so large, there is a certain degree of flexibility in the screen that can cause bowing at the top of the image.

There are three screws in the top of the screen that are adjustable. When loosened, they allow the screen to moved out or in to compensate for the bowing.

The images at the right show the location of these screws.

1. Loosen the three screws at the top of the screen.
2. Grip the edge of the screen at the top and:
    •If the image is bowed down, pull the top of the screen forward.
    •If the image is bowed up, push the top of the screen back.
3. Tighten the screws.
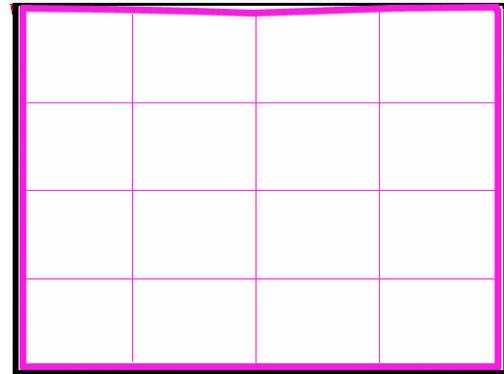
Image bowed down at the top of the screen

Screen adjustment screws
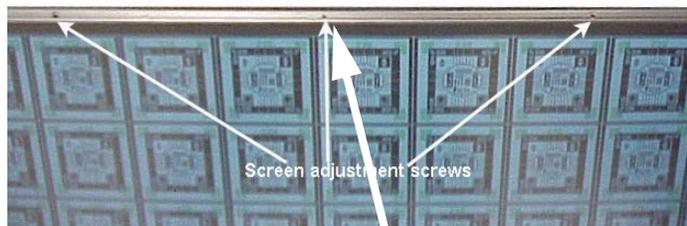
Close-up of screw showing elongated slot to allow adjustment.

Aligning the Image continued

Electronic Alignment

Once the initial alignment adjustments are completed, you can touch up the edges by accessing the IMAGE ALIGNMENT menu.

Follow the menu path on the right to open the Image Alignment menu. In the Image Alignment menu select TEST PATTERN. Use the right and left arrows on the remote control to select GRID.

In the IMAGE ALIGNMENT menu select PAN IMAGE. A Pan Image adjustment box I will open as shown below. When Pan Image is selected, remote control arrow keys will move the image up and down or left and right allowing you to center the image.

In the IMAGE ALIGNMENT menu, select SHRINK/GROW. The SHRINK/GROW adjustment box will open. The remote control arrow keys will cause the image to grow or shrink. The aspect ratio is locked so the image will shrink or grow in all directions uniformly.

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Advanced Options

Color Balance	▶
Miscellaneous Options	▶
Lamp Settings	▶
Serial Port Settings	▶
Auto Setup Options	▶
Image Alignment	▶
Menu Options	▶

Image Alignment
Change Size of Image

Pan Image	
Shrink/Grow	
Test Pattern	**Grid**
Reset to Default	
☐ Illuminate Border	

Pan Image
Use arrow keys to move image without changing size

+11
+19   +1260
+709

Effective Resolution	1241 x 698
Engine Resolution	1280 x 720

Shrink/Grow
Use arrow keys, +ᴬ to grow, -ᵛ to shrink

+11
+19   +1260
+709

Effective Resolution	1241 x 698
Engine Resolution	1280 x 720

3.2 Adjusting TD61 To Its Source

The source picture—from computer, video, DVD—is variable and does not always conform exactly to a standard. TD61 *has a way to compensate for this.*

Connections

The TD61 has 3 computer sources: analog 1, analog 2 and digital. Analog 2 and digital sources share a connector. This is an M1 connector. Because they share a connector, they also share a chip for EDID (Extended Display Identification Data). EDID is what tells a computer the type of monitor it is attached to. It is the mechanism that allows Plug and Play monitors to work.

Most of the time, Plug and Play will work just fine but every once in a while, EDID can get in the way of smooth operation. TD61 has 2 user controls that deal with EDID. Plug and Play Enable turns on EDID for both analog 1 and analog 2/digital. Unchecking this box causes the host computer to ignore it. The other user control allows the user to choose whether the EDID information on the M1 connector is for an analog monitor or a digital monitor. Most digital graphics cards will not output anything if they think they are connected to an analog monitor. The choice defaults to digital but should be set by the user to match which input they are using on that connector.

Input levels

Computer signals vary quite a bit from computer to computer. They even vary between video outputs on the same video card. Video sources vary more.

To make the TD61 respond correctly to these nonstandard sources we adjust Input Levels.

- Input Levels for computer sources, analog, page 30
- Input Levels for video sources, page 32

How does Input Level relate to Color Balance

If you have more than one TD61 in the area and you want them to display identical colors, you need to adjust input levels *and* do color balancing.

You can do Input Levels first, or you can do Color Balance first. It doesn't matter. But they must both be done.

✎ Input Levels and Color Balance do not affect each other, but they both affect the final picture.

- Color Balancing the displays, page 36

What does Input Level do?

For analog computer sources adjusting to the computer's picture output means finding what that computer means by black and white.

Black is supposed to be a voltage a zero coming from the computer's video card, but it almost never is. White is supposed to be a voltage of 0.7 volts, but it usually isn't either.

The Input Level adjustment process asks you to provide a picture from the computer that is black, then one that is pure white. With these, you can quickly and automatically make the display "learn" what *this* computer means by black and white.

The result? Good pictures, using all the dynamic range of color coming from the computer.

✎ For Input Levels, you must use black and white coming from the computer you will use for the program. You don't make this adjustment with your work laptop and then switch to another computer for the display's program of pictures.

What does Color Balance do?

Color balancing matches the colors between several TD61's.

Displays differ from one another because of very small differences in the color of the light produced by the lamp and by differences in the dyes used to make the color in a DLP™ optical engine.

In color balancing you use the display's internal test patterns of white, then gray. The internal pattern assures that a pure white is used.

3.2.1 Adjusting to Computer Sources

Digital sources do not normally need adjustment. The best way to adjust levels is the semi-automatic method.

Adjusting levels semi-automatically

This is quick and easy if you can get a black picture and a white picture from the source computer.

1. Display a black picture from the source. *This must come from the computer source that will be used for the program.* It does no good to use your laptop for this adjustment, then connect to a different computer for the program. Nor can you use the TD61 black test pattern. (Hint: Make a black screen from Windows Paint program.)
2. In the INPUT LEVELS menu, select AUTO BLACK LEVEL and press ENTER.
3. Display a white picture from the source.
4. Select AUTO WHITE LEVEL and press ENTER.

That's all there is to it. The TD61 is now adjusted to the black and white levels of *this* computer using *this* video card. If you change computers or video output cards in the computer, you must do this again.

Adjusting levels manually

1. Display an all-black picture from the source computer.
2. Press PICTURE on the remote to open the PICTURE menu.
3. Select LEVEL at the bottom of the menu.
4. Select BLACK LEVEL and adjust it up and down with the +/− keys to make the three CENTER POINT values go to zero. If they do not all touch zero at the same time, use the individual colors under BLACK LEVEL to adjust them.

. Do not go beyond the point where the Minimum just goes to zero. The idea is to just touch the zero level.

5. Display an all-white picture from the source computer.
6. Select WHITE LEVEL and adjust the levels until the CENTER POINT values just touch 255, adjusting the individual colors as necessary.

✎ It is not a good idea to use the levels to make the displays match each other. That should be done with the COLOR BALANCE menu. (3.4 "Color Balancing TD61" on page 36).

Adjusting levels completely automatically

Open the AUTO SETUP OPTIONS menu and check DO BLACK/WHITE LEVELS. You can check the other items, too, particularly FREQUENCY and PHASE.

Now press SETUP. TD61 looks for the darkest pixel and the brightest pixel in the picture and adjusts itself so that these are the truly the darkest and brightest.

When the BLACK/WHITE LEVELS item is checked, the TD61 will do this automatic level adjustment whenever a *completely* new source is displayed.

What is a "completely" new source?

TD61 remembers all the values in the last 10 pictures. If a new picture comes from a different source, such as from a different computer, and that picture has almost exactly the same resolution, number of active lines, number of blanking lines, etc., the TD61 will assume that this is a source it has seen before and use the remembered setup values. This is a different sort of memory from the 40 numbered memories described in 3.6 "Saving Your Work and Recalling a Memory" on page 40.

On the other hand, if the new source is sufficiently different, TD61 will engage all the checked processes in the AUTO SETUP OPTIONS menu.

When a saved memory is recalled from the RECALL menu, TD61 does not do any auto setup.

Which is best: Manual, Semi-Auto, or Auto

The manual and semi-automatic methods are more accurate. The automatic method works well for the BLACK LEVEL, but it is sometimes not accurate enough for the WHITE LEVEL.

The good news is that you should only have to do the manual or semi-auto method once for each computer source. Save these settings in the SAVE menu, See "Memory: Save" on page 67 Then use RECALL to instantly bring it all back.

When to re-adjust levels

You should re-adjust black and white levels whenever:
• the computer is changed.
• the video card in the computer is changed, or you switch the source for *this* display to a different video card output in the same computer.
• you change the electronics module.

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Auto Setup Options

☑	**Retry on lost signal**
☐	Do Black/White Levels
☑	Do Frequency
☑	Do Phase
☑	Do Position

Picture

🖼	Source	Analog 1
⬩	Colorspace	RGB
	Sync Type	Separate H&V
	Vertical Frequency	60 Hz
	Horizontal Frequency	43.38 kHz
	Pixel Frequency	65.02 MHz
↦	Horizontal Resolution	1024
⊺	Vertical Resolution	768
▦	Frequency	1344
▦	Phase	− ⟨━━━⟩ + 22.5°
▲	Sharpness	Sharpest
	Input Levels	▶

Input Levels

☀	**Auto Black Level (offset)**			
◑	Auto White Level (gain)			
	Center Point	2	1	4
☀	Black Level (offset) - All	− ⟨━━━⟩ +		55
	Red	− ⟨━━━⟩ +		68
	Green	− ⟨━━━⟩ +		57
	Blue	− ⟨━━━⟩ +		69
◑	White Level (gain) - All	− ⟨━━━⟩ +		130
	Red	− ⟨━━━⟩ +		128
	Green	− ⟨━━━⟩ +		131
	Blue	− ⟨━━━⟩ +		130

I

31

3.2.2 Adjusting to Video Sources

Video adjustments are quite a bit like the controls on a television receiver.

Adjusting the picture

1. Select a video source in the Picture menu. There is one composite video, one component input and one S-Video source available.
2. Press PICTURE on the remote.

Now you have two choices.
- Adjust using any picture from the video source.
- Adjust using a standard color bar pattern from the source.

Adjusting with any picture

This procedure must be done *after* you adjust color balance (page 36).

1. Choose pictures that have blacks and whites represented as well as a variety of colors.
2. Adjust Contrast, Brightness, Saturation and Hue on *one* TD61 until it looks satisfactory.
3. Adjust any other TD61's so they have the same values for Contrast, Brightness, Saturation and Hue as the first TD61.

Adjusting with color bars

1. If possible, use a color bar pattern from the video source you will use for the program material. You cannot use the color bar from the Test Patterns menu.
2. In the Picture menu, check Blue Only. You should see only the alternate color bars, all of them blue.
3. Adjust Saturation to make the outer two color bars match. Match them in brightness; they will already match in color.
4. Adjust Hue to make the inner two color bars match.
5. Uncheck Blue Only.

.   When a video source is selected, Auto Setup Options is not available. Adjustments must be made manually.

6. If the color bar pattern has a pluge, you can use it to adjust Brightness.
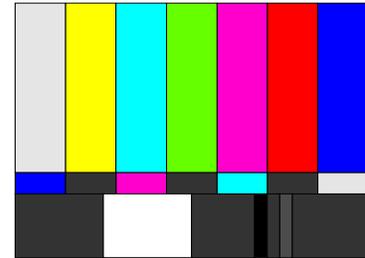
Pluge
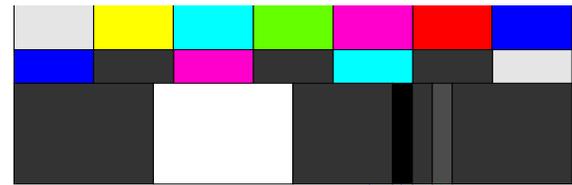
Adjust Brightness so you *cannot* see the difference between these two marks, but you can see the difference between these two marks.
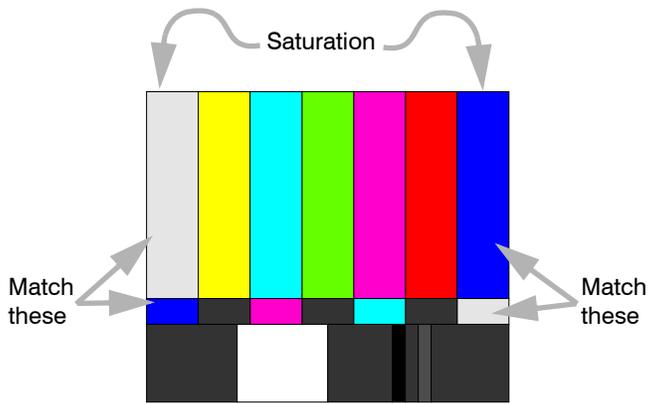
Adjust Saturation so the outside bars match when Blue Only is checked.
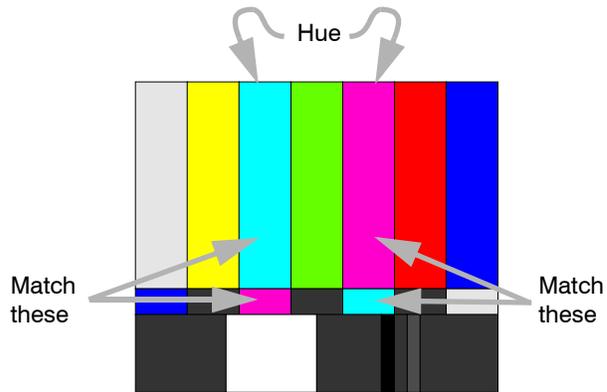
Adjust Hue so the inside bars match when Blue Only is checked.

3.3 What Does Colorspace Mean?

There are many ways to represent a color picture electronically. RGB *and* YPbPr *are the two most common in analog and digital sources. The display will accept either.*

What does colorspace mean?

There are two types—RGB and YPbPr—and they carry the picture information on three conductors or wires.

RGB

In RGB there are separate conductors (wires) for red, green and blue. Full white is represented by a 100% signal level on all three conductors. Black is represented by a 0% level on all three.

Dark red is represented by, say, a 30% level on the red conductor and 0% on the blue and green.

RGB signals need sync for horizontal and vertical. This may be:

- separate sync on two additional conductors (RGBHV).
- composite sync—H & V sync mixed together—on a separate conductor (RGBS).
- sync on the green channel (RGB).

In this manual, RGB refers to all of these types, unless one of them is specifically called out.

YPbPr

YPbPr also has three conductors.

- The **Y** conductor carries the luminance (brightness) signal level as well as composite sync. This luminance (brightness) signal is developed by combining red, green, and blue in certain proportions: 30% red, 59% green and 11% blue.
- The **Pb** line carries a signal that represents the blue component of the picture minus the luminance component: B–Y.
- The **Pr** line carries a signal that represents the red component of the picture minus the luminance component: R–Y.

YPbPr is sometimes called YUV and sometimes called component video. DVD players often have a set of three component video connectors. This makes a picture of substantially higher quality than the single conductor Video Out–Video In connection.

Use the correct colorspace

- If the picture is coming from S-Video, Composite or the Component outputs of a DVD player, the TD61 automatically sets the colorspace.
- For Analog and Digital inputs, colorspace must be set by the user.

✎ **Note**: For DVD players outputting component video, you should use the component input (RCA connectors). For interlaced signals this will give a better picture than through the analog input. If the signal is non-interlaced (or HDTV), you must use the analog connector.

How does the YPbPr system make green?

At first glance, it may look like the YPbPr system doesn't have any way to render something green. But look beyond first glance.

The Y part of the signal has a green component in it. Y is made from 59% of the green of RGB, 30% of the red, and 11% of the blue.

By combining the Y, the B-Y and the R-Y signals algebraically, it is possible to convert the YPbPr signal into RGB. This conversion is performed in the electronics module of the TD61.

When the Colorspace item in the Picture menu is set for RGB, the electronics module sends the three colors through to the optical engine without translation. It is only processed by the Input Level settings and the Color Balance settings.

When the Colorspace is set to YPbPr, the input signal is first translated to RGB before it is processed by the Input Level and Color Balance settings and sent to the optical engine.

Color bars
on the screen

Picture	
Source	Analog 1
Colorspace	RGB
Sync Type	Separate H&V
Vertical Frequency	60 Hz
Horizontal Frequency	43.38 kHz
Pixel Frequency	65.02 MHz
Horizontal Resolution	1024
Vertical Resolution	768
Frequency	1344
Phase – (▭▭▭) +	22.5°
Sharpness	Sharpest
Input Levels	▶

This diagram shows the difference between the RGB and YPbPr signals or waveforms. It is not necessary to completely understand these waveforms.

However, it should be clear that if the $TD61$ is set for one type, say RGB, and the signal is of the other type (YPbPr), the $TD61$ would process the color information incorrectly.

Picture	
Source	Analog 1
Colorspace	YPbPr (Component Video)
Sync Type	Separate H&V
Vertical Frequency	60 Hz
Horizontal Frequency	43.38 kHz
Pixel Frequency	65.02 MHz
Horizontal Resolution	1024
Vertical Resolution	768
Frequency	1344
Phase – (▭▭▭) +	22.5°
Sharpness	Sharpest
Input Levels	▶

35

3.4 Color Balancing TD61

Color Balancing can be done before or after Input Levels.

The object of color balancing is to make individual units show the same colors. If we have more than one TD61 in a room we would like them to look the same. When we see a red car on one of the TD61s it would be nice if it were the same shade of red on the other.

The displays naturally have slightly different colors from one display to the next, because of slight variations in the optics. This cannot be avoided, but we can compensate for it with color balancing.

Color balancing is subjective. It may seem strange at first, but it gets easier with practice. Fortunately, you don't have to match all the colors; you only have to match whites and grays.
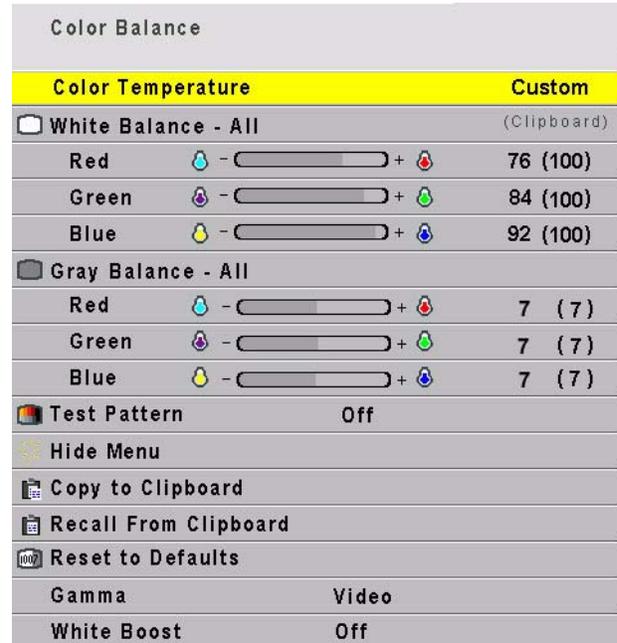
When you make the displays look the same with White and Gray, all the other colors will look the same. It is not necessary to achieve a perfect white or a perfectly colorless gray. It is only necessary that the displays look alike when they display white and gray.

✎ **Note**: Never try to match the colors of the display units with the Black and White Level controls or with the Video Controls. You will not like the results if you do.

Color Balancing

1. Turn on the displays and let them warm up for at least five minutes. The lamps must be thoroughly warm before you color balance.
2. For each display, access the color balance menu by pressing MENU on the remote control then selecting ADVANCED OPTIONS>COLOR BALANCE.
3. If color temperature is important, you should first set the color temperature. If it is not important, start with the default 6500K which yields the brightest display. At 6500K, all the white balance values are set to 100. Once you start adjusting, the color temperature will automatically change to "custom".
4. Set GAMMA at the bottom of the menu to either Video or Film, but be sure this is the same for all displays.
5. Set WHITE BOOST to OFF.
6. Set TEST PATTERN to WHITE.

✎ Always use the internal Test Patterns for color balancing, not an external pattern.

7. The white balance values will depend on the color temperature selected. Those color temperature values will provide the starting point for the color balance procedure. The gray balance values should all start at 7.
8. Select HIDE MENU and press ENTER on each display. This will remove all the menus so you can see the whole screen on each display. (To re-open the Color Balance menu, press ENTER for that display).
9. Look at the displays together. Stand far enough away from them so you are looking almost squarely at each of them. Pay attention to the large central area, not the edges.
10. Determine which is the darkest display. This is the *baseline* display. *Do not* change this one.
11. Go to the brighter display, turn on the Color Balance menu by pressing ENTER. Be close to the display to do this so only this display has the Color Balance menu showing.
12. Match the brightness of brighter display to the darker display.
13. Match brightness first. Move the selector arrow to White Balance – All.

- With the left key, reduce the brightness until it matches the baseline display.
- Select the individual colors and adjust the amounts of Red, Green and Blue to achieve the best match in color and brightness to the baseline display.

14. When each display matches in white, change TEST PATTERN to Gray so the displays show an internal gray pattern.
    - The gray values range from 0 to 15, and they are all now set at 7. Therefore, gray can be adjusted up and down. Choose which display has a middle brightness and that has very little color in gray. This is the display you will match to. It *does not* have to be the same as the display chosen for white balance.

15. When the displays match in gray, turn off the test pattern on each display with the top item in the COLOR BALANCE menu.

✎ COPY TO CLIPBOARD will save all the current settings to a temporary memory. You can then make more adjustments to see if it gets better or worse. RECALL FROM CLIPBOARD will restore these saved settings. The clipboard is only for testing. These values are not saved when AC power is off.

✎ While color balancing, change the White value by a lot, not just one step. It's difficult to see one step in White. A large change will tell you if you are heading in the right direction.
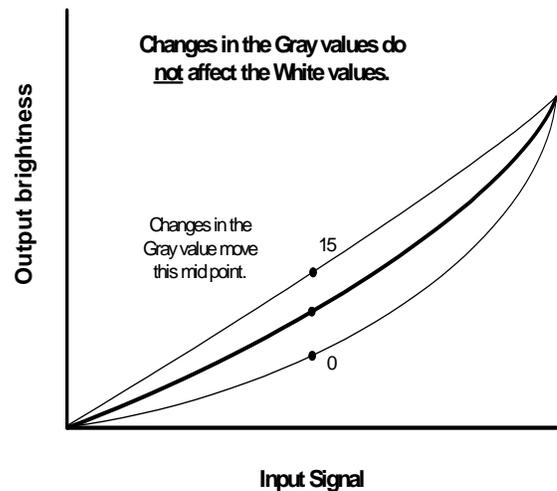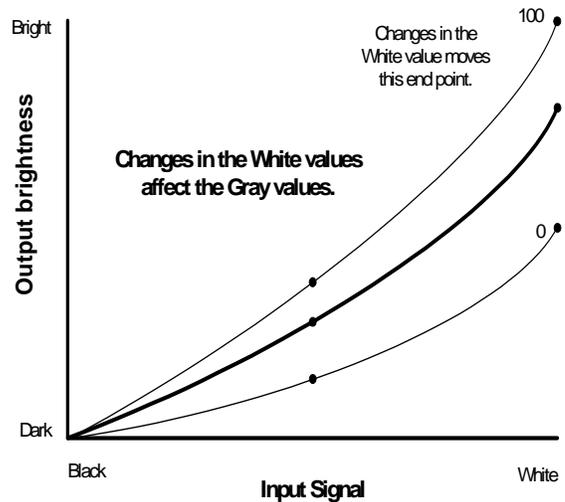
✎ If you can't decide which way to go or how to get this display closer to the others, try any change. If it is the wrong change, it will be quickly obvious, and you can go back. Use the clipboard.

✎ Color balance values are saved for all input sources in the same memory location. Color balance is the same for all sources

✎ When adjusting WHITE BALANCE - ALL you may not see all three of the red, green, and blue numbers decrement or increment. This because the ALL choice adjusts the colors in proportion to each other, so that the color remains constant as you adjust the brightness. For example, if you have the color set at Red-100 Green-80 and Blue-40 and adjust down 10 clicks, you will wind up with Red-90, green-72 and Blue-36. The color has remained the same and only the brightness has changed. Green and blue did not change on every one of the ten clicks.

✎ The TD61 has a feature that allows a boost in the whites. When this is on, Color Balance will become more difficult but will allow for brighter whites.

✎ The TD61 has a gamma control which allows the user to choose between Video and Film gamma in the color balance menu.

Changes in the White value moves this end point.

Changes in the White values affect the Gray values.

Changes in the Gray values do _not_ affect the White values.

Changes in the Gray value move this mid point.

3.5 Scaling and Cropping

Sometimes the picture does not fit the display. The aspect ratio of the TD61 is 1.77 (16x9), the same as HDTV.

✎ The aspect ratio of a picture is its width divided by its height. 1280 ÷ 720 = 1.77

The effective resolution of the TD61display (i.e. the number of pixels visible on the screen) is about 1232x693 pixels, but may vary slightly from unit to unit.

The aspect ratio of a TD61 is 1.77 (16x9). When the source picture's aspect ratio is *not* the same as the TD61, you have to do something to make the picture fit. You have three basic choices:

- Fill the area both ways. This will produce some distortion in the picture. Circles will not be round.
- Put the picture in without distortion crop the top and bottom.
- Put the picture in without distortion and fill the extra space with black.

A picture with an aspect ratio of 1.33 is shown.
Scale Mode = Normal Video (4x3)
Justify = Center
Overscan=0%

Same picture,
Scale Mode = Fill All
Justify=Grayed out
Overscan=0%

Scale Mode determines how the picture will be made to fit the display.

- **Fill All** means that the picture will touch the borders of the display all around, even if this means stretching (and distorting) the picture in one direction.
- **Letterbox/Pillarbox** means expand the picture until the first edges (top-bottom or left-right) touch the border of the display, then fill in the other sides with black.
- **Crop** means expand the picture until the *second* edges touch the border and let the other edges of the picture fall outside the display and get cropped.
- **Wide screen** means force the aspect ratio to 1.77, the standard for many DVD movies.
- **Normal Video** means force the aspect ratio to 1.33, the standard for television.
- **One to One** means show the picture without any scaling. If it is larger than the display's native resolution it will be cropped, if it is smaller it will be shown with a black border. This is most useful for 1280x720 resolution, in order to show the image with no scaling artifacts and only a slight loss of pixels around the edges.

Justify determines how the picture will be placed on the screen.

- If the picture is too wide for the display, and is cropped on the sides, you can choose LEFT, CENTER, or RIGHT.
- If the picture is too tall for the display and is cropped top and bottom, you can choose TOP, MIDDLE, or BOTTOM.

Overscan

Our rear projection technology is capable of showing every pixel of the incoming image. Historically, CRT televisions, especially cheaper sets could not reliably show all the pixels without distortion. Television industry standards allow a television set to chop off up to 20% of the image. This is known as overscan. Some video content assumes that this overscanning is taking place and may not have picture information all the way out to the edges. When shown on our display, you may see black bars, lines of white or other non picture information on the edges of an image. Use the overscan setting to avoid seeing this. Video inputs and YPbPr colorspace inputs have a default overscan of 3% which will match most modern TV sets. Computer inputs default to 0% overscan so you see the whole image.

✎ It may be desirable to display 1280x720 images without any scaling. Since the effective resolution of the TD61 is less than 1280x720, scaling will occur and cause some artifacts. To avoid this, choose "ONE TO ONE" for a scale mode. No scaling will occur and a few pixels on the edge of the picture will be cropped off. "ONE TO ONE" can be used for any input mode. It will be cropped if it is larger than the effective resolution or displayed in the center of a black field if it is smaller.

3.6 Saving Your Work and Recalling a Memory

Some saving is done automatically, but there are big advantages to saving your work manually. There is more information about memories starting on page 67.

How automatic save works

Whatever changes you make with the remote control or RS232 commands, these changes are saved automatically. If you change sources (switch to another input connector) and come back to this source, everything you did before will be "recalled." Things will look like they did before.

Suppose you make adjustments to an SVGA source on Analog 1, then you feed a UXGA source to Analog 1 and make new adjustments. Then you switch to the S-Video 1 connector and do some more setup for it.

Later you switch to the Analog 1 input again, and this time it has the SVGA source from before. The TD61 will recognize that it has seen this source before, or at least a source with these characteristics, and will recall the SVGA settings you established before.

This kind of recall includes Input Levels, Position, and Frequency.

Manually saving to memory slots

The TD61 has 40 numbered memory slots, and this is the best way to save. Recall is fastest from memory slots.

First, set up the TD61 the way you want it, including all the adjustments listed in this section. Then press the SAVE button twice. This opens the Save grid.

Navigate to an unchecked slot number, or to a checked slot if you want to overwrite what's already saved. Press ENTER.

This menu shows all the data that will be saved. You can't change anything but the name in this menu. To save immediately, press ENTER. The appearance of this menu is somewhat different for digital and video sources, reflecting what is saved for them.

To change the name of the memory slot

The default name is an abbreviated description of the contents. In this case, the name tells you that the source is connected to Analog 1, which is an XGA picture. If you need a more descriptive name, select the NAME line and press ENTER.

Use the left-right arrow keys to navigate along the line. Use the up-down keys to change the character at that point. Press PREV when finished. Then select Save Now and press ENTER again.

How to recall a memory slot

1. Press SAVE once to open the Recall grid.
2. Navigate to the slot you want to recall. You can only land on slot numbers that have checks. Press ENTER to open the Recall detail menu. If this slot number has exactly the same settings are currently being used, a (Current) message appears on the top line.
3. The only line you can select is Recall Now. Press ENTER.

✎ The best practice is to recall settings from memory slots. It is faster.

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Memory

Recall	▶
Save	▶
Delete	▶

Memory

Recall	▶
Save	▶
Delete	▶

Recall

☑1	☑9	☐17	☐25	☐33
☐2	☑10	☐18	☐26	☐34
☑3	☐11	☐19	☑27	☐35
☑4	☑12	☐20	☐28	☐36
☑5	☐13	☐21	☐29	☐37
☐6	☐14	☐22	☐30	☐38
☐7	☐15	☐23	☐31	☐39
☐8	☐16	☐24	☐32	☐40

ENTER

Save

☑1	☑9	☐17	☐25	☐33
☐2	☑10	☐18	☐26	☐34
☑3	☐11	☐19	☑27	☐35
☑4	☑12	☐20	☐28	☐36
☑5	☐13	☐21	☐29	☐37
☐6	☐14	☐22	☐30	☐38
☐7	☐15	☐23	☐31	☐39
☐8	☐16	☐24	☐32	☐40

ENTER

Save

Save to Slot			1
Save Now (Overwrite)			
Name		AN1 1024x768	
Source		Analog RGB 1	
Colorspace		RGB	
Resolution		1024 x 768	
Scale/ Justify		Widescreen / Center	
Position		328,4	
Zoom UL/ LR		+1, +0 / -1, +2	
Frequency/Phase		1344 / 0°	
Sharpness		Normal	
Black Level	52	50	104
White Level	178	131	135
Volume/Treble/Bass	46/	48/	53
Mute/Speaker/Input		☐ / ☐ / Channel 1	
Balance/Line Out Balance		50/ 50	

Recall

Slot to Recall			5
Recall Now			
Name		AN1 1024x768, 2x2,1:2	
Source		Analog RGB 1	
Colorspace		RGB	
Resolution		1024 x 768	
Wall		2 x 2 1:2	
Scale/ Justify		Widescreen / Center	
Position		328,4	
Zoom UL/ LR		+1, +0 / -1, +2	
Viewport UL/ LR		+0, +0 / +0,+0	
Frequency/Phase		1344 / 0°	
Sharpness		Normal	
Black Level	52	50	104
White Level	178	131	135
Volume/Treble/Bass	46/	48/	53
Mute/Speaker/Input		☐ / ☐ / Channel 1	
Balance/Line Out Balance		50/ 50	

4 Operating

4.1 Normal Start Up

Start up sequence

 When AC power is turned on (using the orange toggle switch on the electronics cage), it seems that nothing happens for a few seconds. The electronics module is starting up and initializing itself.

 Next, the alpha numeric display on the left front of the unit will display the message STARTING. If the unit has not been turned on for a while and the optical engine is cool, the message will say SEARCHING FOR SIGNAL and the lamp will start if AUTO LAMP ON has been checked in the lamp settings menu. If not pressing the ON button on the remote control or sending an on command via RS232 will start the lamp.

 If the lamp has recently been turned off, and the optical engine is still hot, the message will read COOLING DOWN and a 45 second countdown will commence. At the end of the 45 seconds the lamp will turn on and the lamp fans will start if AUTO LAMP is on. It shortens lamp life to turn it on when it is hot, so the fans run for a minute or so to be sure it is cool.

 If you have turned off the lamp using the remote control the TD61 will start a 45 second cool down. During this time, you cannot turn the lamp on. At the end of the cool-down period the alpha numeric display will say READY and you can now light the lamp using the remote control ON button.

 The TD61 will then lock on to the last selected source. To search for another source press the source button on the remote control.

 After this cooling down period, you can turn on the lamp.

Lamp Settings	
☑ Auto Lamp On	
☐ Lamp Saver	
Lamp Saver Timeout	2hr
Lamp Saver Timeout	0min

Shut down sequence

 When you turn off the lamp, the fan will continues to run for a few minutes to cool the LAMP.

⚠ *CAUTION*

 It is bad practice to turn off the TD61 by turning off the AC power. The lamp does not cool properly. This may shorten lamp life.

4.2 Reading the Alpha Numeric Display

The Alpha Numeric Display provides information on the status of the TD61 including failure information in case the unit should not operate properly.

The Alpha Numeric Display is an LCD panel located on the bottom left of the TD61. It is an excellent resource for troubleshooting as well as providing status information about the TD61. It provides information on:
- failure modes
- active source
- source status
- format (if video)

TD61 Alpha Numeric Display

    The first line of the Alpha Numeric Display contains the following information. Failure modes (modes that cause the lamp not to light) are prefixed with!!:
- !! Door Open (either of the interlocks on the front access panels is open)
- !! Fan Stopped (high voltage power supply fan has stopped)
- !! Engine Fan Stopped (either the DMD fan, or the lamp fan has failed)
- !! HV Power Supply (ballast voltage to the lamp has failed)
- !! Opt. Engine. Com. (optical engine is no longer communicating with the electronics module)
- !! Lamp Failed (lamp not striking)
- Cooling Down xx (xx is a countdown of the number of seconds, starting at 45, until it is ok to light the lamp)
- Lamp Saver Active (see page 77)
- Ready (it is ok to light the lamp)
- Turning on lamp
- Running OK

    The second line in the display contains the active source and its status:
- Analog 1:
- Analog 2:
- Digital:
- component:
- S-Video:
- Composite:

    Status is one of:
- Adjusting
- No Signal
- xxxx yyyy (horizontal and vertical resolution)

    If the source is video, instead of resolution, it will have the video format:
- NTSC
- NTSC.60.443
- PAL.50.358
- PAL
- YPbPr 60Hz
- YPbPr 50Hz
- SECAM

    If a curtain or test pattern is being displayed, it is sometimes difficult to understand why the source input is not being displayed. In these instances the alpha numeric display will provide the information shown below
- TEST PAT.
- LOGO
- CURTAIN

4.3 Controlling TD61 with Remote

You can control TD61 with the remote control or with RS232 commands.

Remote control

   The remote control projects a series of IR (infra-red) pulses to the TD61 for control. Aim the remote control at the bottom left of the screen and press MENU. The main menu should be visible, if the lamp is on. When the TD61 receives a signal from the remote control and the signal is accepted, a solid block will appear as the last character of the LCD display. If the signal is not accepted or understood an X will appear.

.
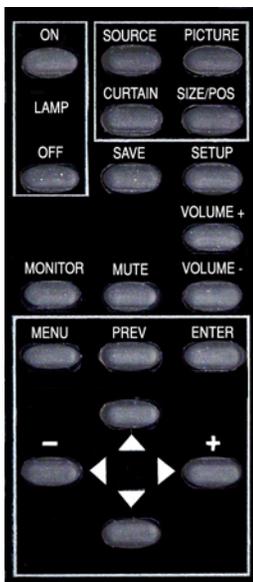
   For a complete list of all remote actions, see

   6.1 "Remote Control Functions" on page 56.

If the remote doesn't work
   • The batteries in the remote are dead or installed wrong.
   • The remote was not aimed at the screen.
   • Something is blocking the IR receiver in the TD61.

✎ The remote control has a large spread of its IR radiation. If you find you are having a difficult time controlling the TD61, move closer and aim the remote at the lower left corner of the display.

4.4 Controlling TD61 with RS232/RS485

Connect the RS232 In to the computer. Loop thru with RS485.

Remote control with serial commands is a good way to control a TD61 while it is operating. It's also an easy way to control TD61s during initial setup using a control program.

Display IDs

When the displays are connected in a series loop, each display should have a *unique* ID. The ID is set in the Serial Settings menu.

The GROUP ID and the UNIT ID go together to make the display's ID. Each of the two parts has a range for characters from 0 to 9 and from A to Z (not case sensitive).

Addressing the displays

When you send a command, it will have an *address*. There are five forms of the address.
- To address all the displays in this serial loop, use ** for the address.
- To address a single display, use the specific ID of that display, such as A6 or 00 or 1B.
- To address all the displays with a certain Group ID, use an address like 3* which will address all the displays in group 3.
- To address all the displays with a certain Unit ID, use an address like *0 or *3.
- When you don't know the ID of any display, you can address the first one in the serial loop with ID --. This will cause only the first display in the series to perform the command.
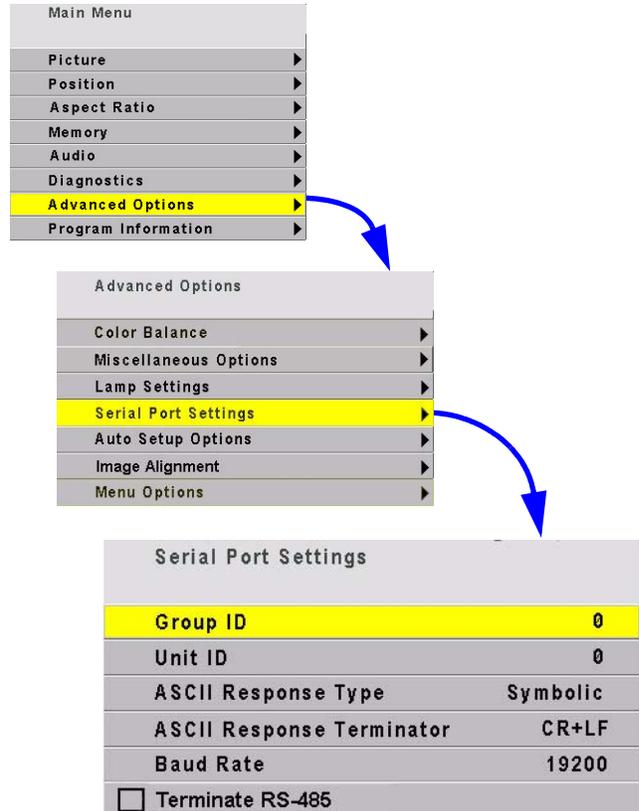
Baud rate

Each display's baud rate *must* be set to the computer or controller's baud rate. The baud rate is *not* automatically established, as it is in modems.

Terminating the series

The displays in a group should not usually need termination, however, if you are experiencing problems try terminating the last display by going to MAIN MENU>ADVANCED OPTIONS>SERIAL PORT SETTINGS and checking the TERMINATE RS485 box at the bottom of the menu.

5 Maintenance

5.1 Changing a Lamp

You will need a slot head screwdriver for this procedure.

TD61**How to change the lamp.**

1. If you are changing the lamp for any other reason than it is dead, use the remote control to turn off the lamp and allow it to cool down. Allow the lamp to cool down for 15 minutes before removing.
2. Turn off the AC power switch underneath the signal input panel on the back-left of the TD61 and remove the power cord.
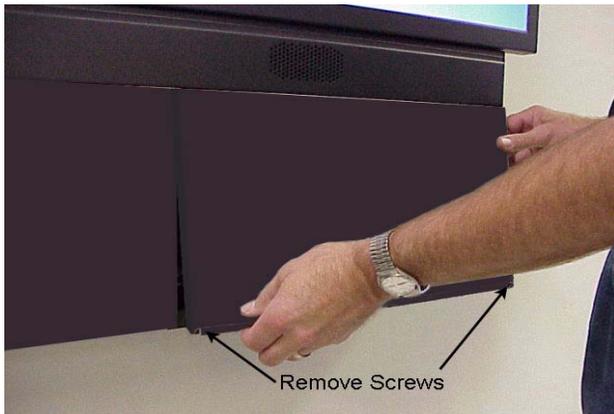
3. Remove the right access panel by removing two 6x32 screws at the bottom of the panel and sliding it to the right.

4. Use screwdriver to loosen the captive screw holding the lamp in place.
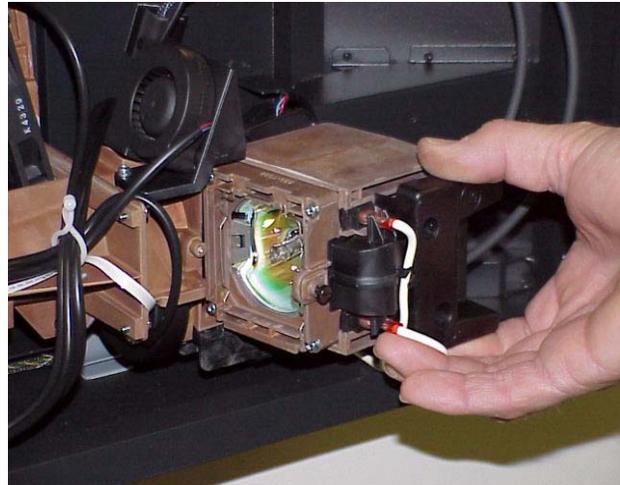
5. Remove the defective lamp.
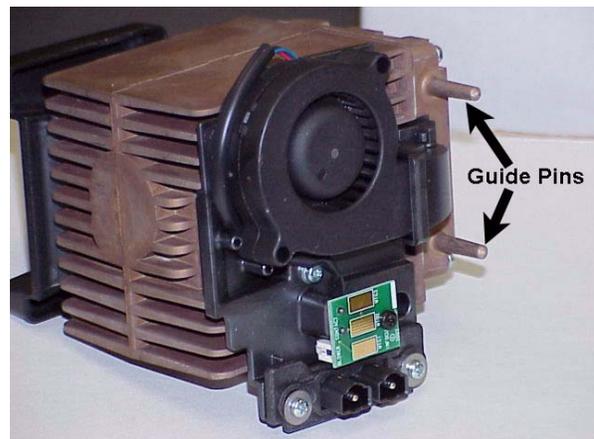
✎ **Note**: Guide pins are provided to insure the proper alignment of the lamp and the optical engine.

6. Slide the new lamp into place and tighten the captive screw.
7. Replace the access panel.

Resetting the lamp hours

It is a good idea to reset the lamp hours to zero when you install a new lamp. If you are replacing a lamp under warranty, you will be asked how many hours were on the lamp when it failed.

The following menu train will lead you to "Reset Lamp Hours".

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Diagnostics

Cube Status	▶
RS232 Port Status	▶
RS485 Port Status	▶
Test Patterns	▶
Setup Summary	▶
Lamp Ballast	▶
Hours	▶

Hours

System Time	02543:23
Running Time	01988:24
Lamp	01988:24
Reset Lamp Hours	

5.2 Changing the Air Filter

Clean cool air is essential to proper operation of the TD61

When should I change the air filter?

When it gets dirty, change it.

Unfortunately, there is no absolute rule about when to change an air filter. For some installations the environment has clean, dust-free air, such as a corporate lobby. The air filter may be good for a year or more.

In other environments—airports, subway terminals—the air is full of dust and dirt all the time. The air filter might have to be changed every month.

Of course, it also depends on how many hours per day or per week the lamp is on and the fans are running.

How to determine a changing schedule.

Remove and inspect the air filter after three months of operation. Make a note of the air filter's condition. Then check it again after six months of operation.

These two inspections will give you some idea of how often the filter needs changing. If it doesn't need changing after six months, inspect again in a year. As long as the environment doesn't change, you can build an appropriate schedule in this way.

If new construction occurs in the vicinity of the InFocus displays, watch out. New construction usually means **DUST.**

Changing the Filter

1. Turn off the lamp and wait 15 minutes till the lamp cools down.The display status readout on the front of the TD61 will tell you when the cool down period is over, usually about 45 seconds. Turn off the AC and unplug the AC cord.

2. Remove the left access panel by removing the two 6x32 screws at the bottom of the panel and sliding the panel to the left.
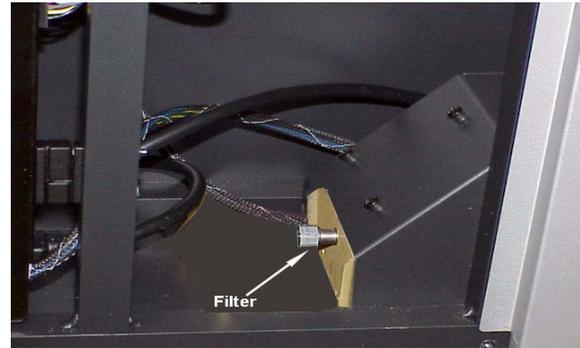
Filter housing showing captive fastener on filter.
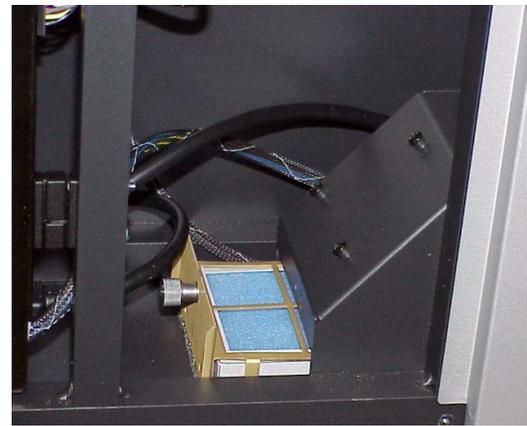
3. Remove filter from filter housing.

4. This is the TD61 filter in its holder. Remove the foam filter from the filter holder.

5. Install new filter in the filter holder and insert the new filter in the filter housing.

6 Reference Section

6.1 Remote Control Functions

The next four pages explain the actions of the remote control

Picture

Picture	
Source	Analog 1
Colorspace	RGB
Sync Type	Separate H&V
Vertical Frequency	60 Hz
Horizontal Frequency	43.38 kHz
Pixel Frequency	65.02 MHz
Horizontal Resolution	1024
Vertical Resolution	768
Frequency	1344
Phase	22.5°
Sharpness	Sharpest
Input Levels	▶

Turns the lamp on and off.

Picture Position
Use arrow keys to move image

Horizontal Position	234
Vertical Position	34

Moves the image on the screen.

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Display Status

TD61	
573-2200	Rev 1.0
Optical Engine SN: 41034400100342	
ID Tag:	

PS Fan	On	Eng Fans	On
Lamp	On		
Interlock	ok		
Temperature	38 ºC		

Fault Override is On

Mode ID:	77	HPer: 1742	VLines: 806

Last Fault: Interlock   0175:05

Serial Port Status RS-232
Press <enter> to clear

Commands Received	24
Replies Sent	3
Last Packet Type	Operation
Last Packet Address	This cube
Bytes Received	231
Bytes Sent	25
UART Framing Errors	0
UART Overflow Errors	0
Group 0 Unit 0 19200 Baud	

Most Recent

0,   0,   0,   0,   0,   0,   0,   0,   0,   0
. . . .

Serial Port Status RS-485
Press <enter> to clear

Commands Received	24
Replies Sent	3
Last Packet Type	Operation
Last Packet Address	This cube
Bytes Received	231
Bytes Sent	25
UART Framing Errors	0
UART Overflow Errors	0
Group 0 Unit 0 19200 Baud	Not Terminated

Most Recent

0,   0,   0,   0,   0,   0,   0,   0,   0,   0
. . . .

Test Patterns

None		Custom Color	
White	Gray Scale	Grid	
Red	Red Scale	Alignment Dashes	
Green	Green Scale	4x4 Checkerboard	
Blue	Blue Scale	Uniformity	
Black	Colors	Focus	
Gray	Color Bars	Logo	

Starts the process of scanning the input connectors for the next available source.

See "Saving Your Work and Recalling a Memory" on page 40

Recall

☑1	☑9	17	25	33
2	☑10	18	26	34
☑3	11	19	☑27	36
☑4	☑12	20	28	36
☑5	13	21	29	37
6	14	22	30	38
7	15	23	31	39
8	16	24	32	40

Save

☑1	☑9	17	25	33
2	☑10	18	26	34
☑3	11	19	☑27	35
☑4	☑12	20	28	36
☑5	13	21	29	37
6	14	22	30	38
7	15	23	31	39
8	16	24	32	40

57

Turns the curtain on and off. Curtain pattern is selected in the Miscellaneous menu. See page 76

Displays this message

Source...	Analog RGB 1
Adjusting the Image	

and starts the process of adjusting the image; performs those steps checked in the Auto Setup Options menu

Mute mutes the audio

Changes the value of the high-lighted item. In some menus, like Picture Position. these buttons control left-right movement. The + button moves you to the next menu, when there is an arrow in the current highlighted item.

See "Picture" on page 60

Picture

🏠 Source	Analog 1
Colorspace	RGB
Sync Type	Separate H&V
Vertical Frequency	60 Hz
Horizontal Frequency	43.38 kHz
Pixel Frequency	65.02 MHz
⊢⊣ Horizontal Resolution	1024
⊺ Vertical Resolution	768
Frequency	1344
Phase – ▭▭ +	22.5°
Sharpness	Sharpest
Input Levels	▶
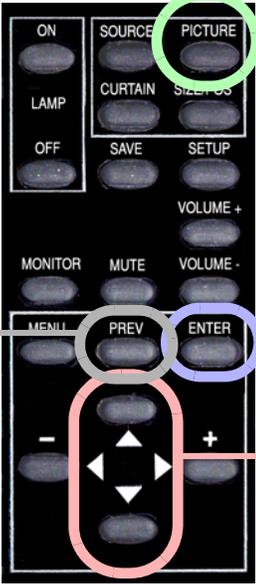
Selects the previous menu.

Selects the highlighted item. If there is an arrow in the item, this button goes to that menu.

Moves through the items in a menu. In some menus, Position Position, these button control up-down movement.

59

6.2 Menus Structures: Picture

Picture

🖼	Source	Analog 1
✨	Colorspace	RGB
	Sync Type	Separate H&V
	Vertical Frequency	60 Hz
	Horizontal Frequency	43.38 kHz
	Pixel Frequency	65.02 MHz
⊢⊣	Horizontal Resolution	1024
I	Vertical Resolution	768
🟧	Frequency	1344
	Phase	– ▭ + 22.5°
⛰	Sharpness	Sharpest
	Input Levels	▶

☑	Analog 1
☐	Analog 2
☐	Digital
☐	Component (YPbPr)
☐	S-Video
☐	Composite

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Picture

🖼	Source	Comp Video 1
	Video Standard	NTSC 60Hz/3.58 MHz
⛰	Sharpness	Sharpest
	Input Levels	▶

Picture

🖼	Source	Digital RGB
✨	Colorspace	RGB
	Vertical Frequency	60 Hz
	Horizontal Frequency	43.38 kHz
	Horizontal Resolution	1024
	Vertical Resolution	768
⛰	Sharpness	Sharpest
	Input Levels	▶

The Picture menu has different items depending on the current source type. You cannot adjust Frequency in Digital pictures, so that item is not in the Picture menu when the selected source is Digital. You cannot adjust Horizontal Frequency in Analog, because that is determined by the source, so it is grayed out. Other items can be adjusted if they are not grayed out.

Clicking in the Source item, opens a drop down menu that allows you to choose a source.

In most menus, this area describes what the selected (highlighted) function will do or what it is used for.

60

Input Levels: Analog Sources

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

For Digital Sources, see page 62.
For Video Sources, see page 63.

When the source is Analog 1 or 2 and has RGB color-space…
(See 3.3 "What Does Colorspace Mean?" on page 34)

To set levels semi-automatically, display a black picture from the source computer. Choose Auto Black Level and press ENTER. Then display a white picture from the source, choose Auto White Level and press ENTER.

The TD61 is now adjusted to the brightest and darkest picture this one source can produce. If you change the computer to a different one, or change the video card in the computer, you should do this adjustment again.

Picture

Source	Analog 1
Colorspace	RGB
Sync Type	Separate H&V
Vertical Frequency	60 Hz
Horizontal Frequency	43.38 kHz
Pixel Frequency	65.02 MHz
Horizontal Resolution	1024
Vertical Resolution	768
Frequency	1344
Phase	– ⊂▭⊃ + 22.5°
Sharpness	Sharpest
Input Levels	▶

Input Levels

☼ Auto Black Level (offset)			
◑ Auto White Level (gain)			
Center Point	2	1	4
☼ Black Level (offset) - All	– ⊂▭⊃ +		55
Red	– ⊂▭⊃ +		68
Green	– ⊂▭⊃ +		57
Blue	– ⊂▭⊃ +		69
◑ White Level (gain) - All	– ⊂▭⊃ +		130
Red	– ⊂▭⊃ +		128
Green	– ⊂▭⊃ +		131
Blue	– ⊂▭⊃ +		130

To set RGB levels manually, display a black picture from the source computer. Select Black Level and adjust it until one of the three colors just touches the 0 value. Then adjust the other two colors until they just touch 0 also. Do not push this value "lower" than 0, because the number will not change, but the picture will get worse.

Now display a white picture from the source computer. Select the White levels and adjust them until the value just touches 255. Do not push them "higher" than 255, because the number will not change, but the picture will get worse.

When the source is Analog 1 or 2 and has YPbPr colorspace…
(See 3.3 "What Does Colorspace Mean?" on page 34)

If a color bar pattern is available in YPbPr, turn on Blue Only and adjust Saturation by matching the two outer color bars; adjust Hue by matching the inner two bars.

Input Levels

☼ Brightness	– ⊂▭⊃ +	148
◑ Contrast	– ⊂▭⊃ +	127
▦ Saturation	– ⊂▭⊃ +	125
▦ Hue	– ⊂▭⊃ +	133
☐ Blue Only		
⬤ Restore Factory Defaults		

Input Levels: Digital Sources

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Picture

🖼 Source		Analog 1
✦ Colorspace		RGB
Sync Type		Separate H&V
Vertical Frequency		60 Hz
Horizontal Frequency		43.38 kHz
Pixel Frequency		65.02 MHz
⊢⊣ Horizontal Resolution		1024
I Vertical Resolution		768
🗔 Frequency		1344
🖾 Phase	– ▭ +	22.5°
🔺 Sharpness		Sharpest
Input Levels		▶

When the source is Digital and the colorspace is
RGB …
(See 3.3 "What Does Colorspace Mean?" on
page 34)

The digital level controls are not often used,
  because most digital sources don't need them.
Reset is a button that will return the system to the
  default values for digital sources.

Input Levels

☀ Black Level (offset) - All	– ▭ +	55
Red	– ▭ +	68
Green	– ▭ +	57
Blue	– ▭ +	69
🔴 Reset Black Level to Default		

When the source is Digital and the colorspace is YPbPr …
(See 3.3 "What Does Colorspace Mean?" on page 34)

Input Levels

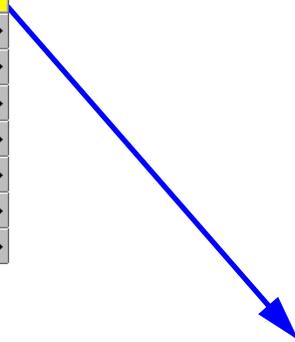|		
🖼 Hue	– ▭ +	27
☐ Blue Only		
🔴 Restore Factory Defaults		
☀ Black Level (offset) - All	– ▭ +	55
Red	– ▭ +	68
Green	– ▭ +	57
Blue	– ▭ +	69
🔴 Reset Black Level to Default		

Input Levels: Video Sources

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Picture

Source	Analog 1
Colorspace	RGB
Sync Type	Separate H&V
Vertical Frequency	60 Hz
Horizontal Frequency	43.38 kHz
Pixel Frequency	65.02 MHz
Horizontal Resolution	1024
Vertical Resolution	768
Frequency	1344
Phase	– ( ) + 22.5°
Sharpness	Sharpest
Input Levels	▶

When the source is Composite or S-Video…

Input Levels

Brightness	– ( ) + 148
Contrast	– ( ) + 127
Saturation	– ( ) + 125
Hue	– ( ) + 133
Blue Only	

The top items in the Input Levels menu, when the source is video, correspond to similar controls on television receivers (although PAL and SECAM receivers do not use a hue control).

The Blue Only check box is for adjusting the picture with color bars from the source. See 3.2.2 "Adjusting to Video Sources" on page 32.

✎ For Digital Sources, see page 62.

✎ For Analog Sources, see page 61

Position
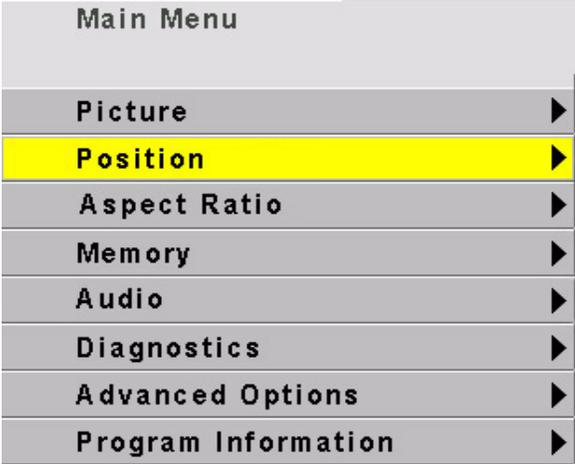
Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

From the Main Menu, select Position to access the Picture Position menu.

Picture Position

Use arrow keys to move image

✥

Horizontal Position	234
Vertical Position	34
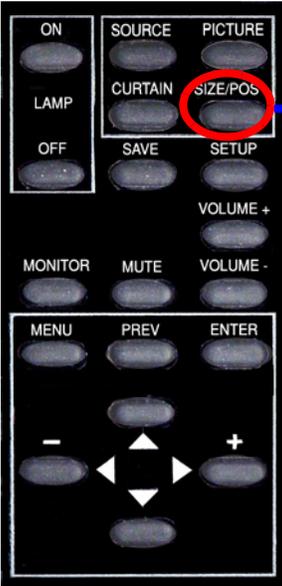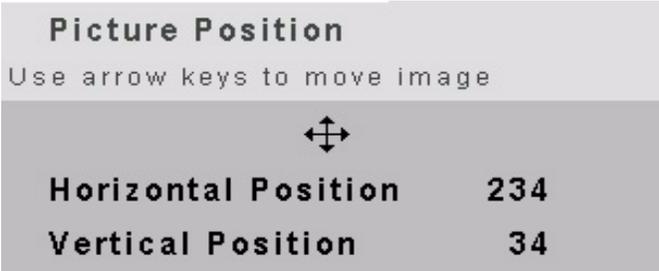
Press the SIZE/POS to access the PIcture Position menu directly

Aspect Ratio

Main Menu

- Picture ▶
- Position ▶
- **Aspect Ratio** ▶
- Memory ▶
- Audio ▶
- Diagnostics ▶
- Advanced Options ▶
- Program Information ▶

Aspect Ratio

Scale Mode	Fill All ▶
Justify	Center
Overscan	-12% -

- ☑ Fill All
- ☐ Crop
- ☐ Letterbox/Pillarbox
- ☐ Widescreen (16x9)
- ☐ Normal Video (4x3)
- ☐ One to One
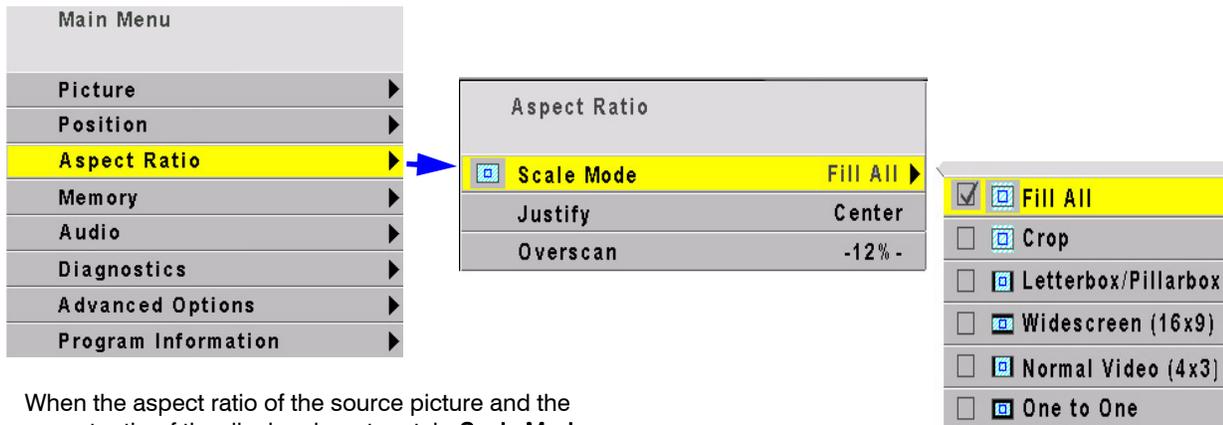
When the aspect ratio of the source picture and the aspect ratio of the display do not match, **Scale Mode** and **Justify** are used to fit the picture onto the display. With **Scale Mode** highlighted in the Aspect Ratio menu, press enter or the right arrow on the remote control to access the drop down menu.

Scale Mode has the choices: Fill All, Crop, Letterbox, or Widescreen.

Fill All stretches the picture as necessary on one axis to fill the screen. All of the picture is shown.

Letterbox fills the screen by stretching until the first edges touch the screen edges (sides or top-bottom) and leaves the rest of the screen filled with the Curtain color. All of the picture is shown.

Crop fills the screen by stretching until the second edges touch the screen edges and crops the rest. Some of the picture will be cut off.

Widescreen forces a 16:9 (1.77) aspect ratio to display compressed DVDs correctly. All of the picture is shown.

Justify moves the picture to the top, middle or bottom, or to the left, center or right. This has no function when the Scale Mode is Fill All.

One to One means show the picture without any scaling. If it is larger than the display's native resolution it will be cropped, if it is smaller it will be shown with a black border. This is most useful for 1280x720 resolution, in order to show the image with no scaling artifacts and only a slight loss of pixels around the edges.

Overscan: As with many rear projection televisions, the InFocus TD61 uses overscan to ensure image quality. For video images, overscan is used to hide video artifacts such as the second audio channel or the sync information that is transmitted in the vertical interval. Sometimes this vertical interval will appear as interference at the top of the screen. Overscan allows you to adjust this out of the picture area.

For computer data, overscan defaults to 0%.

Memory: Recall

Main Menu

|	
Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Memory

Recall	▶
Save	▶
Delete	▶

Recall

☑1	☑9	☐17	☐25	☐33
☐2	☑10	☐18	☐26	☐34
☑3	☐11	☐19	☑27	☐35
☑4	☑12	☐20	☐28	☐36
☑5	☐13	☐21	☐29	☐37
☐6	☐14	☐22	☐30	☐38
☐7	☐15	☐23	☐31	☐39
☐8	☐16	☐24	☐32	☐40
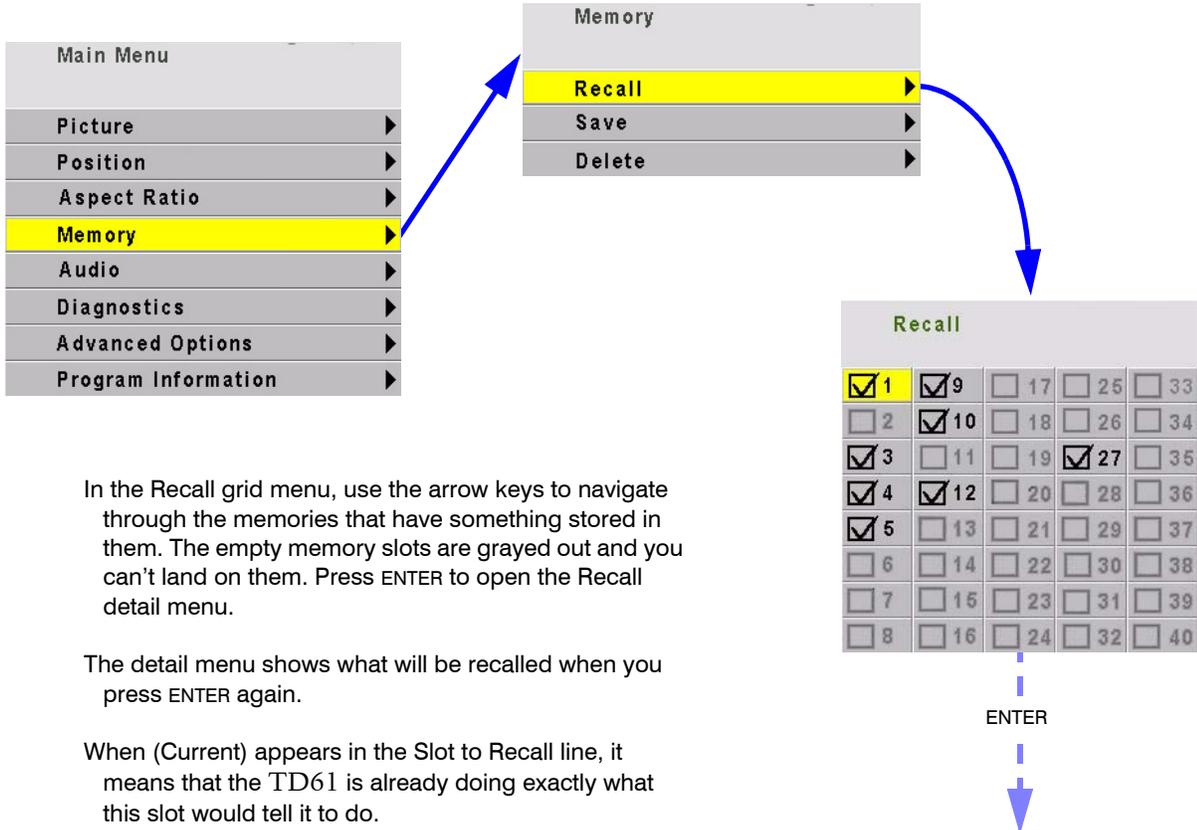
In the Recall grid menu, use the arrow keys to navigate through the memories that have something stored in them. The empty memory slots are grayed out and you can't land on them. Press ENTER to open the Recall detail menu.

The detail menu shows what will be recalled when you press ENTER again.

When (Current) appears in the Slot to Recall line, it means that the TD61 is already doing exactly what this slot would tell it to do.

ENTER
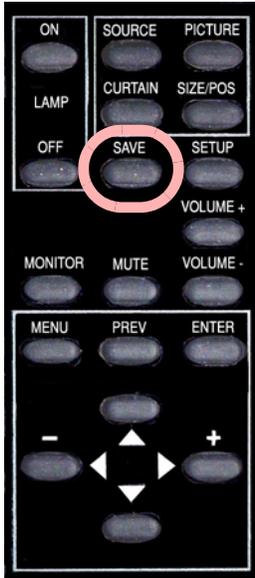
Press SAVE once to open the Recall grid directly.

Recall

Slot to Recall	1
Recall Now	
Name	AN1 1024x768, 2x2,1:2
Source	Analog RGB 1
Colorspace	RGB
Resolution	1024 x 768
Scale/ Justify	Widescreen / Center
Position	328,4
Frequency/Phase	1344 / 0°
Sharpness	Normal
Black Level	52 50 104
White Level	178 131 135
Volume/Treble/Bass	46/ 48/ 53
Mute/Speaker/Input	☐ / ☐ / Channel 1
Balance/Line Out Balance	50/ 50

Memory: Save

Main Menu

Picture
Position
Aspect Ratio
Memory
Audio
Diagnostics
Advanced Options
Program Information

Memory

Recall
Save
Delete

Press SAVE twice to open this menu directly.

Save

☑1 ☑9 ☐17 ☐25 ☐33
☐2 ☑10 ☐18 ☐26 ☐34
☑3 ☐11 ☐19 ☑27 ☐35
☑4 ☑12 ☐20 ☐28 ☐36
☑5 ☐13 ☐21 ☐29 ☐37
☐6 ☐14 ☐22 ☐30 ☐38
☐7 ☐15 ☐23 ☐31 ☐39
☐8 ☐16 ☐24 ☐32 ☐40

ENTER
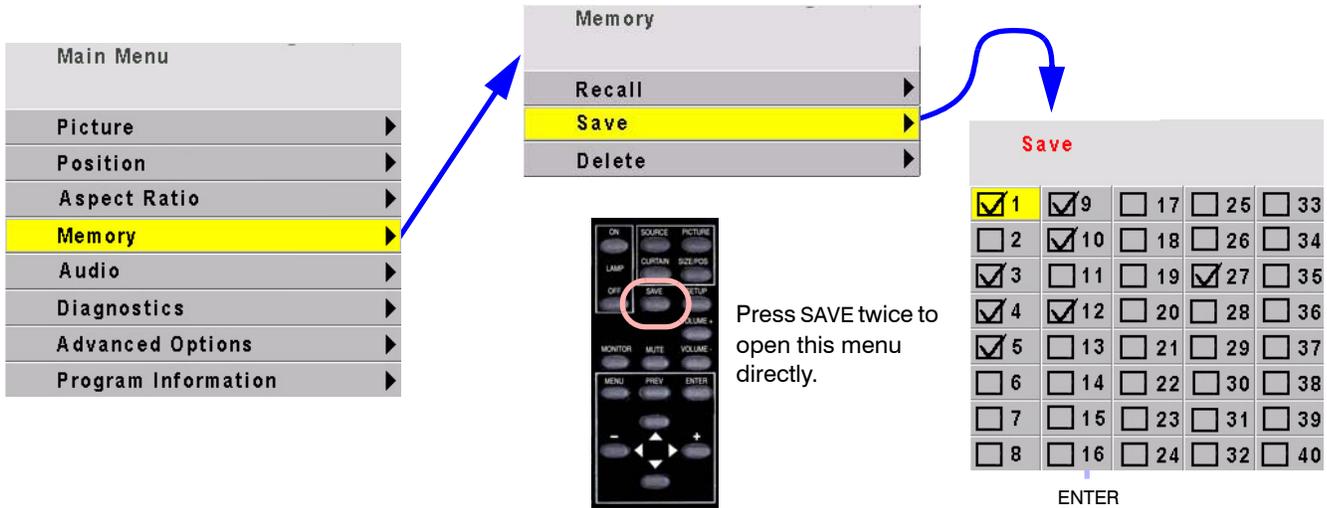
In the Save grid, use the arrow keys to cycle through the available memories. As you navigate through all 40 memories, Save Now will show (Overwrite), as shown here.

For each empty memory, the Name of the memory is the default name for this slot. You can change this name as described below. Many lines are grayed out because you can't change anything here except the name of the memory. The lines in this menu are different for saving different modes: video or digital.

(Overwrite) appears if the Save to Slot number currently has something saved in it.

To save, highlight Save Now and press ENTER.

A (Current) notice will appear in Save to Slot to indicate that the save was successful and that the slot now contains exactly what the $TD61$ is doing now.

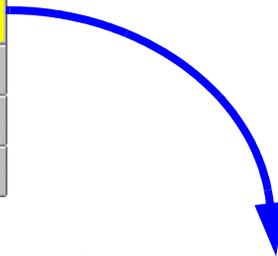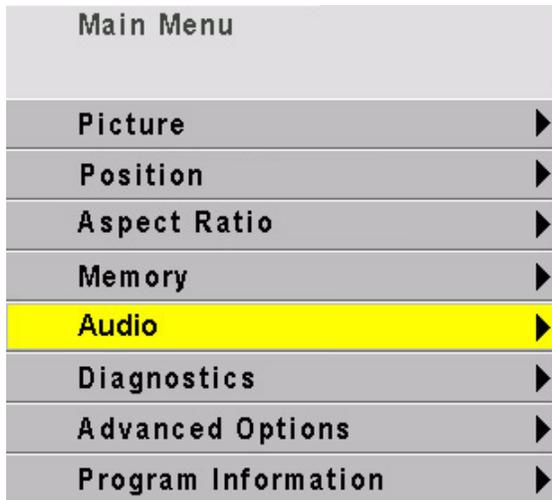Everything shown in the Save menu is saved in the slot selected.

To change the **Name** of a memory slot, highlight Name and press ENTER. A bar appears below the name which indicates character position. Use the $+/-$ arrows to move the yellow highlight in this bar. Use the up-down arrows to change the character at that position. There are 24 character spaces available.

The default name is an abbreviation of the memory contents: connector used, resolution.

Save

Save to Slot			1
Save Now	(Overwrite)		
Name	AN1 1024x768		
Source			Analog RGB 1
Colorspace			RGB
Resolution		1024 x 768	
Scale/ Justify	Widescreen / Center		
Position		328,4	
Frequency/Phase		1344 / 0°	
Sharpness		Normal	
Black Level	52	50	104
White Level	178	131	135
Volume/Treble/Bass	46/	48/	53
Mute/Speaker/Input		☐ / ☐ / Channel 1	
Balance/Line Out Balance		50/ 50	

Save

Save to Slot			2
Save Now			
Name	AN1 1024x768		
Source			Analog RGB 1
Resolution		1024 x 768	
Colorspace			RGB
Resolution		1024 x 768	
Scale/ Justify	Widescreen / Center		
Position		328,4	
Frequency/Phase		1344 / 0°	
Sharpness		Normal	
Black Level	52	50	104
White Level	178	131	135
Volume/Treble/Bass	46/	48/	53
Mute/Speaker/Input		☐ / ☐ / Channel 1	
Balance/Line Out Balance		50/ 50	

Audio

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Volume use the +/- keys on the remote to adjust volume.

Mute turns off the volume.

Treble use the +/- keys on the remote control increase or decrease the treble response.
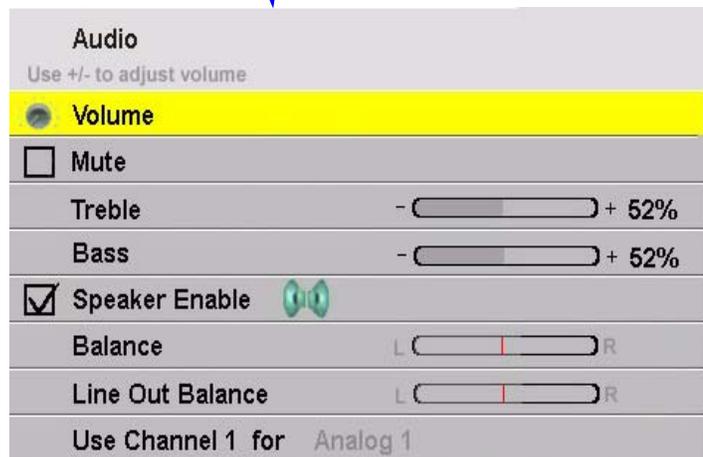
Bass use the +/- keys on the remote control increase or decrease the bass response.

Speaker Enable disables both internal and external speakers. It does not affect line out.
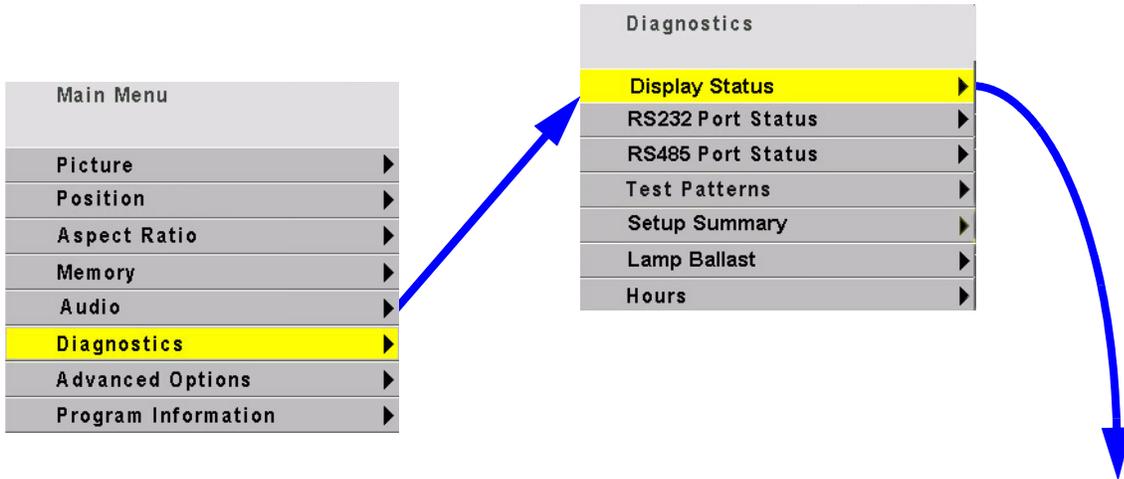
Balance use the +/- keys on the remote control to adjust the balance between both internal and external speakers.

Line Out Balance use the +/- keys on the remote control to adjust the balance between inputs to an external amplifier.

Use Channel(1,2,3**) for (**selected source**)** allows you to select which audio input that will be used for the selected source. Use the +/- keys on the remote control to select the audio inputs 1, 2 or 3.

Audio
Use +/- to adjust volume

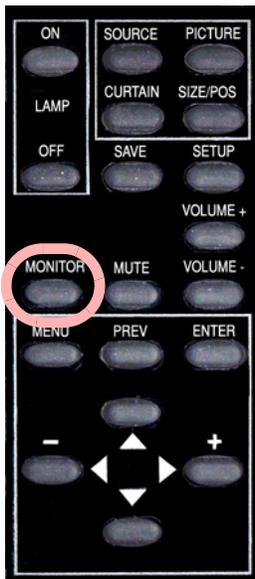|	
Volume	
Mute	
Treble	– ⬚ + 52%
Bass	– ⬚ + 52%
Speaker Enable	
Balance	L ⬚ R
Line Out Balance	L ⬚ R
Use Channel 1 for	Analog 1

Diagnostics: Display Status

The **Display Status** menu shows the status of the lamp and fan. 573- is the firmware number. For TD61 it will be 573-2201

Fan: **On** when running. When a fan fails, the lamp will not turn on and you can't see this menu.

Lamp: **On** when the lamp fails you can't see this menu.

Press MONITOR once to open the display Status menu.

Mode ID: Each mode has a number, and this is the number of the one used now. For XGA, for instance, there are several, each with a different vertical frequency, number of active lines, total number of lines.

Last Fault: Shows the last event that caused the lamp to go off and the elapsed system time (not clock time) in hours:minutes since that happened. Time is in 5 minute increments and does not update while the menu is open.

69

Diagnostics: Serial Status

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Diagnostics

Display Status	▶
RS232 Port Status	▶
RS485 Port Status	▶
Test Patterns	▶
Setup Summary	▶
Lamp Ballast	▶
Hours	▶

Serial Port Status RS-232
Press <enter> to clear

Commands Received	24
Replies Sent	3
Last Packet Type	Operation
Last Packet Address	This cube
Bytes Received	231
Bytes Sent	25
UART Framing Errors	0
UART Overflow Errors	0
Group 0 Unit 0 19200 Baud	

Most Recent
0,   0,   0,   0,   0,   0,   0,   0,   0,   0
. . . .

Serial Port Status RS-485
Press <enter> to clear

Commands Received	24
Replies Sent	3
Last Packet Type	Operation
Last Packet Address	This cube
Bytes Received	231
Bytes Sent	25
UART Framing Errors	0
UART Overflow Errors	0
Group 0 Unit 0 19200 Baud	Not Terminated

Most Recent
0,   0,   0,   0,   0,   0,   0,   0,   0,   0
. . . .

Press MONITOR twice to open the RS-232 Serial Port Status menu. Push three times to open the RS-485 Serial Port Status.

Commands Received is the number of commands that have passed through *this* $TD61$, whether or not they were addressed to it.

Replies Sent is the number of replies *this* display sent.

Last Packet Type will be, most commonly, an Event or an Operation. You might also see Bad CRC or Bad Header if the packet were sent incorrectly.
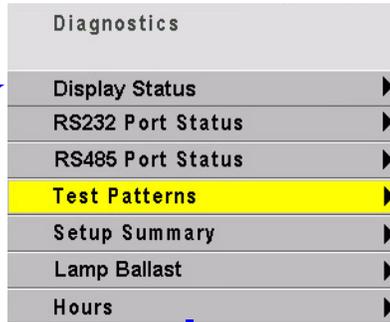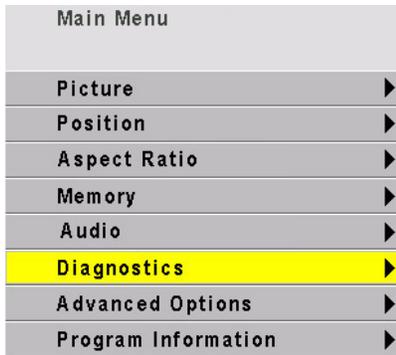
Last Packet Address might be:
- Global—a command meant for all displays or a command meant for a group of which this display is a member, such as a command addressed to 3* when this display's group ID = 3.
- Not This display—a command meant for one or more other displays in this circuit, but not this one, such as addressed to 45 or 4* or *6 when this display's ID is 37.
- This display Alone—a command address exclusively to this display, such as addressed to 37 and this display's ID is 37.

Bytes Received counts bytes received whether addressed to this display or not.

Bytes Sent counts bytes this display sent out.

Most Recent shows the last several bytes (decimal equivalent of the ascii hex value) and the actual text of all commands received by this display, whether addressed to it or not. It does not show bytes or text sent.
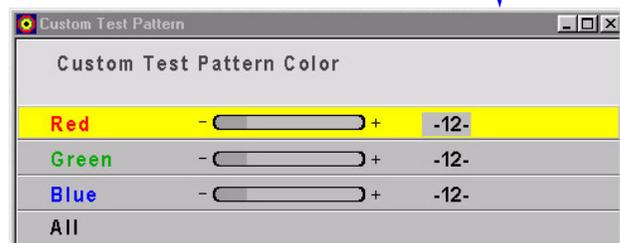
Diagnostics: Test Patterns

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Diagnostics

Display Status	▶
RS232 Port Status	▶
RS485 Port Status	▶
Test Patterns	▶
Setup Summary	▶
Lamp Ballast	▶
Hours	▶

The Test Pattern menu turns on a variety of internally generated test images. These block any incoming picture. Be sure to choose "None" when you are finished testing.

Test Patterns

None	Gray Scale	Custom Color ▶
White	Red Scale	Grid
Red	Green Scale	Alignment Dashes
Green	Blue Scale	4x4 Checkerboard
Blue	Colors	Uniformity
Black	Color Bars	Focus
Gray		Logo

To set a custom test pattern color, select Custom Color from the Test Pattern menu. The Custom Test Pattern Color menu will appear on a neutral gray background. Using the left and right arrows on your remote control to move the slider bars in the menu will cause the background to change color.

Press MONITOR four times to open the Test Patterns menu.

Custom Test Pattern

Custom Test Pattern Color

Red	– [ ] +	-12-
Green	– [ ] +	-12-
Blue	– [ ] +	-12-
All		

Diagnostics: Setup Summary

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Diagnostics

Display Status	▶
RS232 Port Status	▶
RS485 Port Status	▶
Test Patterns	▶
Setup Summary	▶
Lamp Ballast	▶
Hours	▶

Setup Summary

Source	Analog 1
Colorspace	RGB
Resolution	1024 x 768
Scale/Justify	Fill All / Center
Position/ Overscan	328 31 / 0%
Frequency/Phase	1664 / 315.0°
Black Level	10 45 28
White Level	105 129 138
Sharpness	Sharpest
White Balance	85 100 94
Gray Balance	6 8 11
Slot -12-	Group 0 Unit 0
Volume/Treble/Bass	48 / 56 / 64
Mute/Speaker/Input	☐ / ☑ / Channel 1
Balance/Line Out Balance	50 / 50

You cannot change anything in this menu. It is for reference only. The Setup Summary menu looks different for digital or video sources.

Slot is only visible when the current settings are exactly the ones in a numbered memory slot.

Diagnostics: Ballast

Ballast menu provides information only. You cannot change anything from this menu.

Ballast	
Fault	None
Voltage	93 V
Temperature Zone	6
Pulse/Plateau Ratio	2.81
Software Version	1544
Status	Lamp on, Pulse, Sync, Uart

Fault. If a fault condition occurs, the lamp will shut down. However you will be able to query the ballast via RS232 to obtain the fault condition. There are 9 fault conditions:
- None
- Lamp over voltage
- Mains over voltage
- Temp too high
- Asymmetry detected (voltage waveform to the lamp is asymmetrical)
- Lamp under voltage
- Mains under voltage
- NTC defective (temperature sensor for the ballast electronics)
- Sync frequency outside limits

Voltage. Plateau voltage to the lamp

Temperature Zone. There are 7 temperature zones reported by the ballast:
- 1 Driver shut down
- 2 Temperature out of spec
- 3 Temperature critical
- 4-7 Temperature ok

Pulse/Plateau Ratio. Current to the lamp consists of alternating negative and positive plateau's, each followed by a pulse.

Software Version. Version of firmware embedded in the ballast. Not to be confused with the firmware version of the TD61.

Status. Can be queried via RS232 should the lamp be off.

Ballast
Ballast Not Communicating

Ballast Not Communicating. If the ballast stops communicating with the electronics module, the ballast menu will change as shown. The electronics module will lose all control of the ballast and the ballast voltage will go to maximum. At maximum voltage, the lamp life is significantly shortened.

Diagnostics: Hours

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Diagnostics

Cube Status	▶
RS232 Port Status	▶
RS485 Port Status	▶
Test Patterns	▶
Setup Summary	▶
Lamp Ballast	▶
Hours	▶

System Time is the number of hours and minutes the electronics module has been running, that is, how long it has had power applied to it.

Running Time is the amount of time the optics have the lamp on, that is, how long light has gone through the optical parts of the $TD61$.

Lamp is supposed to be the amount of time the lamp has been on, but it may be only the amount of time since this meter was last reset.

Hours

System Time	02543:23
Running Time	01988:24
Lamp	01988:24
Reset Lamp Hours	

To reset lamp hours, select one of the resets, press ENTER, press the left arrow, press ENTER again.

Confirm Lamp Hours Reset

Are you Sure?   Yes   N

Confirm Lamp Hours Reset

Are you Sure?   Yes   N

Advanced Options: Color Balance

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Advanced Options

Color Balance	▶
Miscellaneous Options	▶
Lamp Settings	▶
Serial Port Settings	▶
Auto Setup Options	▶
Image Alignment	▶
Menu Options	▶

Color Balance

Color Temperature	5500K (Medium Warm)
White Balance - All	(Clipboard)
Red	28 (26)
Green	24 (24)
Blue	21 (23)
Gray Balance - All	
Red	11 (11)
Green	7 (9)
Blue	10 (12)
Test Pattern	White
Hide Menu	
Copy to Clipboard	
Recall From Clipboard	
Reset to Defaults	
Gamma	Film
White Boost	Off

Match the whites

Use color balance to match all the displays in a group. Reset values on all displays to numbers shown in top illustration with white test pattern. Match all displays to least bright display. Change the Blue value as little as possible.

When adjusting WHITE BALANCE - ALL you may not see all three of the red, green, and blue numbers decrement or increment. This because the ALL choice adjusts the colors in proportion to each other, so that the color remains constant as you adjust the brightness. For example, if you have the color set at Red-100 Green-80 and Blue-40 and adjust down 10 clicks, you will wind up with Red-90, green-72 and Blue-36. The color has remained the same and only the brightness has changed. Green and blue did not change on every one of the ten clicks.

Match the grays

Adjust the grays using the gray test pattern, again matching all displays to each other. Choose one display that has a neutral gray and match them all, one at a time, to that one.

For more information on Color Balance see 3.4 "Color Balancing TD61" on page 36

Advanced Options: Miscellaneous Options

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Advanced Options

Color Balance	▶
Miscellaneous Options	▶
Lamp Settings	▶
Serial Port Settings	▶
Auto Setup Options	▶
Image Alignment	▶
Menu Options	▶

Miscellaneous

Choose pattern for <CURTAIN> key

☐ Curtain Pattern	White
☑ Plug and Play (EDID Enable)	
EDID for DVI/Analog 2	
Status Display Light − ▭) +128	
☑ Go bright when fault	

Curtain Pattern is a choice of any of the solid color test patterns or the logo. This is displayed when you press CURTAIN.

Plug and Play enables the Extended Display Identification Data (EDID) that is used by many computers to determine the capabilities of the monitor. This is a complicated standard, and not all video card drivers and operating systems act the same. If you are having trouble getting your video card to output a picture when attached to our display, you can try disabling Plug and Play and rebooting the computer, to see if it acts any better. Normally Plug and Play should be enabled.

EDID for Digital/Analog 2 allows you to set up whether you have an Analog or a Digital source attached to the second connector. This connector shares a single EDID line between the two sources, so some graphics cards may not work correctly unless this is set to the appropriate choice.

Status Display Light adjusts the brightness of the status display readout.

Go bright when fault turns the status display readout to full brightness when a fault occurs.

Advanced Options: Lamp Settings

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Advanced Options

Color Balance	▶
Miscellaneous Options	▶
Lamp Settings	▶
Serial Port Settings	▶
Auto Setup Options	▶
Image Alignment	▶
Menu Options	▶

Auto Lamp On, when checked, turns on the lamp shortly after AC power is restored. When not checked, the $TD61$ waits for a Lamp On command from the remote or from RS232.

⚠ *CAUTION*
   The lamp must cool down for about one minute before lighting again. A rapid on-off-on sequence may reduce lamp life. Also, the lamp should be allowed to heat up for at least five minutes before turning them off.

Lamp Settings

☑ Auto Lamp On	
☐ Lamp Saver	
Lamp Saver Timeout	2hr
Lamp Saver Timeout	0min

Before shutting down due to a missing source, $TD61$ will search each of the other connectors for an active source. If another source is not found, **Lamp Saver (**if checked) will turn off the lamp after a specified length of time. When shut down starts, $TD61$ displays the message below.

Lamp Saver is On. Shutting Down...

Advanced Options: Serial Port Settings

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Advanced Options

Color Balance	▶
Miscellaneous Options	▶
Lamp Settings	▶
Serial Port Settings	▶
Auto Setup Options	▶
Image Alignment	▶
Menu Options	▶
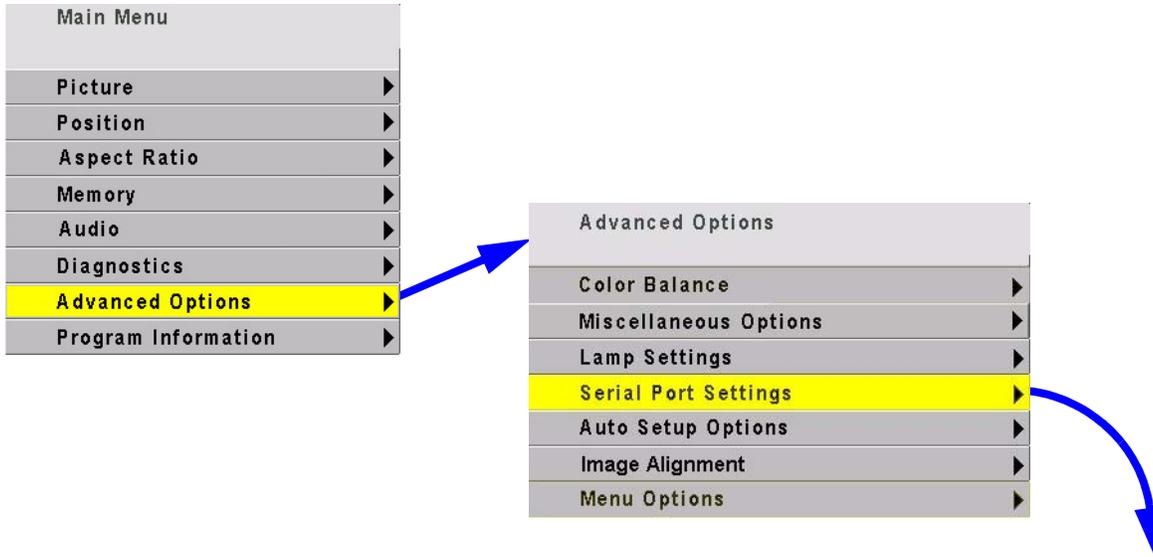
Group ID can be 0-9, A-Z (caps only)
Unit ID can be 0-9, A-Z (caps only) In combination this gives 1296 unique IDs.

. The **ID** is the identification of the individual display. The **address** is the part of an RS232 that specifies which display or displays should execute the command. Put another way, the ID is the number on your house; the address is the number on the envelope that tells the letter carrier where to take it.

Serial Port Settings

Group ID	**0**
Unit ID	0
ASCII Response Type	Symbolic
ASCII Response Terminator	CR+LF
Baud Rate	19200
☐ Terminate RS-485	

ASCII Response Type determines whether the response comes back as text (Symbolic) or an command numbers with the display ID (Numeric) or with the numeric data only (Data).

ASCII Response Terminator determines what non-printing character(s) are sent at the end of each message. CR=carriage return; LF=line feed

Baud Rate is 2400, 4800, 9600, or 19200.

Terminate RS-485 adds electrical termination to the RS485. Should not normally be needed.

Advanced Options: Auto Setup Options

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Advanced Options

Color Balance	▶
Miscellaneous Options	▶
Lamp Settings	▶
Serial Port Settings	▶
Auto Setup Options	▶
Image Alignment	▶
Menu Options	▶
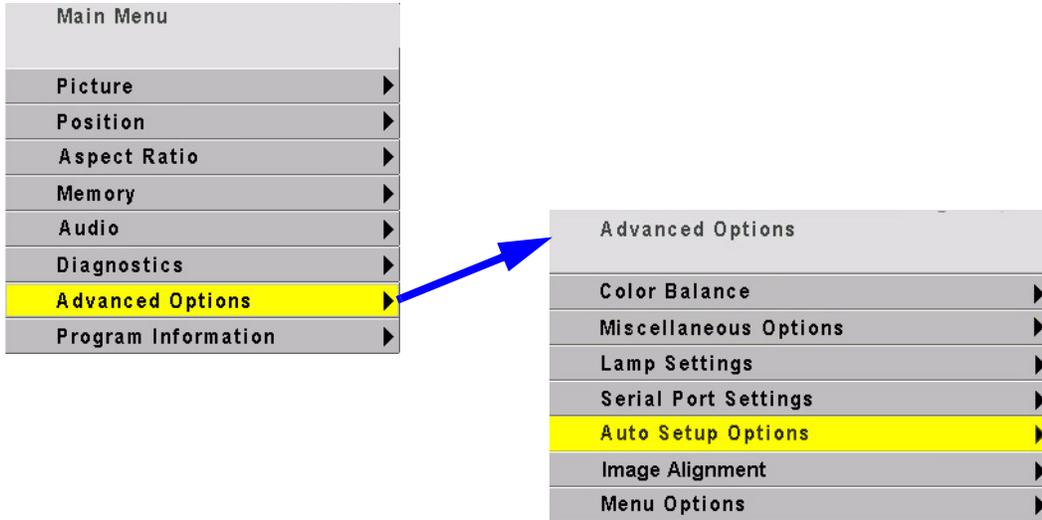
The checked events occur when
  • the input changes, say from XGA to UXGA
  • a new source is selected
  • you press the SETUP button.

Retry on lost signal, when checked, means the TD61 will try again to detect the mode if the sync is lost or momentarily disrupted. If you have a noisy signal you want to turn this off to avoid disruption in the image. However, if this is unchecked the system will not correctly set up the signal if you change resolutions.

Do Black/White Levels automatically adjusts the lightest and darkest pixels to be white and black. This fully automatic method is prone to small errors in the white level. Semi-automatic level adjustment is better.

Auto Setup Options

☑	**Retry on lost signal**
☐	Do Black/White Levels
☑	Do Frequency
☑	Do Phase
☑	Do Position

Do Frequency and **Do Phase** automatically adjust the electronics module to the frequency and phase of the selected picture.

Do Position puts the upper left pixel of the picture in the upper left corner of the screen.

Advanced Options: Image Alignment
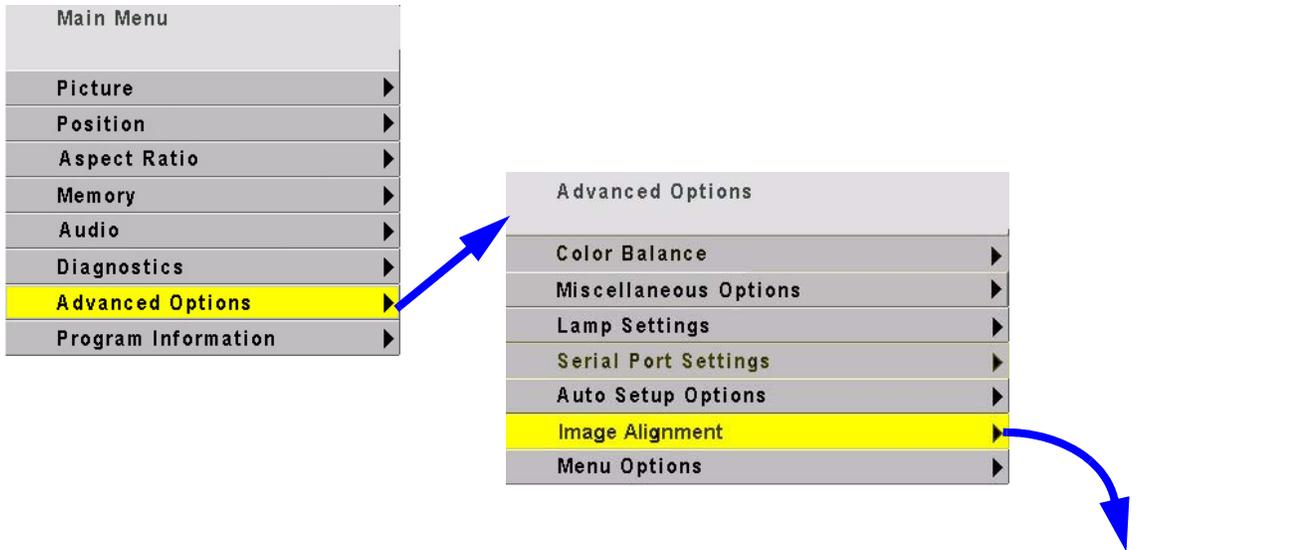
Pan Image moves the entire image vertically or horizontally.

Shrink/Grow allows you to shrink or grow the image, all sides proportionally

Test Pattern allows you to choose the Grid pattern, the alignment pattern or none.

Reset to Default resets the image to factory resolution.

Illuminate Border turns the border, outside the image, green. If the green border is visible, the picture is either not properly sized or centered.

For more information on image alignment, see
  3.1 "Aligning the Image" on page 24

Menu Options: Position
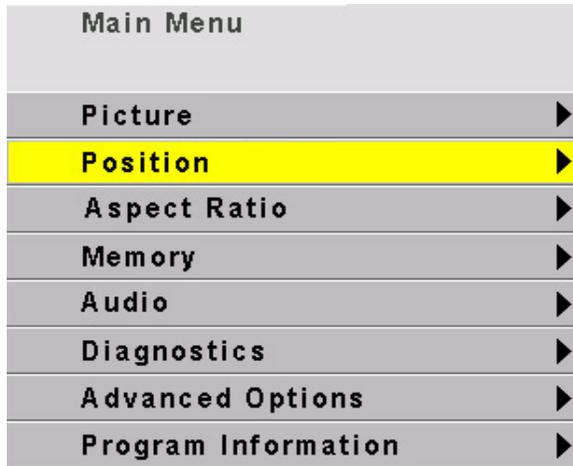
Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

From the Main Menu, select Position to access the Picture Position menu.

Picture Position

Use arrow keys to move image

⟷

Horizontal Position	234
Vertical Position	34
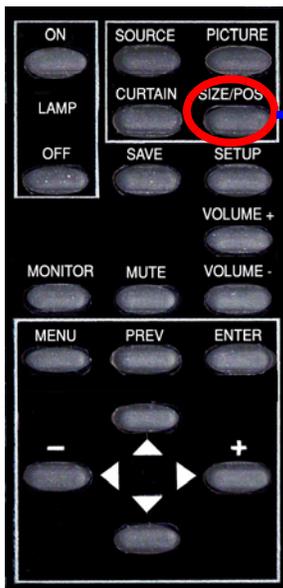
Press the SIZE/POS to access the PIcture Position menu directly

Advanced Options: Menu Options

Main Menu

- Picture ▶
- Position ▶
- Aspect Ratio ▶
- Memory ▶
- Audio ▶
- Diagnostics ▶
- **Advanced Options** ▶
- Program Information ▶

Advanced Options

- Color Balance ▶
- Miscellaneous Options ▶
- Lamp Settings ▶
- Serial Port Settings ▶
- Auto Setup Options ▶
- Image Alignment ▶
- **Menu Options** ▶

Menu Options

🔲	H Position	– ▭▭▭▭ +	25
🔲	V Position	– ▭▭▭▭ +	15
🕐	Menu Timeout		15 sec
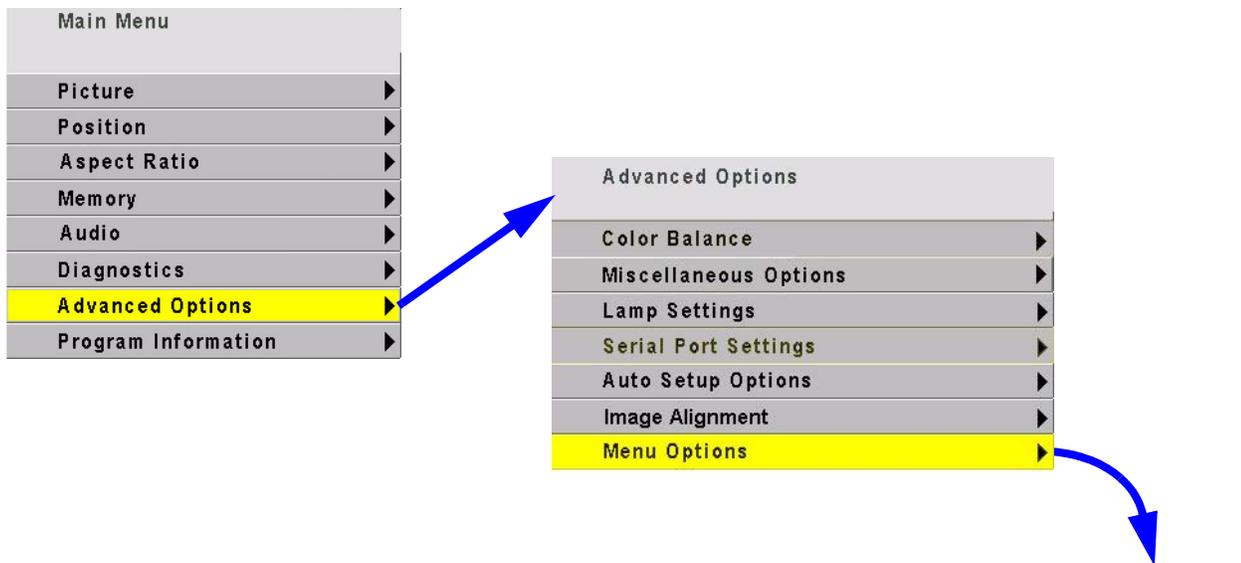
H and **V Position** move the location of the menus on the screen.

Menu Timeout sets how long menus will remain on the screen before disappearing on their own. The choices are 5, 15, and 60 seconds, and Never Time Out, which keeps the menu on indefinitely.

Program Information

Main Menu

Picture	▶
Position	▶
Aspect Ratio	▶
Memory	▶
Audio	▶
Diagnostics	▶
Advanced Options	▶
Program Information	▶

Program Information

InFocus Corporation
www.infocus.com

TD61	1280 x 720
573-2201	Rev 1.3

Code Generated Date: Sep 22 2004 at 14:52:12
GUI Generated Date: Sep 22 2004 at 18:48:15

The middle section shows the native resolution of the TD61 and the Revision number of the firmware.

6.3 TD61 Drawings

Dimensions in inches

54.870

61.0

31.654

46.049

B

FRONT SERVICE
REMOVABLE PANELS
3 PLACES

REMOVABLE FEET
5 PLACES

FRONT INTERNAL SPEAKERS
2 PLACES

50.493

TD61 Front View

6.251

2.755

WALL OR PEDESTAL
MOUNTING BRACKETS
NOT SHOWN

REAR INTERNAL SPEAKERS
2 PLACES

ELECTRONICS I/O
REMOVABLE COVER
NOT SHOWN

6.377

Left Side View

Rear View

10.065

.850

.899

4.103

**DETAIL A
SCALE 1 : 2**

Signal Input Panel

REMOTE CONTROL IR

POWER ON LED

STATUS INDICATOR
AND DIAGNOSIS DISPLAY

**DETAIL B
SCALE 1 : 4**
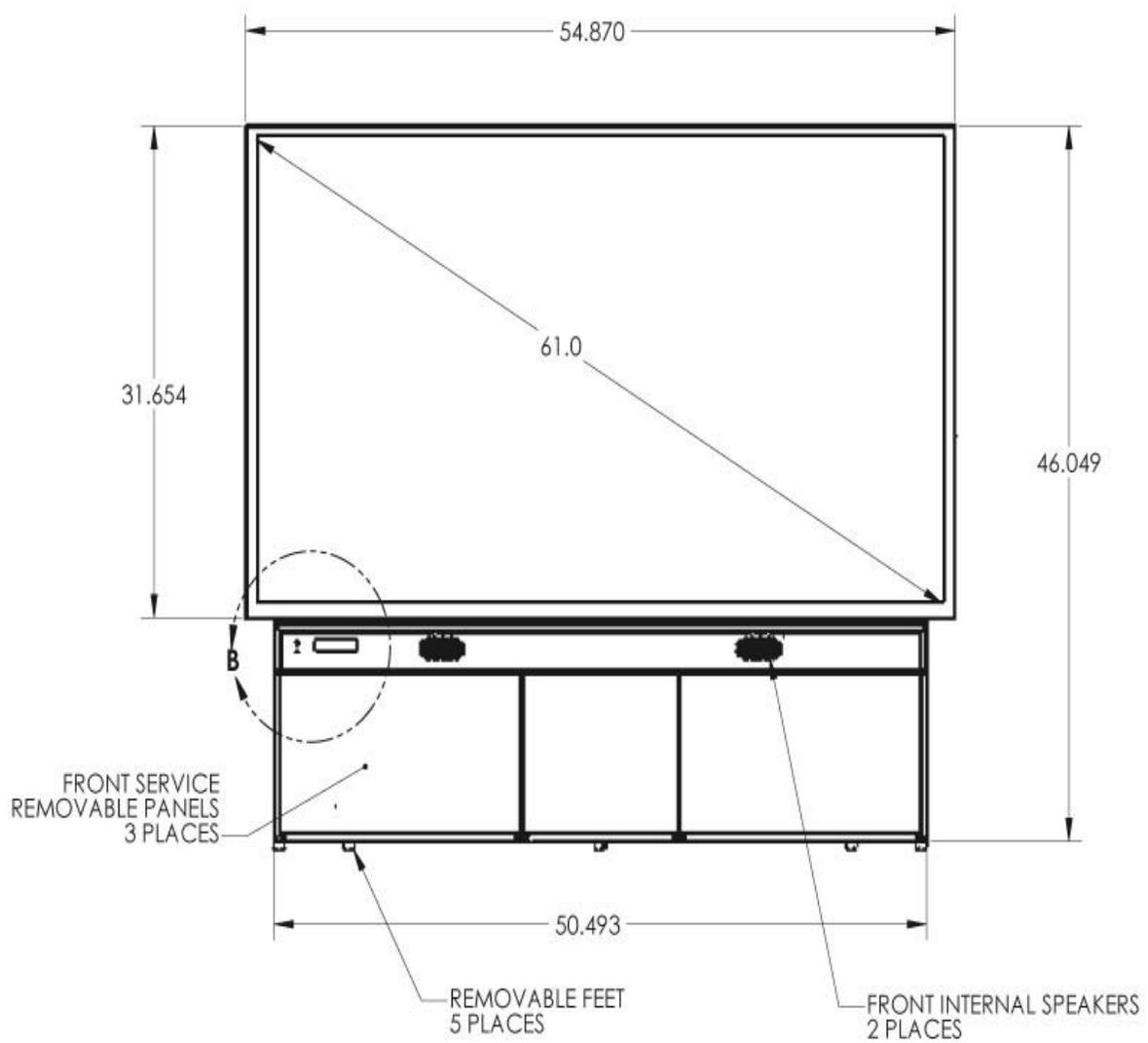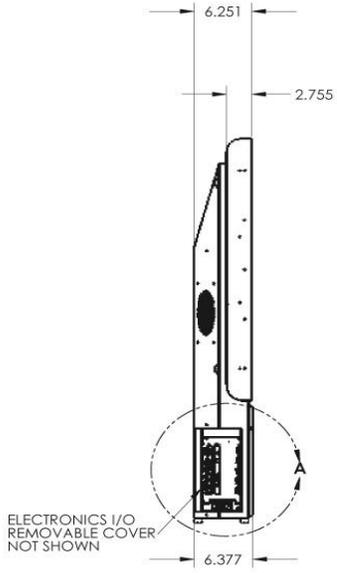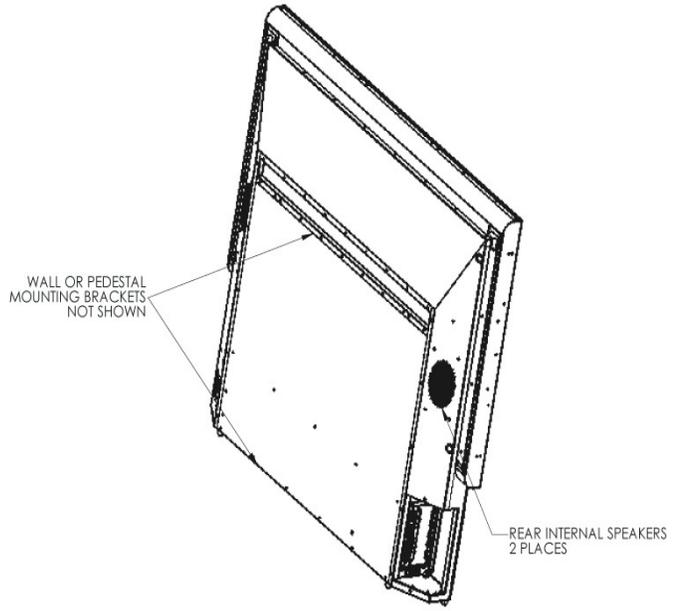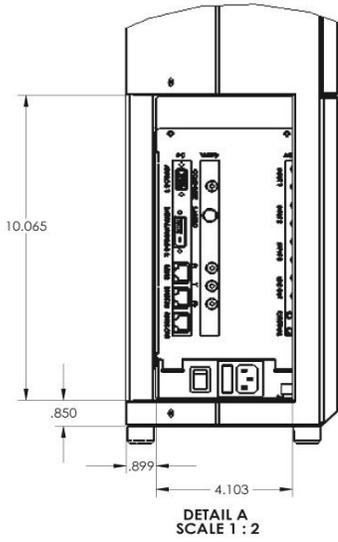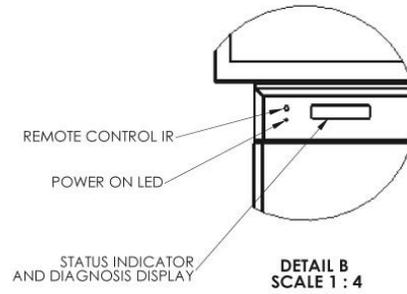
LCD Display

6.4 Connector Wiring

These are connector diagrams with pin designations. All connectors on these pages are shown looking at them from the outside, not from the solder side. These diagrams look at the outside of the connector, as the cable sees it, not the wiring side.

RS232 adapter

The wiring shown for this adapter is correct for *straight-thru* network cables.

1   8
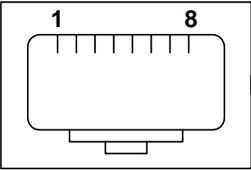
RJ45 looking into the socket.

Yellow wire	pin 3
Black wire	pin 2
Green wire	pin 5

RJ45	9-pin
6	3
5	5
3	2
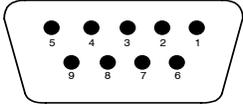
This little 9-pin to RJ45 adapter is available unwired from many computer or electronic stores. Get one with a female 9-pin connector.

The RS232 cable **must** be wired straight-thru. You can tell if a cable is wired straight-thru by looking at its two ends side-by-side.

1. Hold the cable ends next to each other, both ends pointing away from you. Have the clips on both connectors pointing down so you can't see them.
2. If the color of the wires on the two connectors is the same, left to right, the cable is straight-thru. The order of the colors doesn't matter, as long as they are both the same.

DB15 standard VGA connector
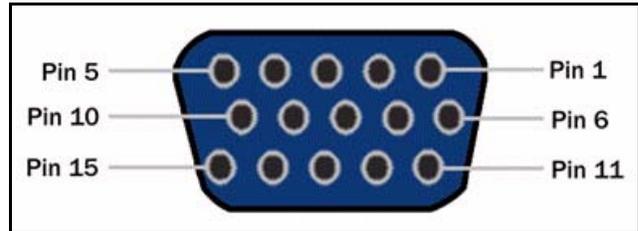
Pin	Signal
1	Analog Red Out
2	Analog Green Out
3	Analog Blue Out
4	Not connected
5	Ground
6	Ground
7	Ground
8	Ground
9	+5V (DDC)
10	Ground
11	Not connected
12	SDA (DDC)
13	TTL Horizontal Sync
14	TTL Vertical Sync
15	SCL (DDC)

M1 Connector
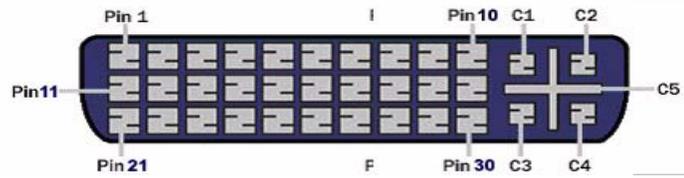
Pin No	I/O	Signal	Pin No.	I/O	Signal
1	I	TMDS Data2 +	15	G	GND – 5V, Hsync,Vsync
2	I	TMDS Data2 -	16	O	Hot Plug Detect, 1K PU
3	G	TMDS Data2/4shield	17	I	TMDS Data0 -
4	-	NC	18	I	TMDS Data0 +
5	-	NC	19	I	TMDS Data05 shield
6	O	DDC Clk	20	-	NC
7	O	DDC Data	21	-	NC
8	I	Analog VSync	22	G	TMDS CLK shield
9	I	TMDS Data1-	23	I	TMDS CLK+
10	I	TMDS Data1+	24	I	TMDS CLK-
11	G	TMDS Data 1/3 Shield	C1	I	Analog Red
12	-	NC	C2	I	Analog Green
13	-	NC	C3	I	Analog Blue
14	O	+5V Power-	C4	I	Analog HSync
			C5	G	Analog Gnd

S-Video Connector

Pin	Signal
1	Ground (luminance)
2	Ground (chrominance)
3	Luminance 1 V including sync 75 ohms
4	Chrominance 0.3 V burst 75 ohms

6.5 Regulatory Information

Declaration of Conformity

Manufacturer's Name: InFocus Corporation
Manufacturer's Address: 27700B SW Parkway Avenue.
                           Wilsonville, Oregon 97070-9215

declares that the product
    Model Number: TD61
    Product Options: All

conforms to the following EU Directives and the standards stated:

    Safety: UL60950 - Safety of Information Technology Equipment

    Electromagnetic Compatibility Directive 89/336/EEC and amendments

        EN 55022/CISPR 22 – Radiated and Conducted Emissions from Information Technology Equipment
        EN 55024/CISPR24-Information Technology Equipment
        EN610000-3-2 Harmonic Emissions
        EN610000-3-3 Voltage Fluctuations and Flicker Emissions

FCC Regulations

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in an installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate receiving antenna.
- Increase separation between equipment and receiver.
- Connect equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult your dealer or an experienced radio/TV technician.

EN 55022 Warning: This is a class A product. In a domestic environment it may cause radio interference, in which case the user may be required to take adequate measures. The typical use is in a conference room, meeting room or auditorium

Note: Any changes or modifications to the display not expressly approved by InFocus Corporation could void the user's authority to operate this equipment. Use of a shielded interface cable is required to comply with the Class A limits of Part 15 of FCC rules.

Other Certifications

    UL, CUL, CE, FCC Class A

6.6 Specifications for TD61

.

Mechanical

Specification	Maximum	Minimum	Typical	Notes
Outside dimensions				
Width	54.9"			139.45 cm
Height	46"			116.8 cm
Depth	6.25"			15.86 cm
Pedestal height	14.75"			37.47 cm
Weight, fully assembled	106 lb			52.62 kg
Shipping weight				
Orientation	10°			Tilt or rotation. Forward tilting may result in screen bowing and subsequent image distortion.
Chassis color				Bobcat Gray
Ventilation requirement Rear clearance				.
Screen size				Aspect ratio 16x9
Diagonal	61"			154.94 cm
Width	53.15"			135.001 cm
Height	29.922"			76.002 cm
Mullion,	0.75"			1.905 cm

Electrical and Heat

Specification	Maximum	Minimum	Typical	Notes
Video input amplitude				
Component (YPbPr) Input	1.0 V p-p	.714 Vp-p	0.5 V p-p	75 ohm termination Conforming to standards: 480i, 480p, 720p, 1080i.
Composite analog	1.0 V p-p	0.714	0.5 V p-p	75 ohm termination Conforming to standards: NTSC, PAL, SECAM
TTL H and V sync	5.0 V	2.5 V	3.5 V	TTL at 330 ohm termination
Input connectors				
VGA 15-pin D-sub female				Analog 1
M1				Digital ; DVI standard shared with Analog 2
RCA female				Composite video
4-pin DIN femal				S-Video
RJ45				RS232 In & RS485 In and Out
RCA female				Audio source 1, 2 and 3 and Audio line out.
RCA female				Component Video YPbPr
3.5mm stereo				switchable external speaker connection

Electrical and Heat

Specification		Maximum	Minimum	Typical	Notes
Frequency, vertical		85 Hz	56 Hz		
Frequency, horizontal		91.1 kHz	31.47 kHz		
Dot clock		165 MHz			
AC requirements					
Line voltage	115 VAC range	132 VAC	190 VAC	110 VAC	45–65 Hz auto-ranging, power factor corrected
	230 VAC range	254 VAC	200 VAC	230 VAC	
Line frequency		63Hz		47 Hz	
Line current					
Current draw 90VAC				2.7 A	
Current draw 100-120VAC				1.35 A	
Current draw 200-240VAC				1.23 A	
Current draw 254VAC				4 A	
Power				250 W	
Input AC fuse rating				4 A	
Heat, BTUs per hour				850	

Optical

Specification	Maximum	Minimum	Typical	Notes
Optical Engine	InFocus Stingray Thin Rear Projection Engine			
Imaging Device	0.8" HD2+			12-degree DMD
Native Resolution	1280 x 720			
Color Wheel	6 segment RGB spinning up to 5X display frame rate			
Resolution				
Resolution Horizontal-Native			1280	Pixels
Resolution Vertical -Native			720	Pixels
Resolution Horizontal-Viewable			1232	Pixels
Resolution Vertical -Native			693	Pixels
Brightness				
Peak - Center	115FL			DNP Screen, 150W, WP=10, Internal White field test pattern
Peak - Bottom Center	135FL			DNP Screen, 150W, WP=10, Internal White field test pattern
ANSI	90			DNP Screen, 150W, WP=10, Internal White field test pattern
Uniformity				
Uniformity +			40%	ANSI-13 Internal uniformity test pattern
Uniformity -			55%	ANSI-13 Internal uniformity test pattern
Contrast				Screen type SCN-5010-AG
Full Field			1000:1	Internal Black/White test pattern
ANSI			150:1	ANSI Contrast pattern
Blackness				

Optical

Specification	Maximum	Minimum	Typical	Notes
Luminance			<0.2FL	Internal Black field test pattern
Non-Uniformity			<20%	Internal Black field test pattern

Color

Specification	Maximum	Minimum	Typical	Notes
Display Color Bit Depth			24 Bits	
Saturation (EBU)			100%	
Color Point -White			0.305 0.335	x,y
Color Point -Red			0.650 0.330	x,y
Color Point -Green			0.320 0.640	x,y
Color Point -Blue			0.145 0.080	x,y
Color Matching of Primaries	+0.030	-0.030		Internal R/G/B field test pattern
Color Temperature			6500°K	

Geometry

Specification	Maximum	Minimum	Typical	Notes
Image Position	+1 pixel	-1 pixel		
Image Rotation	+1 pixel	-1 pixel		
Image Keystone	+2 pixels	-2 pixels		
Image Linearity	+9 pixels	-9 pixels		Total image non-linearity is defined as a maximum of 5 pixels due to optical engine tolerances and 4 pixels due to chassis/screen tolerances.

Focus

Specification	Maximum	Minimum	Typical	Notes
Focus Quality	3 Grade Scale	1 Grade Scale	2 Grade Scale	IFC Focus Pattern 2 meters from screen, 9 locations

Audio

Specification	Maximum	Minimum	Typical	Notes
Audio inputs				3 inputs to handle any selected source
Line Out				Buffered output of currently selecte input to drive headset or external amplifier.
Speaker output				10W/channel

Environmental

Specification	Maximum	Minimum	Typical	Notes
Temperature operating	30° C, 95° F	0° C, 32° F		All performance specifications are maintained within this temperature range
non-operating	50° C, 122° F	−20° C, -4° F		
Altitude (barometric pressure)	10,000 ft			Above sea level, or equivalent barometric pressure
Humidity	85% R.H.	20% R.H.		40° C non-condensing

Index

Limited Warranty

Subject to the Limitations, Exclusions and Disclaimers hereof, InFocus Corporation ("InFocus") warrants that the Rear Projection Display Device, Lamps and Accessories (hereinafter collectively or individually referred to as "Product" as appropriate) purchased from InFocus, an InFocus distributor, or an InFocus reseller will conform to InFocus' specifications and be free from defects in material or workmanship for the respective Limited Warranty period provided below. InFocus does not warrant that the Product will meet the specific requirements of the end-user customer.

If the Product while subject to this Limited Warranty, is defective in material or workmanship during the warranty period, then InFocus, <u>at its option</u>, will REPAIR or REPLACE the Product.

All exchanged parts and Products replaced under this Limited Warranty will become property of InFocus. <u>InFocus' sole obligation</u> is to supply (or pay for) all labor necessary to repair the Product found to be defective within the Limited Warranty period and to repair or replace defective parts with new parts or, <u>at the option of InFocus</u>, serviceable used parts that are equivalent or superior to new parts performance. Limited Warranty periods are as follows:

- **Product Limited Warranty Period (Excluding Lamps): one (1) year** from date of purchase.

- **Lamp Product Limited Warranty Periods**: From the date of Product purchase, the original installed lamp shall have a 90-day or 500 hours usage Limited Warranty Period, whichever comes first.
  Replacement Lamps purchased at the time of Product purchase will have a 90-day or 500 hours usage Limited Warranty Period from the date of installation, whichever comes first.
  Replacement lamps purchased after the time of Product purchase shall have a 90-day or 500 hours usage Limited Warranty Period from the date of replacement lamp purchase, whichever comes first.

- **Accessory Product Limited Warranty Period: one (1) year** from date of purchase.

WARRANTY LIMITATION AND EXCLUSION

THIS WARRANTY SETS FORTH INFOCUS' MAXIMUM LIABILITY FOR ITS PRODUCT. THIS WARRANTY EXTENDS ONLY TO PRODUCTS PURCHASED FROM INFOCUS OR AN INFOCUS AUTHORIZED RESELLER. InFocus shall have no further obligation under the foregoing Limited Warranty if the Product has been damaged due to abuse, improper ventilation, fire, water, disaster, mispackaging, shipping, lightning or other acts of nature, misuse, neglect, smoke exposure (cigarette or otherwise), accident, unusual physical or electrical stress and/or power surges, unauthorized modifications (including use of an unauthorized mount), tampering, alterations, service other than by InFocus or its authorized agents, or failure caused other than from ordinary use or failure to properly use the Product in the application for which said Product was intended. In addition, failure of the end-user to follow maintenance procedures as outlined in the product's user guide where a schedule is specified for regular cleaning of certain parts (based on usage and environment) and the end-user has failed to follow such schedule, will not be covered under the Limited Warranty. Finally, InFocus shall have no further obligation if the Product was subjected to operating conditions outside of the range specified in the user's guide or in this warranty. 'Normal operating conditions are defined as use not in excess of 16 hours continuously per day with a minimum 8 hour period of continuous rest in the powered off state. If a claimed defect cannot be identified or reproduced in service, you will be held responsible for the costs incurred. This Limited Warranty excludes Product cleaning, removal or installation of the product, repair, or replacement of plastics or glass due to cosmetic damage and damage as a result of normal wear. Product repair outside of the terms of the Limited Warranty will be on a time and materials basis. InFocus will not be liable for any rental costs incurred in the event of a failure. The warranty does not apply to cartons, carrying cases, shipping cases, external cabinets, accessories used in connection with the product, or cosmetic parts, knobs, or batteries.

The Accessory Product Limited Warranty covers the accessory item only and excludes normal wear. The Lamp Product Limited Warranty excludes expected lamp degradation.

Remanufactured Products and Software Products are exempt from the foregoing Limited Warranty. Please refer to the appropriate Remanufactured Product Limited Warranty or Software Product Limited Warranty for applicable Warranty information.

DISCLAIMER OF UNSTATED WARRANTIES

THE WARRANTY PRINTED ABOVE IS THE ONLY WARRANTY APPLICABLE TO THIS PRODUCT. ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE ARE DISCLAIMED.

<u>THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF</u> AND THE FOREGOING WARRANTY SHALL NOT BE EXTENDED, ALTERED OR VARIED EXCEPT BY WRITTEN INSTRUMENT SIGNED BY INFOCUS. SOME JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY MAY LAST, SO SUCH LIMITATIONS MAY NOT APPLY TO YOU.

Limited Warranty Period

The Limited Warranty periods hereof commence on the date of purchase by the end-user customer. These Limited Warranty provisions shall apply only to the end-user purchaser (first person or entity that purchased a new Product for personal or business use and not for the purpose of distribution or resale). SOME JURISDICTIONS MAY GRANT YOU CONSUMER RIGHTS WITH MINIMUM WARRANTY DURATION THAT DIFFER FROM THE DURATIONS PROVIDED HEREIN, AND INFOCUS WILL HONOR ALL SUCH CONSUMER RIGHTS.

To Be Eligible For Limited Warranty Coverage

Any person exercising a claim under this Limited Warranty must establish to the satisfaction of InFocus both the date of purchase and that the Product was purchased new. The sales receipt or invoice, showing the date of purchase of the Product is the proof of the date of purchase.

To Obtain Warranty Service

During the Limited Warranty period, to exercise this Limited Warranty, the purchaser must first contact 1) InFocus, 2) a service facility authorized by InFocus or 3) the place of original purchase.

InFocus Customer Service – 1-503-685-8888 or visit www.infocus.com/service

Warranty service will be provided at an InFocus authorized repair facility. The purchaser must either deliver the Product to an authorized repair facility freight and all fees prepaid, or pay for any travel and/or transportation costs the service center may charge to and from the purchaser's location. InFocus or the service facility authorized by InFocus will return the repaired/replaced Product freight prepaid to the purchaser.

Products returned for Warranty service must be accompanied by a written letter that: (i) explains the problem; (ii) provides proof of date of purchase; (iii) provides the dealer's name; and (iv) provides the model and serial number of the Product. Upon request of InFocus Corporation or an authorized repair center for InFocus, proof of legal import must accompany the warranty repair Product, otherwise the Product must be returned to the place of original purchase, to the manufacturer (Purchaser must bear all tax, duty and freight), or the Purchaser must bear charges for the warranty repair.

No repair or replacement of Product or part thereof shall extend the Limited Warranty period as to the entire Product. Warranty on the repair part and workmanship shall only be effective for a period of ninety (90) days following the repair or replacement of that part or the remaining period of the Product Limited Warranty whichever is greater.

LIMITATION OF LIABILITY

IT IS UNDERSTOOD AND AGREED THAT INFOCUS' LIABILITY WHETHER IN CONTRACT, IN TORT, UNDER ANY WARRANTY, IN NEGLIGENCE OR OTHERWISE SHALL NOT EXCEED THE RETURN OF THE AMOUNT OF THE PURCHASE PRICE PAID BY PURCHASER AND UNDER NO CIRCUMSTANCES SHALL INFOCUS BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOST PROFITS, LOST REVENUES OR LOST SAVINGS. THE PRICE STATED FOR THE PRODUCTS IS A CONSIDERATION IN LIMITING INFOCUS' LIABILITY.

Limitation on Bringing Action - No action, regardless of form, arising out of the agreement to purchase the Product may be brought by purchaser more than one year after the cause of action has accrued.

Governing Law - Any action, regardless of form, arising out of the agreement to purchase the Product is governed by Oregon law.

Mandatory Arbitration – Any action, regardless of form, arising out of the agreement to purchase the Product is subject to mandatory arbitration.

SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS, DEPENDING ON JURISDICTION.

IF YOU NEED ASSISTANCE....

For all types of Service and Support information on InFocus products and services please go to our web site at **www.infocus.com/service.**

Many resources are available on our website.
Some examples are:

- Frequently Asked Questions about general projector usage and technical issues
- E-mail support
- Online product registration
- Product data sheets
- Optional accessories
- Technical specifications

InFocus®

TD™61

USER'S GUIDE

InFocus®