

VIEWPORT Monitors

Color Active Matrix LCD Video/VGA Combi Screens

STANDARD DEFINITION MODELS

NTSC/PAL/SECAM & NTSC4.43/PAL-M

Full PC Scaling from EGA to WUXGA

4:3, 16:9, Variable Aspect Ratios

H & V Scan Reverse

Picture-in-Picture

User Manual

for models:

8.4" Models d084c, xd084b, d084cDB

10.4" Models d104h, xd104d

12.1" Models d121e, d121eDB

15.0" Models d150c, d151cDB

17.0" Models d170c, d170cDB

19.0" Models d190c

20.1" Model d201c

& -x1, -x2 Rackmounted versions of above



I description

• overview

The **BOLAND** Combi *VIEWPORTS* are high performance LCD video displays for computer and motion video display. The display quality is excellent for both natural and graphic video. The moni-

tors come with integral non-glare glass screens, and are part of the compliment of 4.0 up to 37" *VIEWPORT* family of LCD Video and Computer monitors. All offer the size, brightness and clarity necessary for extended daily use.

• standard features (included in all models)

▶SR: **Scan Reverse**. Picture may be mirror-imaged Horz, Vert, or both for prompting or other effects. Image may also be rotated 90°

▶AR: **Aspect Ratio**. Display may be switched between 4:3, 16:9, or adjustable user settings (1.85, etc.)

▶UDS: **Up/Down AutoScaling**. A built-in scaler automatically accepts any computer resolution from less than CGA up to UXGA for full screens.

▶PiP: **Picture-in-Picture**. Main image or window image may each be any two of the three video and computer inputs. Moveable, sizeable window.

▶CF: **Comb Filter**. Intelligent, adaptive NTSC Y/C filter provides full resolution

without artifacts.

▶AS: **Automatic TV Standards** (Worldwide) **NTSC/PAL/SECAM/NTSC4.43/PALM**, all autodetected.

▶US: **Under Scan**. Video mode picture size fully variable from overscan to normal to underscan.

▶PZ: **Picture Zoom**. Magnify images up to 1000%. View window is pan-tilt adjustable.

▶CT: **Color Temperature**. Screen temperature fully variable, in PC and Video, with four presets.

▶SDI: **Serial Digital Interfaces** (Options) Input 270 Mb or 1.45 Gb digital video, for standard or HDTV. Auto-detected. Reclock/regen output(s).

• customer support

Boland provides a full range of support from sales through installation and application of our products. We are here to help. Our office hours are extended, in the Pacific time zone (GMT+8 in winter, +7 summer). To reach us:

BOLAND COMMUNICATIONS

(949) 465-9911, or
 (800) 918-9090,
 (949) 465-9944 [fax]
 Lake Forest, CA 92630
 or: techsupport@bolandcom.com

2 installation

• supplied items

Supplied with your LCD Monitor is a desk-top universal 100-250 VAC, 50/60 Hz AC to 12 volt DC regulated power supply, power and VGA cords, and this instruction manual. Outside the US, a

local power cord may be needed.

Available options may include: SDI, High Brightness (1850 nts), Remote Controls, and VESA-, Rack-, Wall- Mounts, and Desk Stands.

• handling

A VIEWPORT display is rugged. As a precaution though, please consider the following general characteristics of AMTFT LCDs. These are not defects or malfunctions:

Please handle the panel with care. Since the panel is made of glass, sharp blows to the screen, failure after dropping onto a hard surface, etc., are not covered by the warranty.

High voltages are present inside the cabinet for the fluorescent lighting. There are no fuses or other user-serviceable parts inside. **Do not remove any screws or disassemble the cabinet to stay safe and to retain the Warranty.**

Use only factory-specified power supplies for powering the panel.

A wet, condensing atmosphere (dew or fog) should be avoided. If you require routine operation in these conditions, please consult the factory (optional cabinets are available).

Note the normal operating and storage temperatures in the specifications. Do not place the unit in the sun, as the black cabinet can absorb a considerable amount of heat. Extreme temperatures, just as uncomfortable for people, will cause degraded performance or permanent LCD

damage. Extended temperature models are available. Please also take care to avoid electrostatic discharges.

When a panel is not installed, place it in its packing material or place it *face down* on a smooth table.

After several thousand hours of operation, the special internal fluorescent lamps will eventually taper in their brightness. Please consult the factory for replacement.

Over long periods of time, some changes in luminance uniformity or small dots may become visible, depending on image content.

Avoid fixed video patterns for extended periods of time. Some image retention may temporarily occur. If possible, use an interesting screen saver or black.

Please handle cables and connectors with care. Please replace worn cables with standard, locally-available parts (see power supply substitution caution).

Note that although most Boland screens are glass, they are still somewhat sensitive to scratching. Please clean with a *soft cloth slightly dampened* (not dripping) with water or, if necessary, Windex® or 409® type cleaners.

• system requirements

VIEWPORT monitors operate on DC power and display PC video with a 15 pin VGA connector, composite video signal with BNC, or S-Video with a 4-pin mini-DIN (or "S") connectors.

Monitors will display a composite or S-Video from a 525 or 625 standard video signal at a nominal 1.0 Vpp (when properly 75 Ω terminated, where source video is 2.0 Vpp unterminated), and are

for use as connected to all normal baseband video systems. (The "C" component of the Y/C signal is 0.7 Vpp nominal.)

The built-in scaler very cleanly displays PC images from CGA (320 x 480) to WUXGA (1920 x 1200) resolutions. Boland models for high resolutions formats, like HDTV, are available.

• physical mounting

When mounting the panel on a flat surface, allow clearance for any connection cords on the rear. In the corners on the backside of monitors are 10-32 threaded inserts for mounting screws. Use screws that don't penetrate the cabinet more than 1/2".

Also on the backside of many models are 75 or 100 mm **VESA** pattern holes. These holes may accept no. 6, 8, 10, M3, 3.5, or 4 screws, depending on a model's size and weight. The VESA holes are typically used for wall mounts and desk stands.

Also, up to 15", a 1/4-20 (UNC) threaded socket is on the bottom side (not for vehicle use).

The LCD monitors dissipate only a few watts (see *specifications*), so no special cooling or ventilation is usually required (except with DB models). The mounting location may usually be enclosed. But avoid any mounting situations with appliance, environmental, or solar heat sources that may cause the monitor's operating location to exceed 122°F/50°C.

• power and video connections

VIEWPORT LCD monitors connect like CRT-type monitors. The connections are video and power:

Power Connection - 12 Volts DC

Insert the barrel or XLR plug from the desk-top power supply into the jack on the back of the panel. The AC side of the power supply will accept **100-240 VAC, 50/60 Hz**. Some monitors have

an optional 9 to 36 VDC feature built-in.

Video Connections

Most *VIEWPORT* monitors have BNC connectors for composite, 4-pin for S-Video and one VGA input video source per screen (most screens have auto-terminating loop-thru 75 Ω BNCs)

Computer Connections (next page)

• computer connections

The "VGA" connection may be made with the supplied cord, plugging a cord into the back of the monitor and into the (back) of the computer. Supply the monitor with a **CGA** (320 x 480) up to a **WUXGA** (1920 x 1200) signal. A **built-in processor** will adjust the image automatically to fit the screen.



Connector Well, typical of 10.4 to 37" Monitors

For DayBrite Monitors, see page 10 for operation of the fan switch located here.

3 Operation

Your *VIEWPORT* Monitor's On-Screen menu provides for normal operational adjustments. These user adjustments are stored (memorized) separately for VGA, Composite, and Y/C S-Video, and separately for both NTSC and PAL modes.

For normal operation, set the Brightness to just be able to see the **blackest** portions of the video image, then Contrast to bring the **whitest** areas of an image to just less than wash-out. Then set Color and Tint [NTSC] for pleasing flesh tones.

Push the menu button to bring up the menu and to step down through the icons. Starting on the subsequent pages are all the menu choices and a description of each item.



Controls and Connections

Monitor Front Side:

- 1  **Power On/Off**
When power is applied, the monitor will come on. This button then turns the monitor on and off.
- 2  **Menu On/Off**
This button is used to bring up the controls menu. Upon Exit the menu clears from the screen, saving the new settings chosen (or wait 10 seconds).
- 3 **▼ Select Down / Contrast -**
Advance down the menu list with this button.
Without pushing the `MENU` button first, this button is Direct Access 2 to reduce Contrast (lower whites level).
- 4 **▲ Select Up / Contrast +**
This is used to move up through the menu list.
Without pushing the `MENU` button first, this button is Direct Access 2 to increase Contrast (raise whites level).
- 5 **◀ Decrement / PC**
Use to reduce (-) the amount of the highlighted item. For some items, this selects 'No' or 'Off'.
Without pushing the `MENU` button first, this button is Direct Access 1 to select the next active/available video source in the list..
- 6 **▶ Increment (Enter) / Video**
Pushing this button increases (+) the amount of the chosen item. For some types of items, the button will chose 'Yes' or 'Accept'.
Without pushing the `MENU` button first, this button is Direct Access 1 to select the next active/available video source input in the list.

Monitor Back Side:

- 1 **Input Connector Well, Power**
(Recessed wiring location for all cables)
Place the plug from the world-wide AC power supply (included) into the DC 12V connector. Input power to the monitor from any other source **must** be within the DC Voltage range marked on the monitor label or backside markings. (Some monitors will accept 9~36 VDC).
- 2 **Input BNCs, S-Video, and VGA Connectors**
Attach the video cord(s) from cameras, VCRs, PC or other sources to the BNC, Y/C (S-Video), or VGA connectors. When two BNCs are present, connect a source to either. A second cable will allow further connection to another display or device. The internal 75 Ω termination is automatically switched off.
- 3 **Optional Audio and Speaker(s)**
Audio inputs are high impedance. Some monitors may have a jack to feed external speakers.
- 4 **Threaded Mounting Sockets**
The corner threaded sockets are for mounting the monitor. You may mount monitors in any orientation. The screw must not insert deeper than 1/2" (12 mm). The threads are 10-32. See page 4 above regarding VESA mounting.
- 5 **1/4-20 Threaded Mounting Socket**
For flexibility in mounting, you may use this bottom-side threaded socket for locating the monitor on a tripod (like an SLR or video camera, or other CCTV mounting arm or device). Do not insert the screw head deeper than 3/8" (8 mm).



Picture Menu

Note: ">" indicates a sub-menu (use > button to enter)

- Brightness**  brightness level (picture blacks level) (100 steps)
- Contrast**  contrast level (picture whites level) (100 steps)
- Saturation***  colors saturation (100 steps)
- Hue***  hue of colors (flesh tones) (100 steps)
- Sharpness***  sharpness of picture (30 steps)
- Volume†**  volume of sound connected to monitor (100 steps)

NOTE: Monitor factory calibration settings are: 50 / 50 / 50 / 0 / 0.

Aspect Size >

- Fill Screen : Enable full screen expansion for lower resolution
- Fill to Aspect Ratio: Enable fill screen expansion for lower resolution image according to aspect ratio (height or width)
- 4:3 : sizes image to 4:3 format
- 16:9 : sizes image to 16:9 format
- 16:10 : sizes image to 16:10 format
- 2.35:1 : sizes image to 2.35:1 ratio format
- 2:1 : sizes image to 2:1 ratio format
- 1:1 : displays the image in exact image resolution on the screen without image expansion/reduction (pixel-for-pixel mode).

Custom Sizing* :

- Normal
- Underscan
- Custom:
 - H Size 
 - V Size 
 - H Pan 
 - V Pan 

Blue Only >

- ON/OFF: Turns off the red and green channels for calibration of display using test signal (SMPTE color bars or equivalent).
- NOTE: This menu item not visible on monitors with a separate RGB-only Hot Key.

* Not displayed for all input signal types, appears only as appropriate
 † Displays only if Audio Option (Opt 29) is factory installed



Input Select Menu

Push Menu button twice within 1/2 second to directly access this menu.

Note: only installed inputs for this monitor model are displayed, and only if enabled in the Setup Menu under AUTO SOURCE SEEK.

- HD/SD SDI 1
- HD/SD SDI 2
- VGA
- DVI
- HD Component
- Composite 1
- Composite 2
- S-Video

PIP Source >

(Inserted video for both Picture in Picture and Picture by Picture (PbP) modes)

OFF / HD/SD SDI 1 / HD/SD SDI 2 / VGA / DVI / HD Component / Composite 1 / Composite 2 / S-Video



Utilities Menu

Setup >

Auto Picture Setup:^o Auto adjust the image position, phase and size
 Auto Color Gain:[□] Auto Color Calibration (RGB white levels)
 Wide Screen Mode detection^o: Choose to recognize the VGA mode as a normal or wide screen input:
 - Normal 4:3
 - 1280x768 Widescreen
 - 1366x768 Widescreen 16:9

Manual Clock^o:  Adjust the image horizontal size
 Manual Phase^o:  Adjust image quality (fine tune the data sampling position)

Auto Source Seek > Setup >

Choose to display and auto detect signals for these inputs:

| | |
|--------------|--|
| HD/SD SDI 1 |  |
| HD/SD SDI 2 |  |
| VGA |  |
| DVI |  |
| HD Component |  |
| Composite 1 |  |
| Composite 2 |  |
| S-Video |  |

Note: only the names set to ON will display on the Input Select Menu.

ON: The monitor will Seek a new input if a signal is lost or missing.

OFF: Seek function is disabled (inputs will change only by manual choice)

De-interlacing Mode* >

AFM  : Auto Film Mode (3:2 pull-down compliance)
 TNR  : Temporal Noise Reduction
 MADI  : Motion Adaptive De-interlacing
 LADI  : Low Angle De-interlacing

Auto Power > (Automatic monitor power off for missing signal; automatic power on)

ON: Enable soft power off in absence of an input signal

OFF: Disable soft power function

Video Standard (SD)* > Auto / NTSC / NTSC 4.43 / PAL / PAL M / SECAM

Image Orientation > Normal / Horizontal flip / Vertical flip / Rotate

OSD > (On Screen Display menu system)

OSD position
 H POS  move the OSD menu box horizontally
 V POS  move the OSD menu image vertically
 OSD Timeout  OSD menu timeout period, 5 to 60 seconds
 Note: select "0" for continuous display of OSD menu.

Transparency Sets OSD to Transparent or Opaque background.

Color Temperature > Note: settings are remembered for each input source name

5000K > (each temperature has an individual RGB submenu as shown below)

6500K > Red  0-100

8000K > Green  0-100

9300K > Blue  0-100

Default : Restore initial set of factory values.



Utilities Menu (continued)

Hot Keys > Sets operation of button pairs to directly access functions when OSD menu is not visible.
Use up / down arrow keys to highlight desired function and use > key to select:

Hot Key 1: Volume / Brightness / Contrast / Input / Aspect / PIP Size / PIP Swap / Image Orientation

Hot Key 2: Volume / Brightness / Contrast / Input / Aspect / PIP Size / PIP Swap / Image Orientation

PIP

PiP Size : Off / Small / Medium / Large / PBP (side-by-side Picture-by-Picture)

Note: Four possible input groups that can be mixed for PIP:

(Main and PIP must be from two different groups. Not all inputs are on all mons.)

a) VGA/HD-component

b) DVI

c) HD-SDI

d) Composite/S-Video/SD-component

Those input group combinations not allowed are greyed-out in the menu.

PiP Position: Use four arrow $\blacktriangleright\blacktriangleleft$ keys to move the PiP window on the screen.

PIP Swap

Select to swap the pictures between the main window and PiP window.

Monochrome Mode: (Color picture is converted to monochrome (Y) and displayed in one primary.)

Red Monochrome (mono picture is displayed in shades of red)

Green Monochrome (mono picture is displayed in shades of green)

Blue Monochrome (mono picture is displayed in shades of blue)

Reset to Factory Defaults

Use > key to initiate a reset to return all monitor settings to factory original.

CAUTION: All previous user menu choices are lost.

* Not displayed for all input signal types, appears only as appropriate

○ Displays in VGA mode only

□ Displays in VGA and HD Component modes only

High Bright Monitors

Description

The High Brite Option is a factory-installed accessory for an LCD video monitor to boost its brightness to full daylight readability. The 12 and 15" displays are specified at about 1800 nts (cd/m²).

Operation

In addition to the standard button controls of a normal monitor, a knob is added to the front panel to control the brightness of the internal lamps. With a range of nearly 100:1, the brightness can be adjusted to outdoor daylight conditions down to minimum for night use. Power consumption is much reduced at less than the full setting. The brightness can be set to any value without having to change electronic video adjustments via the menu system (Brightness in the *menu* means the video adjustment of the glow in the **black** areas of the picture. Contrast is used to set the whiteness of the lightest areas of the picture.)



Note: DayBrite models usually have a fan switch located in the well area. Use the fan use, at noon in the sun, you will need the HI setting. Without sunshine or full CW, low or off may be sufficient to keep the cabinet cool.

4 Maintenance

A *VIEWPORT* display requires no regular/periodic maintenance.

• Cleaning

The standard cabinet finish is semi-gloss black paint over aircraft aluminum, or the aluminum cabinet itself is mil-spec black-dye anodized.

The front screens are non-glare glass. A damp (not dripping) cleaning cloth with a small amount of spray cleaner (such as 409[®], or Windex[®]) may be used to remove dust or fingerprints. You will not want to have enough moisture on the outside of the cabinet that liquid would run inside through the cracks.

• Factory Service

After about fifty thousand hours of service (as long as 10 years, even if used often, depending on the Boland model), it may be possible to notice the screen brightness start to fall to half or less of its original level. Or, the internal fluorescent lamps may not come on at all, or stay on properly, especially when

the temperature is cold. In these cases, the full brightness may be restored by replacing the special type of internal fluorescent lamps (not user serviceable—these require extreme care in a very clean environment). Please contact **BOLAND COMMUNICATIONS** for factory replacement.

• Warranty (Note: opening the cabinet voids the warranty)

VIEWPORT Video Displays are warranted for one year against defects in materials or workmanship (see the *Warranty Agreement*, page 15).

Consequential damages are not covered. Units requiring attention will

need to be returned to the factory for correction. **Telephone for a tracking/RA number before shipping.** Units will be returned UPS Ground pre-paid. Warranty correction is at best an inconvenience, so every reasonable effort will be made by **BOLAND** to smooth the process.

BOLAND COMMUNICATIONS WARRANTY AGREEMENT

All products, including hardware, software, firmware, and documentation are subject to the terms below. Opening the monitor cabinet in any manner for any purpose voids the warranty.

1. **Boland Communications** (Boland) warrants the *VIEWPORT* LCD Monitors and their accessories are provided to be free from defects under normal use. Parts are covered for a period of **two (2) years** and Labor is covered for **one (1) year** from the date of delivery to you.

The Pro Series of monitors carries a separate term of **one (1) year** Parts and Labor warranty.

All monitors with a serial number less than 009001, manufactured before April 2005, carry their original **one year warranty**.

2. In the event of a repair under this warranty, Boland's sole obligation is to replace or repair, at Boland's option, any Product free of charge. Any replaced parts shall become Boland's property.
3. Warranty claims must be made during the warranty period and within seven (7) days of the observation of the defect, accompanied by any necessary evidence satisfactory to Boland. Prior to returning any Product to Boland, you **must** obtain a Return Authorization (RA) Tracking Number and receive shipping instructions from Boland. Shipments without an RA are subject to refusal at Boland dock. All Products returned to Boland contain glass and shall be adequately packed (200 lb. corrugated carton and 2" foam on all six sides of product, minimum) and shipped with freight and insurance sender-prepaid or the warranty coverage **will be void** and are subject to return unrepared. Boland will return all repaired units in double carton and cushion packaging via pre-paid UPS Ground, Insured. Customer may provide own shipping number or arrange upgrade for faster return.
4. Except as stated above, there is NO OTHER WARRANTY, REPRESENTATION, OR CONDITION REGARDING BOLAND'S PRODUCTS, SERVICES OR PERFORMANCE, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.
5. Boland is not responsible for any delays beyond its control, and where possible will advise of any such delays. Boland's entire liability for damages to you or any other party for any cause whatsoever, whether in contract or in tort, including negligence, shall not exceed the price you paid for the unit of Product that is the subject matter of the dispute. In no event will Boland be liable for any damages caused by your failure to perform your obligations, or for any loss of data, profits, savings, or any other consequential and incidental damages, even if Boland has been advised of the possibility of damages, or for any claims by you based on any third-party claim.