INSTALLATION AND OPERATIONS MANUAL
Rose Electronics® warrants the QuadraVista™ to be in good working order for one year from the date of purchase from Rose Electronics or an authorized dealer. Should this product fail to be in good working order at any time during this one-year warranty period, Rose Electronics will, at its option, repair or replace the Unit as set forth below. Repair parts and replacement units will be either reconditioned or new. All replaced parts become the property of Rose Electronics. This limited warranty does not include service to repair damage to the Unit resulting from accident, disaster, abuse, or unauthorized modification of the Unit, including static discharge and power surges.

Limited Warranty service may be obtained by delivering this unit during the one-year warranty period to Rose Electronics or an authorized repair center providing a proof of purchase date. If this Unit is delivered by mail, you agree to insure the Unit or assume the risk of loss or damage in transit, to prepay shipping charges to the warranty service location, and to use the original shipping container or its equivalent. You must call for a return authorization number first. Under no circumstances will a unit be accepted without a return authorization number. Contact an authorized repair center or Rose Electronics for further information.

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NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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This equipment generates, uses and can radiate radio frequency energy and if not installed and used properly, that is in strict accordance with the manufacturer’s instructions may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A digital device in accordance with the specifications of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference. Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

Declaration of Conformity

This declaration is valid for the following product:

Equipment: Video, Keyboard, Mouse Switching System
Type: QuadraVista

Hereby the equipment is confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility (89/336/EEC) and the Council Directive relating to Low Voltage (73/23/EEC). For the evaluation of the above mentioned Council Directive for Electromagnetic Compatibility and for Low Voltage, the following standards were consulted:

EN 61000-3-2: 2000 (Harmonic current emissions)
EN 61000-6-2: 2001 (Immunity)
EN 61000-4-3: 2002
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Disclaimer

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(See limited warranty)

Introduction

Thank you for choosing Rose Electronics QuadraVista QF. This product is the result of Rose Electronics continuing commitment to provide state-of-the-art switching solutions for today’s demanding workplace. The key advantage of the QuadraVista AF over conventional KVM switches is that it allows you to simultaneously display and manage 4 computers on a single console. It combines key features of a high-end KVM switch and a digital Quadviewer, scaling and converting video at both input and output.

Selectable Display Modes

Quad Mode
In this mode, the screen is split into four fields of equal size, each displaying the entire screen contents of one source.

Fullscreen Mode
In Fullscreen mode, one of the four sources is displayed in full screen size and maximum resolution.

PiP Mode (Picture in Picture)
Using this mode, the full screen display of one of the four video sources is accompanied by one to three small images (thumbnails) of the other video sources which are displayed in the right hand side of the screen allowing simultaneous monitoring.

Win Mode
In Win mode, each video source is displayed in its own separate, detached window. Each of these windows can be freely positioned and their height and width can be adjusted.
About This Manual

This manual covers the installation, configuration, and operation of the QuadraVista QF. The Installation section explains how to connect the unit to console and computers. The Operations section describes how to operate the system and the features available to make switching and maintenance simple and easy.

Features

- Supports resolutions up to 1920 x 1200 @ 60Hz for both DVI and VGA
- Any combination of VGA and DVI is possible at inputs and outputs
- Analog video is converted to digital at the input, guaranteeing superior digital image quality
- Digital video is converted to analog at the output, if an analog display is detected
- Either USB or PS/2 keyboard and mouse to computers
- Two USB-HID ports for console keyboard and mouse
- Four USB 2.0 ports for printers, memory sticks, and other high speed devices
- On Screen Display (OSD) for configuring and navigating
- Front panel LEDs for status indication
- Firmware updating through serial (RS232) or USB port
- Six operation alternatives:
  - Front panel buttons
  - Configurable keyboard hotkeys
  - Mouse functions (Hotmouse)
  - Configuration software running on an external computer
  - Serial port control using DCP XML protocol
  - Touchscreen

Compatibility

Video
DVI-I inputs and output support resolutions up to 1920 x 1200 @ 60 hz, both analog and digital.

Keyboard
Compatible with all standard USB keyboards. By using a USB hub, multiple keyboards can be connected in share mode, with an inactivity time of 3 seconds.

Mouse
Compatible with all standard USB mice. By using a USB hub, multiple mice can be connected in share mode, with an inactivity time of 3 seconds.

Audio
Analog or digital audio input via ?????? Analog audio output via 3.5mm stereo jack, or digital audio output via S/PDIF digital cinch connector or TOSLINK optical audio connector.

Package contents
- QuadraVista QF unit
- Rack mount kit ??????
- 1 x Power cord
- DefCon Control software ??????
- Manual

If the package contents are not correct, contact Rose Electronics or your reseller, so the problem can be quickly resolved.

Product registration
Register your product for future updates at: www.rose.com/htm/online-registrationform.htm
Front Panel

The QuadraVista QF front panel has eight LED status indicators and eight buttons. Buttons 1 through 4 switch between channels, and LEDs 1 through 4 indicate the status of the individual channels. Full, Quad, PiP, and Win buttons are used to switch display modes, and the corresponding LEDs indicate the current mode. The Pip and Win buttons are also used to display the OSD menus and make selections.

- LEDs 1 to 4: When these LEDs light up green, the corresponding channel (computer port) has been selected and is available for keyboard and mouse access. When a LED flashes green, there is no signal at the video input of the selected channel.

  When the LED lights up yellow, there is a signal at the video input, but another channel has been selected.

  When the LED is dark, there is no signal at the video input and another channel has been selected.

  The LEDs light up blue when Win Mode preset window configuration is being selected.

- LED Full: This LED lights up green when the unit is in Fullscreen mode.

- LED Quad: This LED lights up green when the unit is in Quad mode.

- LED PiP: This LED lights up green when the unit is in PiP mode.

- LED Win: This LED lights up green when the unit is in Win mode.

Note: While the OSD menu is open, the active computer can still be operated by mouse or touch screen.
Figure 3. Buttons

- **Buttons 1 to 4**: These buttons activate the corresponding CPU channel (computer port).
- **Full button**: Press to switch to Fullscreen mode.
- **Quad button**: Press to switch to Quad mode.
- **PiP button**: Press to switch to picture in picture mode (PiP).
- **Win button**: Press to switch to Win mode.

Figure 4. Hot Key Channel Selection Window

You can also switch the active channel using the hotkey and arrow keys. The selection window closes once the channel selection timeout period has elapsed. The timeout value for channel selection can be changed in the OSD System menu by selecting Quad mode. Then use the “Time out of Channel Selection” menu item to indicate how long the selector icon should be displayed on the screen.

Additional Button Functions

Setting output resolution to safe output modes
To set the output resolution to 640 x 480 @ 60 Hz, press and hold buttons 1 and 2 simultaneously for 2 seconds.
Using this feature is recommended when you cannot use the OSD, because the on screen display is dark or illegible due to an output resolution setting which is not supported by the monitor. Once the widely supported 640x480@60 Hz output is set, you can then use the OSD to choose a resolution that the monitor in use supports. Alternatively, hold buttons 1 and 2 for 2 seconds at a time to cycle through the following standard video modes: VGA 640x480@60 Hz, SVGA 800x600@60 Hz, XGA 1024x768@60 Hz, UXGA 1600x1200@60 Hz.

**Hardware Reset**

Press and hold buttons 3 and 4 simultaneously for 5 seconds to reset the Unit completely (video, keyboard, and mouse).

**Displaying the OSD**

Press and hold the Pip and Win buttons simultaneously to cause the OSD menu to be displayed.

**Note:**

While the OSD menu is displayed, the active computer can still be operated by mouse or touchscreen.
Rear Panel

The rear panel of QuadraVista QF features three audio output ports, four computer input ports, the Console (KVM) ports, a USB control port, an RS232 control port, four USB 2.0 device ports, and the a/c power connector and switch.

![Rear Panel Connectors](image)

**Figure 8. Rear Panel Connectors**

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<td>Audio ports</td>
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<td>3</td>
<td>Monitor / DVI-I output</td>
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<tr>
<td>4</td>
<td>Four DVI-I inputs</td>
</tr>
<tr>
<td>5</td>
<td>USB control port</td>
</tr>
<tr>
<td>6</td>
<td>RS232 / RJ45 control port</td>
</tr>
<tr>
<td>7</td>
<td>USB for keyboard, mouse, touch or trackball (console)</td>
</tr>
<tr>
<td>8</td>
<td>USB or PS2 keyboard and mouse (computer)</td>
</tr>
<tr>
<td>9</td>
<td>Four transparent high-speed USB 2.0 ports</td>
</tr>
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</table>

1. **Power**
   Plug for supplied power cable.

2. **Audio Output ports**
   Connect external speakers or headphones to the 3.5 mm analog stereo jack or digital cinch connector. The TOSLINK optical audio connector allows digital audio output to an optical receiver.

3. **Monitor / DVI-I Output**
   Connect digital displays to this port with a DVI-D cable. VGA Analog monitors can be connected with a DVI-I to VGA cable.

4. **DVI-I Inputs**
   Connect the analog or digital video signal of CPU/Video sources to these four DVI-I ports. For HDMI video sources, use an HDMI to DVI adapter cable. For VGA video sources, use a VGA to DVI-I adapter cable. Cable lengths of up to 65 feet are supported.

5. **USB Control Port**
   External USB control devices connect to this port to operate QuadraVista remotely. Firmware updates can also be performed through the USB control port.
Rear Panel (continued)

6. **RS/232 Control Port**
   External serial control devices can be connected to this port to operate QuadraVista QF remotely. The port can also be used for firmware updates. (see page ???.

7. **USB ports for Console Keyboard, Mouse, Touchscreen, or Trackball**
   Console USB keyboard and mouse, touchscreen or trackball can be connected to these two ports. Multiple keyboards and mice can be connected through a USB hub. The devices will work in share mode with an inactivity timeout of 3 seconds.

8. **USB and PS/2 Ports for Computer keyboard and mouse connections**
   Connect each computer’s PS/2 or USB keyboard and mouse here.

9. **High Speed USB 2.0 Ports**
   Data intensive USB devices such as printers, memory sticks, and finger print readers can be connected to any of the four high speed ports.
Installation

Please refer to the safety section first before proceeding with any installation or configuration of the QuadraVista QF. Installation of the QuadraVista QF consists of connecting the computers and KVM console to the unit. The following steps can be used as a guideline for installing your QuadraVista. It is recommended that you locate the QuadraVista as close as possible to the computers being connected.

Plug the power cable into the power plug located on the rear panel of QuadraVista QF with the power switch in the off position. Connect the power cord to a grounded power supply. Connect all cables before powering on the QuadraVista.

KVM Console Connections
Connect your digital monitor’s DVI connector to the console monitor connector using a DVI-D cable. If the digital monitor has an HDMI connector, use an HDMI to DVI-D cable. Connect an analog monitor to the console monitor connector using a VGA to DVI-I cable.

Connect a USB mouse and keyboard to the console USB-A connectors. PS/2 keyboard and mouse requires a PS/2 to USB adapter.

Maximum recommended cable length for high quality video (DVI / VGA) is 65 feet (20 meters). Maximum cable length for USB / PS2 keyboard and mouse is 16 feet (5 meters). For greater distances QuadraVista-QF supports most KVM extenders, video (DVI / VGA) extenders, and USB extenders.

Computer / Video Source Connections
Switch off the computer and disconnect the keyboard, monitor and mouse.

Connect a USB port on the computer to a QuadraVista-QF USB input port using a single USB A-B cable. For computers with PS/2 keyboard and mouse, connect the 2 computer ports to a Quadravista QF PS/2 input port using a PS/2 Y cable. For distances greater than 16 feet (5 meters), use a USB or PS/2 extender.

Connect the computer’s digital video output to the QuadraVista QF’s DVI input using a DVI-D to DVI-D or HDMI to DVI-D cable. For computers with an analog video (VGA) output, use a VGA-DVI-I cable to QuadraVista-QF DVI input. For distances greater than 65 feet (20 meters), use a DVI or VGA video extender.
Powering up the System
Ensure that all installation work is complete before applying power to QuadraVista QF. Switch on QuadraVista-QF using the power switch on the rear panel. All front panel LEDs light up briefly indicating that QuadraVista-QF is ready for operation. QuadraVista-QF is now in Quad-Mode (default).

Power-up all the connected computers. QuadraVista-QF recognizes all input video sources automatically and displays them on your monitor screen.

To select another display mode, use the relevant keyboard commands or buttons on the front panel.

Connecting Audio
The QuadraVista-QF can be connected to external powered speakers or audio devices for audio playback from any of the connected computers or video/audio sources.

Three different output connection options are available (see Figure 11):

1) 3.5mm analog stereo jack
2) Digital cinch connector
3) TOSLINK optical audio jack

After the speakers have been physically connected to the QuadraVista-QF
- Open the OSD and navigate to COMPUTER > AUDIO
- Enable audio output
- Select the audio source and adjust the volume.
Figure 11. Audio Output Connections

**Note:** Powered speakers or headphones can also be connected directly to QuadraVista-QF, eliminating the need for an amplifier.
On Screen Menu System

The QuadraVista has an easy to use menu system that enables you to customize the “System”, “Mode”, “Configuration”, “Console”, “Video”, “Computers”, and “USB Devices”. Each section is described in detail on the following pages. The On screen Menu System structure is shown below.

![On Screen Display Menu System Diagram]

**Figure 12. OSD Main Menu**

**SYSTEM**
- HDCP: HDCP status
- HOTKEY: Multiple Hotkey / Double Click Hotkey
- HOTMOUSE: Hotmouse Recognition, Hotmouse Timeout
- QUAD MODE: Channel Selection Timeout
- WIN MODE: Appearance settings for windows
- OSD POSITION: Position of OSD window
- OSD LANGUAGE: German / English / Spanish
- SECURITY: Set security level
- DISABLE CHANNEL: Deactivate unused channels
- CONTROL: Device control via DCP-XML protocol (RS232)

**MODE**
- CURRENT: Set the current channel and mode
- START: Set the channel and mode in which the device should boot

**CONFIGURATION**
- BACKUP RECALL: Save configuration settings
- FACTORY RESET: Restore last saved configuration
- RESET: Reset to factory default settings

**CONSOLE**
- VIDEO OUTPUT: Video resolution and frequency
- KEYBOARD: Keyboard layout
- TOUCH SCREEN: Calibration / Mouse key emulation / Enlarge on touch
- FADE: Indicate use of smooth transitions
- MULTI MONITOR: Assign mouse/keyboard to video
- BACKGROUND: Select background type
- EDID: Display of EDID monitor data
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<th>Display computers’ video input resolutions</th>
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<td>DVI / VGA</td>
<td>Choose input signal: DVI/VGA - DVI - VGA</td>
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<td></td>
<td>ROTATION</td>
<td>Rotate the screen display at different degrees</td>
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<td></td>
<td>CROPPING</td>
<td>Crop the display of video sources</td>
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<td></td>
<td>BRIGHTNESS</td>
<td>Set brightness of analog input signal</td>
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<td>Set contrast of analog input signal</td>
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<td></td>
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<td>MOUSE</td>
<td>Display type of mouse (PS/2, PS/2 Wheel or USB)</td>
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<td>List of keyboard commands</td>
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<td></td>
<td>CONTACT</td>
<td>Contact information</td>
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**Main Menu**

The Main Menu is called up by pressing the assigned HotKey + O (not zero) key. You can also simultaneously press the Quad and PiP front panel buttons. This is the starting point for the OSD menus. From the main menu you can set-up the system, select the start-up mode, and configure the system features. Each OSD menu feature is described in this section.
The system Menu is called up by highlighting SYSTEM from the main menu and pressing enter. From the system menu you can set-up the Hotkey, Hotmouse, Quad Mode, OSD Position, change OSD languages, security, display nine different test patterns to fine tune the video, disable channels and set-up remote control features.
System / HotKey

The system HOTKEY window is used to define the multiple keys HOTKEY and Double Click HOTKEY features. To modify the HOTKEY features, call up the Main menu (Default = left Ctrl + Alt + O key). From the Main menu, highlight “SYSTEM” and press enter. Highlight “HOTKEY” and press enter. The SYSTEM / HOTKEY window shown in Figure 4 will display.

From this menu you can modify which multiple keys and Double Click key defines the HOTKEY. Use the arrow keys to navigate through the menu. Select “Yes” or “No” to choose 1-4 keys for the HOTKEY.

Press the + key to switch to the double click menu.

The double click HOTKEY activation menu allows you to define which key to double click on to be the HOTKEY.

Use the arrow keys to select one of four key choices to define the double click HOTKEY method.

Figure 13. HotKey menu
When the multiple key and double click key assignment has been made, exit the menu system and these values will be saved.

If you assigned the Control, Alt, and Shift keys (menu value = “Yes”) to be the multiple key HOTKEY, then you must press these three keys simultaneously plus the command key.

If the shift key was assigned to be the double click HOTKEY, then you must press the shift key twice then the command key.

**System / HotMouse**

The Hotmouse works similarly to the HOTKEY function where an operation is activated using only the mouse. To use the Hotmouse feature, it first must be enabled. Navigate to the SYSTEM / Hotmouse window and enable the Hotmouse (set to “Yes”) and set the timeout value (1 to 30 sec.). This determines how long the selection window is displayed.

![Enable hotmouse: Yes](image)

Enabling the HOTMOUSE feature, you can perform several functions using only the mouse:
- (Switch channels, size PiP window, and other features)

**Figure 14. System HotMouse**

To activate the Hotmouse cursor feature, move the mouse rapidly in alternating horizontal directions four times (Note: the Hotmouse must be enabled for this feature to function).

→ ← → ← or ← → ← →

The Hotmouse cursor will change depending on the view mode. Activating the Hotmouse in the Full screen mode will temporarily display the PiP images of the non-selected channels (see below). Moving the cursor to a PiP image and clicking on the left mouse button will switch, full screen, to that channel.

![Hotmouse cursor](image)

Activating the Hotmouse in the Quad screen mode will display a box cursor with the active channel number in the box (see below). Moving the cursor to any quadrant and clicking on the left mouse button will switch control (keyboard / mouse) to that channel.
Activating the Hotmouse in the PiP mode has three features:

1- Switch active full screen channels

Channel 2 active

Activate Hotmouse, Move cursor to PiP 3
Press left mouse key

Channel 3 active

(Keyboard/mouse)

2- Move the PiP images vertically

Channel 2 active

Activate Hotmouse, Move cursor to PiP windows
Press/hold left mouse key, move PiP windows vertically

Release mouse key, PiP windows are in new vertical position

3- Modify the PiP image size
Activate the Hotmouse and move the cursor to the left edge of the PiP window.

Press and hold the left mouse button and drag the PiP window to the left or right to increase or decrease the PiP size.

**Hotmouse Menu**

A menu is associated with the Hotmouse that can be called up to perform various functions based on what screen mode the system is in. To activate the Hotmouse menu, first activate the Hotmouse by moving the cursor rapidly to the left and right 4 times. When the Hotmouse cursor appears, click the right mouse button and depending on the screen mode, the Hotmouse menu will display.

In the Full screen or Quad mode, the Hotmouse menu allows you to switch channels, change display modes (quad, full, PiP, Dual), or activate a channel.

In the PiP mode the Hotmouse menu allows you to switch channels, change the display mode, change the position, size, and zoom of the PiP images, change PiP mode (Triple gap, no gap, tile), and set the scan time.

**System Quad Mode**
From the system / quad mode menu you can set the timeout of the quad selection window.

Figure 15. System Quad Mode

System OSD Position

Selecting OSD position allows you to set the screen position of the OSD menus. Use the arrow keys to move the OSD screen position.

Figure 16. System / OSD Position

System / OSD Language
System / Security

The security features sets up and limits the functionality of the QuadraVista unit. The default security level = 0 which enables all functions. The QuadraVista security password is furnished separately and should be made available to only those persons authorized to modify the unit security features.

Selecting the Security feature displays the password screen. Enter the predefined password that is furnished separately and the security window will display. Select the security level (1 – 8). These levels are defined below. The predefined 6 digit password can be entered on this OSD screen or the front panel keys 1, 2, 3, and 4.

Example: Password = 123432 press front panel keys 1, 2, 3, 4, 3, and 2.

Figure 17. System / OSD Language

Following lists the security level and functions each security level allows. Level 0 is the factory security default setting which enables all functions.

For example, changing the security level to level 4 inhibits the “System” HotKey, HotMouse, Quad Mode, OSD Language, and Disable channel functions for the unit. Other features are also inhibited. See the below security level matrix.

QuadraVista OSD security matrix
| Quad Mode | • |   |
| OSD Position | • | • | • | • |
| OSD Language | • | • |   |
| Security | • | • | • | • | • | • | • |
| Test Pattern | • | • | • | • | • |
| Disable Channel | • |   |
| Control | • | • | • | • | • | • |
| Mode | PiP | • | • | • | • |
| Start | • | • | • | • |
| Configuration | Backup |   |   |
| Recall | • | • | • |   |
| Factory Reset |   |   |
| Console | Video Output | • | • | • | • | • | • |
| Keyboard | • |   |
| Multi-Monitor | • |   |
| EDID | • | • | • | • | • | • |
| Video | Video Input | • | • | • | • | • | • |
| Brightness | • | • |   |
| Contrast | • | • |   |
| Horiz. Position | • | • |   |
| Vert. Position | • | • |   |
| Screen Width | • | • |   |
| Phase | • | • |   |
| Format | • | • | • |   |
| Computer | Keyboard | • | • | • | • | • | • |
| Mouse | • | • | • | • | • | • |
| Reset PS/2 | • |   |
| Change EDID/DDC | • | • | • | • | • | • |
| Help | Command | • | • | • | • | • | • |
| About | • | • | • | • | • | • |
| Contact | • | • | • | • | • | • |

• = Authorization to this OSD function is permitted

Security level 0 is the factory default setting. All settings are allowed and all functions enabled. Additional security features are listed below for each security level. These features are in addition to the OSD security levels listed above.

If the pre-assigned password is lost or forgotten, please contact Rose Electronics Tech Support for assistance. Please provide the QuadraVista serial number when requesting help.

**Security level 8** (most limited level) allows you to work only on pre-selected channel (computer) in a predefined display mode (Quad / Full / PiP). Except the security menu, where you can change the security level there are no other operations available.
Security level 7 is the same as security level 8. All OSD windows are available that have information contents only (showing display modes, active channels and settings):

Security level 6 is the same as security level 7 with the addition of:
Active channel setting using front panel, keyboard, or mouse commands
Channel selection in Quad Mode using front panel PiP button

Security level 5 is the same as security level 6 with the addition of:
- Display mode setting (Quad / Full / PiP) using front panel buttons,
- keyboard or mouse commands

Security level 4 is the same as security level 5 with the following OSD additions:
- Modify PiP settings using HotMouse menu
- System - OSD Position
- Mode - PiP / Start features
- Configuration - Recall
- Video - format

Security level 3 is the same as security level 4 with the following OSD additions:
- System – OSD language
- Video – All video OSD features

Security level 2 is the same as security level 3 with the following OSD additions:
- System – Hotkey / Hotmouse / Quad Mode
- Console - keyboard

Security level 1 is the same as security level 2 with the additions of:
- Set video output to VGA using keyboard command (Hotkey V) or front panel buttons 1+2
- System – Disable channel
- Console – Multi-Monitor / Video output
- Computer – Mouse / Reset PS/2
- Video – Video input

System / Test Pattern
There are nine test patterns to assist in adjusting the colors and skew.

Use the Test Pattern to check the function of internal video circuits or to check the quality of the connected console monitor. It’s recommended to use all the test patterns for the test procedure.
System / Disable Channel

Using this feature, the connected computers should be connected to the channel ports in ascending order. Connecting computers to channel 1, 2, and 4 and selecting the number of channels to be 3, channel 4 can not be displayed.

System / Control

The DCP (Device Control Protocol) offers three modes, off, control and synchronize. Set the DCP mode to “Control” if a single QuadraVista will be controlled from an external computer. Set the mode to “Synchronize” if you system features several linked QuadraVista’s. When in this mode the QuadraVista status is transmitted to the external computer. For local unit operation, set the mode to off. See the Serial Operations section for detailed information on the DCP mode.
MODE

Mode / PiP-Start

Selecting “MODE” and pressing enter displays the mode screen. Two mode selections are available, PiP and Start. The PiP features and configuration can be set-up, and the channel and mode setting on start-up.

The PiP menu allows you to change from triple to single PiP. Triple display shows the three non-active windows on the right of the screen. Single display shows only one non-active window. PiP size, zoom, and offset from the top of the screen can be set.

PiP display modes:
- Triple – Displays the three non-active channels
- Single – Displays one non-active channel
- Fixed – Permanently displays one non-active channel
- Scan – Scans non-active channels in one PiP window (scan time 1-9 sec)
- Direct – Permanently displays one non-active channel. Select the desired channel to display directly.
Selecting Start from the MODE menu defines which channel is active, the display mode, and the PiP settings when power is applied.

**Figure 22. Mode / PiP-Start**

**Configure**

**Configure / Backup, Recall, Factory Reset**

The backup command saves the current device settings.

**Figure 23. Backup**

The recall command replaces the current settings with the latest backup.
Figure 24. Recall

The Factory Reset command resets the unit to the original factory settings. See Appendix C. for factory reset values.

Figure 25. Reset

Do you want to set the default factory settings? This will override all user settings and will restart the device.

Press Enter/Select to set the default settings.

Press any other key to keep the user settings.
Console

Video output / Keyboard / Multi-Monitor / EDID

Selecting “Console” from the main menu displays the options for the video output, keyboard, Multi-monitor, and EDID.

Setting the video output to “auto” the QuadraVista will read the connected monitor’s configuration data and set the mode, resolution, and frequency based on the monitors DDC table. Use the up / down arrow keys to manually select a specific mode, resolution, and frequency. The new setting will display for 10 seconds. Within this time, press Enter / select to accept the new video output setting. No change is executed if enter is not pressed within the 10 second period. See Appendix D for a list of supported video modes.

Use Up / Down arrow keys to show additional modes.
Changing the video resolution will display the notification window shown to the right. Press Enter to accept the new setting or any other key for no change.

Figure 26. Console, Video output

**Console / Keyboard**

The keyboard option sets the keyboard language to English, German, Spanish, French, or Italian.

Figure 27. Keyboard layout
Console / Multi-Monitor

The QuadraVista can be set-up to connect to computers with multiple video outputs. Selecting Multi monitor opens the Multi monitor window. If your computer uses a graphic card with two video outputs, assign the computers keyboard and mouse for Monitor 1 and 2 to channel 1.

Example – Multi-Monitor

PC(1) Dual Video keyboard/mouse/video1 to input #1, video2 to input #2.
KVM Switch (3) to input #3
KVM Switch (4) to input #4

Set Multi-Monitor options to:
Monitor 1: Channel 1
Monitor 2: Channel 1
Monitor 3: Channel 3
Monitor 4: Channel 4

Select for each monitor on which channel the mouse and the keyboard are active:

Monitor 1: > channel 1
Monitor 2: > channel 2
Monitor 3: > channel 3
Monitor 4: > channel 4

Figure 28. Multi-Monitor setup

Console / EDID
The EDID menu, when selected, will read and display the EDID data of your console monitor. Extended Display Identification Data is a VESA standard data format that contains basic information about a monitor and its capabilities, including vendor information, maximum image size, color characteristics, factory pre-set timings, frequency range limits, and character strings for the monitor name and serial number.

**Figure 29. EDID display**

**Video**

From the main menu, selecting Video will display a menu that allows you to view or change the connected computers video information, set the brightness, contrast, horizontal position, vertical position, screen width, phase, and format. Selecting Video Input will display the video information QuadraVista has automatically detected from the four video inputs (Plug & Play).

**Video / Video Input**

In the lower part of the Video Input window you define which video input is selected for display. If both signal inputs DVI/VGA or VGA/DVI are selected, the first one will be processed and displayed. If there is no signal present the other automatically will be selected and processed.

The "S" column shows the type of video detected, a = analog, d = digital, g = sync on green, c = composite sync.

**Figure 30, Video input**

Appendix D shows the video formats QuadraVista can support.
Video / Brightness / Contrast

Using the brightness / contrast menu, you can adjust video brightness and contrast for each analog video input. Using the arrow keys, select the computer to adjust and increase or decrease the brightness or contrast.

This setting is used to adjust brightness or contrast of the analog input signal for the desired computer.

Figure 31. Video Brightness / Contrast
Video / Horizontal and Vertical position

The Horizontal position menu is used to adjust the position of a computer's screen manually.
To adjust the horizontal position, select the computer to adjust, and then select the auto/man field. Select "Man" and adjust the position using the + and – keys. It is recommended that the “Auto” setting be used for all computers.

Figure 32, Horizontal Position

The Vertical position menu is used to adjust the position of a computer’s screen manually.
To adjust the vertical position, select the computer to adjust, and then select the auto/man field. Select "man" and adjust the position using the + and – keys. It is recommended that the Auto setting be used for all computers.
Video / Screen width

The width of the screen can be adjusted to improve screen quality by selecting the screen width menu, the computer to modify, and adjusting the number of horizontal pixels.

Figure 33. Screen width

Video / Phase

Adjust the clock phase of the analog signal:

<table>
<thead>
<tr>
<th>Computer</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer 1</td>
<td>+0</td>
</tr>
<tr>
<td>Computer 2</td>
<td>+0</td>
</tr>
<tr>
<td>Computer 3</td>
<td>+0</td>
</tr>
<tr>
<td>Computer 4</td>
<td>+0</td>
</tr>
</tbody>
</table>

If a computer's phasing is incorrect (blurring screen, incorrect contrast) use the Phase menu to adjust the video phasing from the detected value.

Figure 34. Clock phase
Video / Format

Figure 35. Video format

Computer

Selecting Computer from the main menu will display the features that can be displayed or modified for each computer connection.

Figure 36. Computer

Wide screen monitors (aspect ratio 16:10) normally display black borders on the left and right side of the display. Setting “Fit to screen” to Yes so that computer will resize the image to fill the entire quadrant or PiP.
Computer / Keyboard

Selecting keyboard and pressing enter will display the type of keyboard the system has detected for each connected computer (USB, PC1, PC2, or PC3).

Computer / Mouse

Selecting mouse and pressing enter will display the type of mouse the system has detected for each connected computer (USB, PS/2, or PS/2 wheel).

The Mouse positioning USB: lower section allows you to choose absolute mouse positioning when a device is connected to the console that supports absolute coordinates such as graphic trays, screen pads or KVM extenders.
Select Reset PS/2 when the keyboard or mouse have been disconnected or get out of sync. Use the arrow keys or the “+” and “-” keys to select the channel to reset and press enter / select.

Select Change EDID / DDC to add two selectable video modes to the list of video modes available at each of the four video ports. Use the left, right arrow keys (← →) to select the first video mode to add. Once selected, use the up, down arrow keys (↑ ↓) to select the second video mode to add. Use the left, right arrow keys (← →) to select the second video mode to add. When both video modes have been selected, use the up, down arrow keys (↑ ↓) to select signal and the left, right arrow keys (← →) to select analog or digital. With all entries completed, select “WRITE” and press ENTER / SELECT and the window shown on the right in Figure 32 will open.

(Procedure continued on next page)
Figure 41. EDID Programming

Choose two video modes:

- UXGA 1600 x 1200 60Hz
- WUXGA 1920 x 1200 50Hz

Signal: digital

WRITE

EDID Programming:

Connect video input you wish to program to video output and confirm by twice pressing ENTER / SELECT.

Program EDID
Successful
Help

Selecting the help section will display the keyboard command list, about, and contact information. The Command List option will display the keyboard commands recognized by QuadraVista.

Figure 42. Help / Command

The About section informs you of information pertaining to the QuadraVista.

Figure 43. Help / About

The Contact section provides you with information on who to contact for technical assistance and other information.
Figure 44. Help / Contact

Rose Electronics
10707 Stancliff Road
Houston Texas 77099
USA

Phone: 281-933-7673
Fax: 281-933-0044
www.rose.com

Thank you for using QuadraVista
**Serial Features**

QuadraVista can be configured or controlled from a remote computer by connecting a serial cable from the computer’s COM port to the QuadraVista’s serial input port.

To remotely configure the QuadraVista (Display / execute the OSD features only), download the communication software (QuadraVista.zip) from our web site at /www.rose.com/htm/download.htm in the tech support section and install it on a remote windows based computer. Next, call up the OSD from the local console and navigate to the “System, Control” section and change the DCP mode setting to “control”.

Connect a serial cable from COM1 or COM2 port on the remote Laptop or PC to the RS232 port on the rear panel of QuadraVista as shown below.

**Figure 45, Serial connections**

Execute the Serial Communication software and the window shown below will display. Click on the 🌐 ICON to connect and display the OSD on the remote computer.
Remotely navigate within the OSD menu system from the remote computer the same way as you would using the local console. All OSD menus can be accessed using the arrow keys and the Enter / Select key.

**DCP Synchronizing Multiple Units**

In systems that use multiple QuadraVista’s, the display mode can be synchronized so all units are the same display mode. To accomplish this, first display the OSD and navigate to the “Control” section (System, Control). Use the up/down arrow keys to select “Synchronization”, then exit the OSD.

Each time you restart a QuadraVista set to synchronization, it will send all its settings to the next connected device. This process also takes place after activating Synchronization in the OSD menu.
Connect the multiple unit system as shown below using a special “Y” serial cable.

When starting a chain of devices, always start by first switching on the device at the end of the chain. When the device has completed its startup phase and sent its DCP messages, switch on the next device in the chain. Finally, switch on the first device in the chain, which synchronizes the settings of all other devices in the chain with its own settings as it starts up. The synchronized chain can have any length. Do not connect the last unit to the first to create a loop.

**DCP/XML Feature**

The QuadraVista can be controlled remotely from a PC or laptop connected to the RS232 port (serial) using the DCP/XML feature. This feature is different from the OSD serial features. The serial feature allows only the OSD functions to be performed. The DCP/XML feature sends a DCP/XML message
containing the defined elements like switching to a given port, changing the display mode, defining the PiP features, and other items.

To use the DCP/XML feature, connect the system in the serial configuration as shown in Figure 36. The PC or laptop must have a serial communication program installed like HyperTerminal. Configure the communication program for the following:

- Transfer rate – 57600 Baud
- Data Bits – 8
- No parity
- Stop Bit – 1
- No flow control

Connect to QuadraVista and send the DCP/XML text message containing the controlling script. A simple example of sending a DCP/XML text message that will switch ports is shown below. Tabbed spacing in the below example is for readability only; the actual text file does not need the spacing.

```
<dcp-xml>
  <device>
    <mode>
      <console>
        <channel>0</channel>
      </console>
      <video>
        <channel>0</channel>
      </video>
    </mode>
  </device>
</dcp-xml>
```

This example switches the console and video to channel 0

Note: DCP/XML channel 0 = QuadraVista channel 1
DCP/XML channel 1 = QuadraVista channel 2
DCP/XML channel 2 = QuadraVista channel 3
DCP/XML channel 3 = QuadraVista channel 4

An example of a DCP/XML message containing all defined elements is shown below:

```
<dcp-xml>
  <device>
    <type>VSQ</type>
    <version>
      <dcp-protocol>1.0</dcp-protocol>
      <hardware>32</hardware>
      <software>1.30</software>
    </version>
  </device>
</dcp-xml>
```
DCP/XML System Querying

Using the DCP/XML feature, the QuadraVista can be queried to request setting information. Queries are only replied to in the DCP control mode. Sending the below text script to QuadraVista using Hyper Terminal, queries for the entire device status:

```
<dcp-xml/>
```

Queries can be combined with changes in one text script. The following is an example of querying for the console information and setting the video to channel 1.

```
<dcp-xml>
  <device>
    <mode>
      <console/>
      <video>
        <channel>1</channel>
      </video>
    </mode>
  </device>
</dcp-xml>
```
The console and video are queried in the below script.

```xml
<dcp-xml>
  <device>
    <mode>
      <console/>
      <video>
        <channel/>
      </video>
    </mode>
  </device>
</dcp-xml>
```

The response to the above query is:

```xml
<dcp-xml>
  <device>
    <mode>
      <console>
        <channel>0</channel>
      </console>
      <video>
        <channel>0</channel>
      </video>
    </mode>
  </device>
</dcp-xml>
```

The above response shows that the console and video are connected to channel 1.

**DCP error messages:**

- **Malformed XML:** Opening and closing tags do not match.
- **Opening tag without matching closing tag:** Only occurs with Simple Elements. In the case of Complex Elements, a timeout error is reported.
- **A simple element contains a subtag:**
- **Tag name exceeding 16 characters:**
- **Incorrect data type:** For list types, such as Device Name, this error message also refers to values not included in the list.
- **Contents of a Simple Element exceeding 30 characters:**
timeout
Receive timeout. This error message is displayed if a DCP message is not complete after expiry of the timeout, but no other error has occurred.

parser stack overflow
This error occurs when unknown elements are nested too deeply, or in the case of an internal error.

internal parser error
Internal error parser error.

unknown error
Unknown error.

DCP Communication
DCP/XML messages exceeding 38 characters must be divided into individual lines before being sent to a device.

Replies sent by a device are also divided into lines.

When sending a DCP message, the following constraints apply:

**Linefeed: LF**
Linefeed (0x0A) is used as terminating character of each line.

**Whitespace: TAB, SPACE, CR**
Whitespace characters are TAB (0x09), Space (0x20) and Carriage Return (0x0D).

Whitespace may occur anywhere between two tags, except at the start of a line and inside simple elements

Whitespace is ignored.

**Line length: maximum 38 characters**
The line length may not exceed 38 characters.
(Not including the terminating LF.)

**Timeout: 750 ms**
Timeout for DCP messages is 750 milliseconds.

DCP messages containing errors are not regarded as completed until the timeout period has elapsed.

Therefore, it is recommended to wait for this time between DCP messages to allow the parser to handle possible errors.

Correct messages are processed immediately upon completion.

**Unknown elements**
Unknown tags in a DCP message are ignored for the sake of upwards compatibility of the protocol.

Messages containing unknown elements must still be syntactically correct.
Unknown tags may not be nested deeper than 5 levels.

**Empty elements**

An empty element is an opening tag immediately followed by a closing tag.

((tag)) may be abbreviated as ((tag))
Service Information

Maintenance and Repair

This Unit does not contain any internal user-serviceable parts. In the event a Unit needs repair or maintenance, you must first obtain a Return Authorization (RA) number from Rose Electronics or an authorized repair center. This Return Authorization number must appear on the outside of the shipping container.

See Limited Warranty for more information.

When returning a Unit, it should be double-packed in the original container or equivalent, insured and shipped to:

Rose Electronics
Attn: RA
10707 Stancliff Road
Houston, Texas 77099 USA

Technical Support

If you are experiencing problems, or need assistance in setting up, configuring or operating your QuadraVista, consult the appropriate sections of this manual. If, however, you require additional information or assistance, please contact the Rose Electronics Technical Support Department at:

Phone: (281) 933-7673
E-Mail: TechSupport@rose.com
Web: www.rose.com

Technical Support hours are from: 8:00 am to 6:00 pm CST (USA), Monday through Friday.

Please report any malfunctions in the operation of this Unit or any discrepancies in this manual to the Rose Electronics Technical Support Department.
Safety

The QuadraVista has been tested for conformance to safety regulations and requirements, and has been certified for international use. Like all electronic equipment, the QuadraVista should be used with care. To protect yourself from possible injury and to minimize the risk of damage to the Unit, read and follow these safety instructions.

Follow all instructions and warnings marked on this Unit.
Except where explained in this manual, do not attempt to service this Unit yourself.
Do not use this Unit near water.
Assure that the placement of this Unit is on a stable surface.
Provide proper ventilation and air circulation.
Keep connection cables clear of obstructions that might cause damage to them.
Use only power cords, power adapter and connection cables designed for this Unit.
Keep objects that might damage this Unit and liquids that may spill, clear from this Unit. Liquids and foreign objects might come in contact with voltage points that could create a risk of fire or electrical shock.
Do not use liquid or aerosol cleaners to clean this Unit. Always unplug this Unit from its electrical outlet before cleaning.
Unplug this Unit refer servicing to a qualified service center if any of the following conditions occur:
- The connection cables are damaged or frayed.
- The Unit has been exposed to any liquids.
- The Unit does not operate normally when all operating instructions have been followed.
- The Unit has been dropped or the case has been damaged.
- The Unit exhibits a distinct change in performance, indicating a need for service.

Safety and EMC Regulatory Statements

Safety information

⚠️ Documentation reference symbol. If the product is marked with this symbol, refer to the product documentation to get more information about the product.
WARNING  A WARNING in the manual denotes a hazard that can cause injury or death.

CAUTION  A CAUTION in the manual denotes a hazard that can damage equipment.

Do not proceed beyond a WARNING or CAUTION notice until you have understood the hazardous conditions and have taken appropriate steps.

Grounding
These are Safety Class I products and have protective earthing terminals. There must be an uninterruptible safety earth ground from the main power source to the product’s input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, disconnect the power cord until the ground has been restored.

Servicing
There are no user-serviceable parts inside these products. Only service-trained personnel must perform any servicing, maintenance, or repair.

The user may adjust only items mentioned in this manual.
Appendix A. Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>1900 x 1200</td>
</tr>
<tr>
<td>Video compatibility</td>
<td>VGA to UXGA / DVI</td>
</tr>
<tr>
<td>Keyboard</td>
<td>USB / PS/2 (Computers), USB (KVM)</td>
</tr>
<tr>
<td>Mouse</td>
<td>USB / PS/2 (Computers), USB (KVM)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>W- 17.125&quot; / D – 9.125&quot; / H – 1.75&quot;</td>
</tr>
<tr>
<td>Weight</td>
<td>6.3 lbs</td>
</tr>
<tr>
<td>Approval</td>
<td>Europe: CE</td>
</tr>
</tbody>
</table>

Appendix B. Parts and cables

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>QV-4KVMDVI</td>
<td>QuadraVista unit</td>
</tr>
<tr>
<td>CAB-DVIIMMnnn</td>
<td>DVI-I to DVI-I (male/male)</td>
</tr>
<tr>
<td>CAB-DVIIMFnnn</td>
<td>DVI-I to DVI-I (male/female)</td>
</tr>
<tr>
<td>CAB-DVIIMVMnnn</td>
<td>VGA to DVI-I (male/male)</td>
</tr>
<tr>
<td>CAB-DVIIMVFnnn</td>
<td>DVI-I to VGA (male/female)</td>
</tr>
<tr>
<td>CAB-DVIDMMnnn</td>
<td>DVI-D to DVI-D (male/male)</td>
</tr>
<tr>
<td>CAB-USBABnnn</td>
<td>USB-A to USB-B (male/male)</td>
</tr>
<tr>
<td>CAB-CXUSBCnnn</td>
<td>DB25 to VGA/USB</td>
</tr>
<tr>
<td>CAB-CXV66MMnnn</td>
<td>VGA/PS2 to VGA/PS2 (male/male)</td>
</tr>
<tr>
<td>CAB-C1VS0600Cnnn</td>
<td>DB25 to VGA-PS/2</td>
</tr>
<tr>
<td>CAB-MD6MMnnn</td>
<td>PS/2 to PS/2 (male/male)</td>
</tr>
<tr>
<td>CAB-MD6M2MD6M</td>
<td>PS/2 “Y” cable</td>
</tr>
<tr>
<td>CAB-QVRJ006</td>
<td>Serial DB9 to RJ45 cable</td>
</tr>
<tr>
<td>ACC-DVIMVF</td>
<td>DVI-I to VGA adapter</td>
</tr>
<tr>
<td>RM-QV19</td>
<td>Rack Mount kit</td>
</tr>
</tbody>
</table>
### Appendix C. Factory Defaults

The Below table shows the factory default settings. When “Factory Reset” is executed, the unit configuration is changed from the user settings to the below default settings.

<table>
<thead>
<tr>
<th>Section</th>
<th>Function</th>
<th>Default Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSTEM</td>
<td>Hotkey</td>
<td>Ctrl + Alt</td>
</tr>
<tr>
<td></td>
<td>Hotmouse</td>
<td>On / 5 Sec.</td>
</tr>
<tr>
<td></td>
<td>Quad Mode</td>
<td>Timeout = 5 Sec.</td>
</tr>
<tr>
<td></td>
<td>OSD Position</td>
<td>Centered</td>
</tr>
<tr>
<td></td>
<td>OSD Language</td>
<td>English</td>
</tr>
<tr>
<td></td>
<td>Security</td>
<td>None (Level 0)</td>
</tr>
<tr>
<td></td>
<td>Test Pattern</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Disable Channel</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>Off</td>
</tr>
<tr>
<td>MODE</td>
<td>Pip</td>
<td>Size = 15%; Zoom = 1; Mode = triple; gap, Offset = 0%</td>
</tr>
<tr>
<td></td>
<td>Start</td>
<td>Quad / active channel = 1</td>
</tr>
<tr>
<td>CONFIGURE</td>
<td>Backup</td>
<td>User initiated</td>
</tr>
<tr>
<td></td>
<td>Recall</td>
<td>User initiated</td>
</tr>
<tr>
<td></td>
<td>Factory Reset</td>
<td>User initiated</td>
</tr>
<tr>
<td>CONSOLE</td>
<td>Video Output</td>
<td>Auto</td>
</tr>
<tr>
<td></td>
<td>Keyboard</td>
<td>English</td>
</tr>
<tr>
<td></td>
<td>Multi-Monitor</td>
<td>Monitor 1, 2, 3, 4 = channel 1, 2, 3, 4</td>
</tr>
<tr>
<td></td>
<td>EDID</td>
<td>Display information only</td>
</tr>
<tr>
<td>VIDEO</td>
<td>Video Input</td>
<td>DVI / VGA (all channels)</td>
</tr>
<tr>
<td></td>
<td>Brightness</td>
<td>58.2% (all analog channels)</td>
</tr>
<tr>
<td></td>
<td>Contrast</td>
<td>63.5% (all analog channels)</td>
</tr>
<tr>
<td></td>
<td>Horiz. Position</td>
<td>auto (all channels)</td>
</tr>
<tr>
<td></td>
<td>Vert. Position</td>
<td>auto (all channels)</td>
</tr>
<tr>
<td></td>
<td>Screen width</td>
<td>+0 (all channels)</td>
</tr>
<tr>
<td></td>
<td>Phase</td>
<td>+0 (all channels)</td>
</tr>
<tr>
<td></td>
<td>Format</td>
<td>No (all channels)</td>
</tr>
<tr>
<td>COMPUTER</td>
<td>Keyboard</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Mouse</td>
<td>N/A</td>
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<tr>
<td></td>
<td>Reset PS/2</td>
<td>N/A</td>
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<tr>
<td></td>
<td>Change EDID / DDC</td>
<td>No</td>
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<tr>
<td>HELP</td>
<td>Command</td>
<td>N/A (Lists available keyboard commands)</td>
</tr>
<tr>
<td></td>
<td>About</td>
<td>N/A (Displays unit information, version)</td>
</tr>
<tr>
<td></td>
<td>Contact</td>
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## Appendix D. Supported Video-In Formats

<table>
<thead>
<tr>
<th>Mode</th>
<th>Resolution</th>
<th>Rate Analog</th>
<th>Rate Digital</th>
<th>Mode</th>
<th>Resolution</th>
<th>Rate Analog</th>
<th>Rate Digital</th>
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<tbody>
<tr>
<td>CGA</td>
<td>640 x 350</td>
<td>85</td>
<td>85</td>
<td>HDTVp</td>
<td>1280 x 720</td>
<td>-</td>
<td>60</td>
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<tr>
<td>CGA</td>
<td>640 x 400</td>
<td>85</td>
<td>85</td>
<td>WXGA</td>
<td>1280 x 768</td>
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<tr>
<td>EGA</td>
<td>720 x 400</td>
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<td>70</td>
<td>WXGAp</td>
<td>1366 x 768</td>
<td>-</td>
<td>22-60</td>
</tr>
<tr>
<td>EGA</td>
<td>720 x 400</td>
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<td>85</td>
<td>UXGA</td>
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<tr>
<td>VGA</td>
<td>640 x 480</td>
<td>60</td>
<td>22-60</td>
<td>UXGA</td>
<td>1280 x 960</td>
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<tr>
<td>VGA</td>
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<td>VGA</td>
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<td>SXGA</td>
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<td>22-60</td>
<td>UXGA</td>
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<td>SUN</td>
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<td>HDTVp</td>
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</tbody>
</table>