

FIELD-READY



O R I O N
20

USER MANUAL



Z Microsystems

Regulatory

FCC INFORMATION



WARNING



TO PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. ALSO, DO NOT USE THIS UNIT'S POLARIZED AC PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLETS UNLESS ALL THREE PRONGS CAN BE FULLY INSERTED.

1. Use the power and video cables supplied with the Orion to help prevent interference with radio and television reception. The use of cables and adapters may cause interference with electronic equipment in the vicinity of this unit.

2. This equipment has been tested and found to comply with the limits for Class "A" digital devices, pursuant to certain limits imposed by Part 15 of the FCC

rules. These limits are designed to provide



operate the equipment.

reasonable protection against harmful interference in when equipment is operated in commercial environments. 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.

3. Operation of this equipment in a residential area is likely to cause interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by Z Microsystems could void user's authority to



CAUTION



RISK OF ELECTRIC SHOCK - DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK OF UNIT). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.



This symbol warns the user that insulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any part inside this unit.



This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included. Therefore it should be read carefully in order to avoid any problems.

Contents

STARTING POINT	4	TROUBLESHOOTING	18
Shipment Contents	4	SAW Touch Panel	20
User Manual	4		
System Requirements	4	SPECIFICATIONS	23
Product Description	5	Supported Video Modes	24
Tools Required	6		
Precautions	6	WARRANTY	26
INSTALL ORION	7	SUPPORT	29
Drawings	7	Further Help	29
Rear Panel Connectors	8	Replacing Parts	30
		Providing Feedback	30
MONITOR	9		
Controls	9		
ON-SCREEN MENU	11		
Main Menu Navigation	11		
Brightness & Contrast Menu	12		
Contrast RGB Submenu	12		
Color & Gamma Menu	13		
Color RGB Submenu	13		
Gamma RGB Submenu	14		
Position, Size & Focus Menu	14		
OSD Position & Language Menu	15		
OSD Position Submenu	15		
Language Submenu	16		
All Reset Submenu	16		
Resolution, Hsync & Vsync Menu	17		

Starting Point

Congratulations on selecting a rugged field-ready Orion 20

SHIPMENT CONTENTS

The Orion shipping box contains the following:

- The Orion FPD
- User Manual

Remember to save your original shipping container and packing material to transport or ship the Orion.

USER MANUAL

The User Manual is also available on the Z Microsystems web site (www.zmicro.com).

We recommend you read this manual as follows:

Carefully follow the instructions in the Installation chapter for hookup and initial control settings.

Refer to the On-Screen Menu chapter for a complete description of all the user controls, and the Troubleshooting chapter for correcting any unforeseen problems with the system.

The Specification chapter is provided for quickly finding technical information about the Orion.

SYSTEM REQUIREMENTS

The Orion works with any computer system that provides industry standard screen formats from 640 x 480 to 1280 x 1024, with up to 85 Hz vertical sync. Required input power is AC 90 - 264 VAC @47 - 440 Hz with a power consumption of 85 Watts. A serial port (COM port) from a host computer will be needed when the touchscreen function is used.

Starting Point

PRODUCT DESCRIPTION



The Orion 20 is a thin, lightweight, rugged direct-mount liquid crystal display.

Designed to replace bulky power guzzling 17" to 21" CRT's.

It has a 20.1" diagonal active display area, featuring up to 1280 x 1024 pixel resolution.

The Orion 20 display plugs-and-plays with workstations and PCs.

With active-matrix LCD technology to provide superior color, the lightweight aluminum construction and sharper resolution is perfect for shipboard, airborne, field deployments, industrial or lab applications where high resolution as

well as weight and size are a driving factor.

Each Orion 20 features a transparent SAW TouchScreen over the FPD area, front eight button control panel, and low power usage that extends the life of the monitor as well as emanation protection that make it less susceptible to electromagnetic interference.

Modulated Fan Option

In order to maintain proper cooling of the display and its electronics, the Orion 20 monitor includes a variable speed fan that turns on when the monitor control electronics temperature rises to 30° C. The speed of the fan increases gradually, as the temperature rises from 30° C up through 50° C.

Starting Point

TOOLS REQUIRED

Required Tools and Equipment for Mechanical Installation

- Flat head screwdriver



DANGER: To avoid shock hazard:

- *Do not remove the covers around the Orion.*
- *Do not connect or disconnect the Orion during an electrical storm.*
- *The power cord plug must be connected to a properly wired and grounded power outlet.*
- *Any equipment to which the Orion will be attached must also be connected to properly wired and grounded power outlets.*

PRECAUTIONS



NOTE: For the fastest and easiest installation of the Orion, follow these steps in the sequence they are presented.

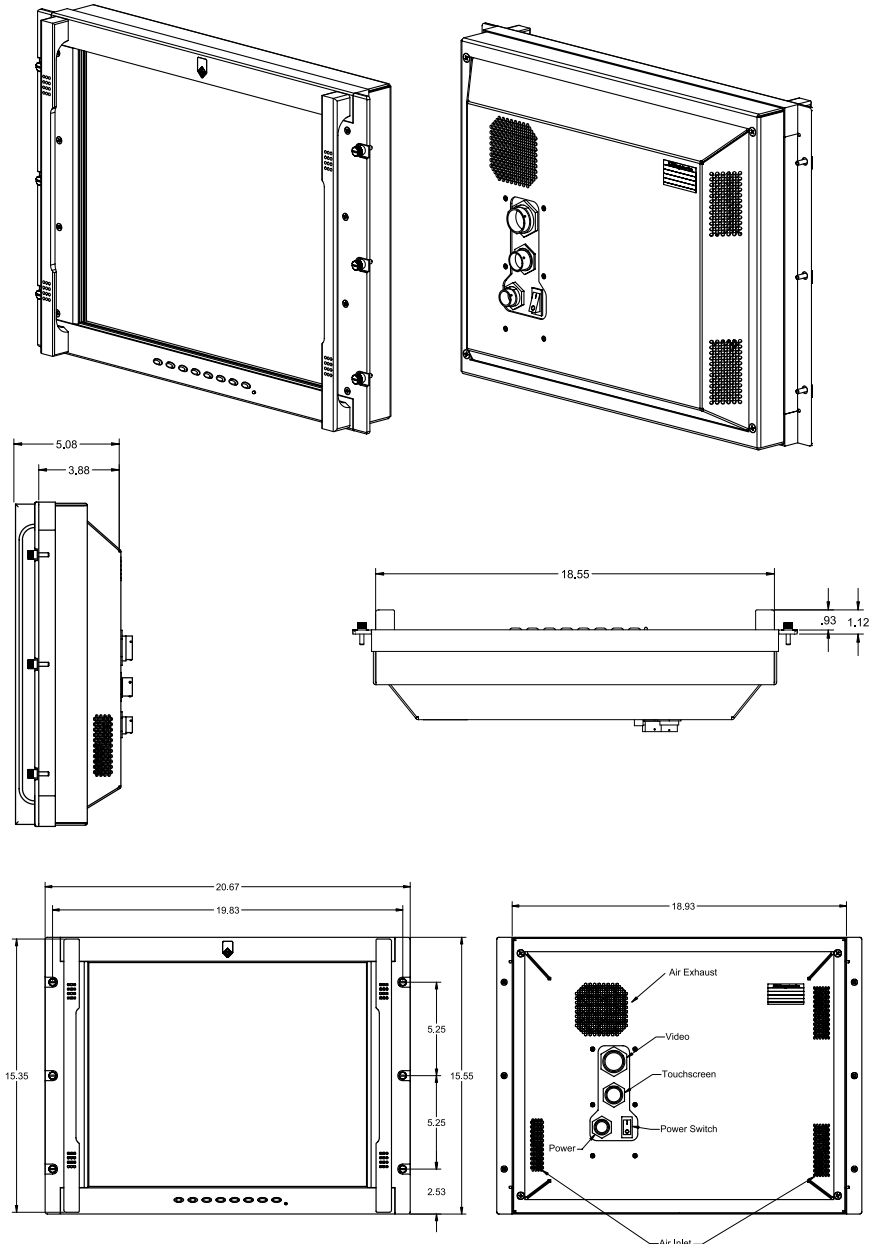
In preparation to install the Orion, take the following precautionary steps:

- Turn off the electrical power to your computer.

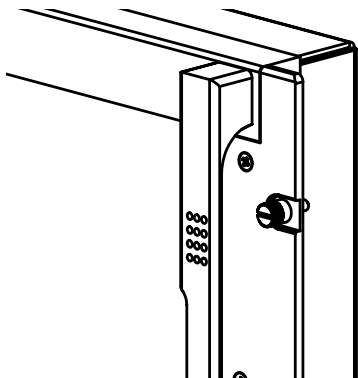
Install Orion

DRAWING

The following drawing shows the Orion 20 from the back, side, top and front.

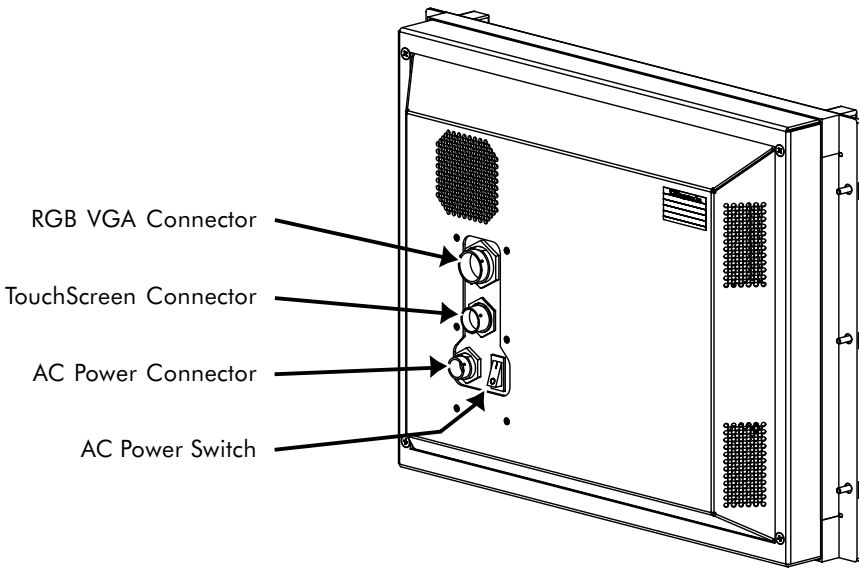


Install Orion



Six captive 10-32 screws secure the Raytheon Orion 20 to the rack.

REAR PANEL CONNECTORS




CONTROLS

The Orion features push-button controls on the lower front of the display screen to adjust the brightness of the display, to change the image positioning on the screen, and to refine the screen image.

The Orion control buttons allow the user to control image position, clarity and to power on and off the monitor.

This section explains how to use the Orion control buttons to adjust the clarity of the display and image position on the screen. In particular it discusses the function of each of the push-button controls.

To complete the setup of the Orion, use the following controls to fine tune the image on the screen:

There are three LED lights on the right of the control panel. The top two LEDs are not used. The bottom LED is labeled . The lighted functions are:

 -- Video (green/ orange)

Green -- power and signal

Orange -- power and no signal

Off -- Standby mode

Monitor

CONTROLS



BUTTONS (from left to right)



EXIT

Exit "On-Screen Menu"



DOWN

Move down through menu functions.



UP

Move up through menu functions.

Menu

MENU

Activate "On-Screen Menu". Also, use this button to activate the highlighted function.

Reset

RESET

Reset the menu function that is currently selected.



LEFT

Move left through menus or adjust value for functions.



RIGHT

Move right through menus or adjust value for functions.

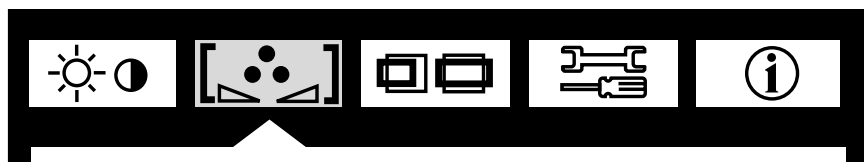


POWER

Apply power to the monitor.

On Screen Menus

MAIN MENU NAVIGATION

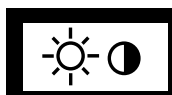


Use the Right and Left buttons to navigate through the main menus in the heading of the On Screen Menu display.



Use the Up and Down button to navigate the various menus or access submenus for each of the five heading menus.

These Heading Menus are:



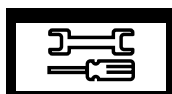
Brightness and Contrast Menu and access point for the Contrast RGB Submenu.



Color and Gamma Menu and access point for the Color RGB and Gamma RGB Submenus.



Position, Size and Focus Menu.



OSD Position and Language Menu and access point for OSD Position, Language, and All Reset Submenus.



Resolution, Hsync, Vsync and Input Mode Menu.

On Screen Menus

BRIGHTNESS AND CONTRAST MENU



Brightness

- < Reduces the Brightness Level
- > Increases the Brightness Level

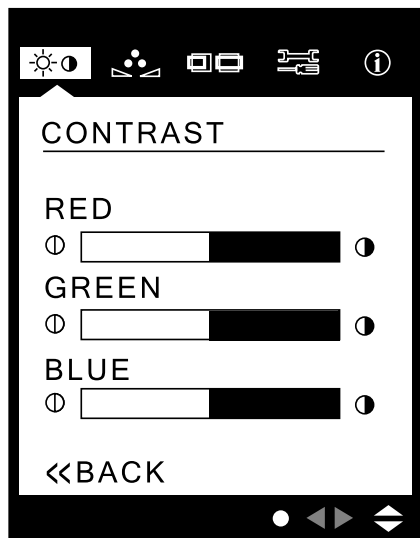
Contrast

- < Reduces the Contrast Level
- > Increases the Contrast Level

RGB>>

Depress the "Menu" button to enter the "Contrast RGB Submenu".

CONTRAST RGB SUBMENU



Red

- < Reduces the Red Contrast Level
- > Increases the Red Contrast Level

Green

- < Reduces the Green Contrast Level
- > Increases the Green Contrast Level

Blue

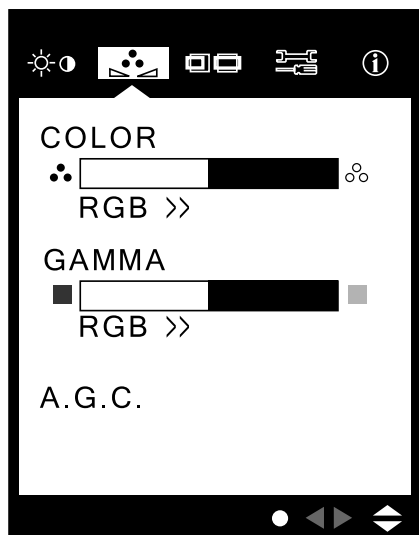
- < Reduces the Blue Contrast Level
- > Increases the Blue Contrast Level

<<BACK

Depress the "Menu" button to go back to the top menu level.

On Screen Menus

COLOR AND GAMMA MENU



Color

- < Reduces the Color Level
- > Increases the Color Level

RGB>>

Depress the "Menu" button to enter the "Color RGB Submenu".

Gamma

- < Reduces the Gamma Level
- > Increases the Gamma Level

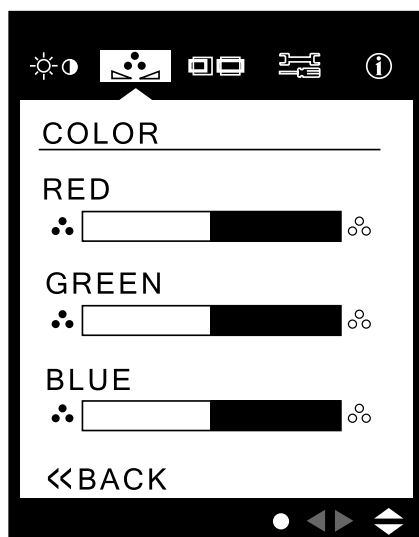
RGB>>

Depress the "Menu" button to enter the "Gamma RGB Submenu".

A.G.C.

Depress the "Menu" button to activate the A.G.C. function. (Automatic Gain Control)

COLOR RGB SUBMENU



Red

- < Reduces the Red Color Level
- > Increases the Red Color Level

Green

- < Reduces the Green Color Level
- > Increases the Green Color Level

Blue

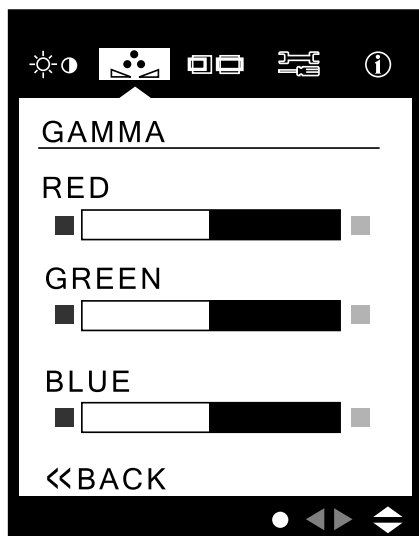
- < Reduces the Blue Color Level
- > Increases the Blue Color Level

<<BACK

Depress the "Menu" button to go back to the top menu level.

On Screen Menus

GAMMA RGB SUBMENU



Red

- < Reduces the Red Gamma Level
- > Increases the Red Gamma Level

Green

- < Reduces the Green Gamma Level
- > Increases the Green Gamma Level

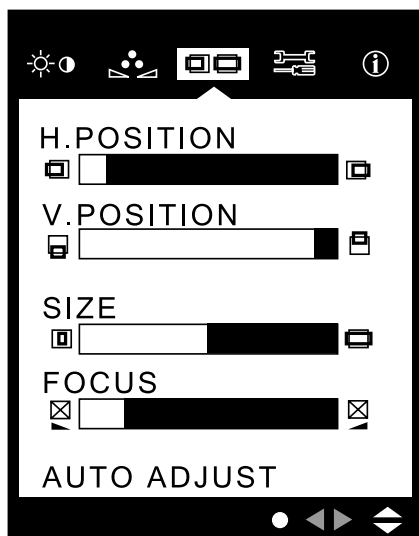
Blue

- < Reduces the Blue Gamma Level
- > Increases the Blue Gamma Level

<<BACK

Depress the "Menu" button to go back to the top menu level.

POSITION, SIZE AND FOCUS MENU



H. Position

- < Moves the image towards the left
- > Moves the image towards the right

V. Position

- < Moves the image downward
- > Moves the image upward

Size

- < Compresses the image horizontally
- > Stretches the image horizontally

Focus

Use the < button or the > button to adjust the image for maximum clarity.

Auto Adjust

Depress the "Menu" button to activate the Auto Adjust function.

On Screen Menus

OSD POSITION AND LANGUAGE MENU



OSD Position

Depress the "Menu" button to enter the OSD Position Submenu.

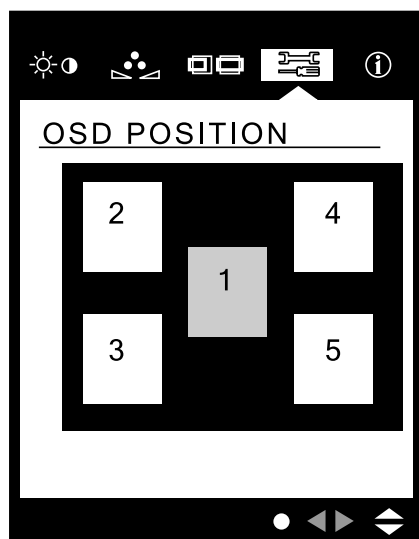
Language

Depress the "Menu" button to enter the Language Submenu.

All Reset

Depress the "Menu" button to enter the "ALL RESET" submenu. ["ALL RESET" returns all of the On Screen Menu functions to the default settings.]

OSD POSITION SUBMENU

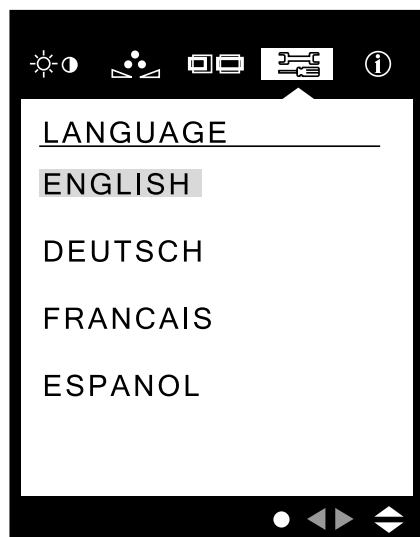


Use the < button or the > button to adjust the OSD Position.

Use the "Menu" button to save the setting and/or to go back to the top level.

On Screen Menus

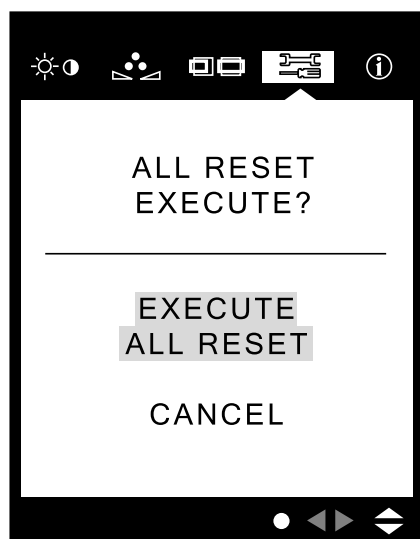
LANGUAGE SUBMENU



Use the < button or the > button to change the Language setting.

Use the "Menu" button to save the setting and/or to go back to the top level.

ALL RESET SUBMENU

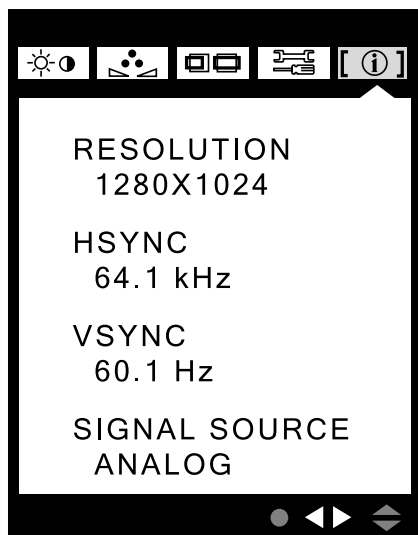


Depress the "Menu" button to activate the "ALL RESET" function.

To return to the top menu level, use the **V** or **Λ** buttons to highlight "CANCEL", then depress the "Menu" button to go back to the top menu level.


On Screen Menus

RESOLUTION, HSYNC, VSYNC AND INPUT MODE MENU



Displays the current Resolution, Hsync frequency, Vsync frequency, and Input Mode.

Troubleshooting



ANALOG
DIGITAL - NO SIGNAL -

1. Input signal change. Everytime the unit is powered on this message is displayed.

SIGNAL SOURCE

NO SIGNAL

2. NO SIGNAL: "NO SIGNAL" is displayed for four seconds when there is no video input.



OUT OF RANGE

H 95.0 kHz

V 60.0 Hz

PRESS EXIT KEY

3. OUT OF RANGE: Each frequency is displayed for four seconds when the Horizontal and Vertical synch signals are outside the range of the monitor.

Troubleshooting

NO IMAGE ON DISPLAY

What is the color of the Standby LED?

Black -- No power or in Standby mode:

- Make sure the power cable is plugged in.
- Connect the power cable to a 110 V outlet, which is turned ON.
- Wake up the display by pressing the Power button.

Orange -- There is power, but no video signal:

- Make sure the video cable is plugged into the VGA Video connector.
- Make sure there is a video signal coming out of the computer.

Green -- There is power and there is a video signal:

- Make sure that the video signal coming out from the computer is not a black image.
- Possible hardware failure.
Contact Z Microsystems
Customer Support.

Troubleshooting

SAW TOUCH PANEL

OPERATION

The SAW (Surface Acoustic Wave) Touch Panel incorporates a glass overlay with transducers that generate ultrasonic waves that are directed over the front surface of the glass. When touched, a portion of the wave traveling across the screen is absorbed. The received signal is compared with a stored digital map, the change recognized and a coordinate calculated.

TOUCH PANEL NOT RESPONDING WHEN TOUCHED

Verify that the pointing device (if not a finger) is soft enough to absorb the signal.

- A finger, soft eraser or rubber stylus will work.
- A hard eraser, pen or metal stylus will not absorb enough of the signal and the touch panel will not respond.

Verify that the SAW Panel driver is loaded in the host computer.

- If loaded, the driver will be found in the "Control Panel" directory.
- If not loaded, install the driver.

Troubleshooting

SAW TOUCH PANEL

TOUCH PANEL NOT RESPONDING WHEN TOUCHED

After verifying that the “ELO Touch Screen” driver is installed, verify that the touch panel is responding to the host computer.

- From the ELO Touch Screen Program, select the “Diagnostic” tab.
- If the touch panel is responding, a check mark will be in the “Controller Information” box next to the COM port menu.
- If it is not, a red X will appear next to the COM port menu.
- If a red X appears, verify that the appropriate COM port has been selected and that the serial cable is connected to the touchscreen port of the display unit.
- If the COM port matches the connection of the host computer and you still get an X when initialized, then verify that the serial cable type is a “Straight Connect” not “Null Modem” type.
- If all of the above is correct then there is something wrong with the touch panel, contact Z Microsystems Customer Service at (858) 657-100 x232 or fill out an RMA Request Form at www.zmicro.com/rma-request.htm

Troubleshooting

SAW TOUCH PANEL

CURSOR NOT RESPONDING

If the cursor does not move under the pointer when touched, calibration of the touch panel may be required.

Note: whenever the monitor is connected to a new or different host computer, calibration of the touch panel should be performed. Calibration is performed as follows:

1. From the Control Panel Directory, select the ELO Touch Screen Program on the host computer.
2. Select the General tab
3. Press the "Align" button at bottom of menu.
4. Follow on-screen instructions

Specifications

RAYTHEON ORION 20

SIZE

Display Area	399.36 (H) x 319.49 (V) mm
Drive System	a-Si TFT active matrix
Image Size	1280 pixels by 1024 pixels
Pixel Configuration	RGB Vertical Stripe
Video Input	Analog RGB 0.7Vp-p/75 Ohm
Separate Sync	TTL level
Composite Sync	TTL level
Sync on Green	Video 0.3 V Negative
Horizontal Sync	Positive/Negative
Vertical Sync	Positive/Negative
Horizontal Frequency	31 kHz to 80 kHz
Vertical Frequency	60 Hz to 85 Hz
Pixel Frequency	25 MHz to 135 MHz
Color Palette	16.7 million colors
Contrast Ratio	250:1 typical
Pixel Pitch	0.312 mm x 0.312 mm
Luminance	250 cd/m2 typical
Diagonal Dim.	20.1"
Horizontal	399.36 mm
Vertical	319.49 mm
Viewing Angle H.	85° typical, left side, right side
Viewing Angle V.	85° typical, up side, down side
Optical Resp. Time	25ms typical, "Black" to "White" (0% to 90%)
Backlight	Direct light type: 12 cold cathode florescent lamps with an inverter

POWER

Power Consumption	85 W typical
Power Supply	90 - 264 VAC input @ 47 - 440 Hz

Specifications

SUPPORTED VIDEO MODES

No.	Display size	Vsync (Hz)	Hsync (kHz)	DOTCLK (MHz)	V Pulse (H)	V B.Porch (V)	H Pulse (DOTCLK)	H B.Porch (DOTCLK)	Sync logic V.H	Remarks
1	640×480	59.992	31.469	25.175	2	33	96	48	-, -	VGA
2	720×400	70.087	31.469	28.322	2	35	108	45	+, -	VGA TXT
3	800×600	60.317	37.879	40.000	4	23	128	88	+, +	VESA
4	640×480	66.667	35.000	30.240	3	39	64	96	SonG type A	Macintosh
5	640×480	75.000	37.500	31.500	3	16	64	120	-, -	VESA
6	720×400	85.039	37.927	35.500	3	42	36	144	+, -	VESA
7	640×480	85.008	43.269	36.000	3	25	48	112	-, -	VESA
8	1024×768	60.004	48.363	65.000	6	29	136	160	-, -	VESA
9	800×600	75.000	46.875	49.500	3	21	80	160	+, +	VESA
10	832×624	74.565	49.735	57.283	3	39	64	224	SonG type A	Macintosh
11	800×600	85.061	53.674	56.250	3	27	64	152	+, +	VESA
12	1024×768	70.069	56.476	75.000	6	29	136	144	-, -	VESA
13	1024×768	75.029	60.023	78.750	3	28	96	176	-, -	VESA
14	1280×1024	60.020	63.981	108.000	3	38	112	248	+, +	VESA
15	1152×900	66.003	61.846	94.500	4	31	128	208	CS(-)	SUN
16	1280×1024	67.189	71.691	117.000	8	33	112	224	CS(-)	SUN
17	1152×900	76.149	71.809	108.000	8	33	128	192	CS(-)	SUN
18	1280×1024	75.025	79.976	135.000	3	38	144	248	+, +	VESA

Specifications

TOUCHSCREEN SPECIFICATIONS

Technology	Surface Acoustic Wave
Resolution	4096 x 4096
Conversion Time	Approximately 10.4 ms per coordinate set
Serial I/O Interface	RS-232, DCE configuration, 8 Data Bits, 1 Stop Bit, No Parity, Full Duplex

CABLING

Display Cable	6' cable, HD 15 (optional 13W3 or BNC)
Power Cable	6' cable, IEC

TOTAL PACKAGING SIZE

Size	15.55" H x 20.67" W x 5.08" D
------	-------------------------------

WEIGHT

Total Assembled Weight	23 lbs.
------------------------	---------

ENVIRONMENTAL

Operating Temp.	0 to +50 Celsius
Nonoperating Temp.	-20 to +60 Celsius
Operating Humidity	5% to 95% Non-condensing
Non-operating Humidity	5% to 95% Non-condensing
Non-operating Altitude	0 to 40,000 ft.
Operating Altitude	0 to 10,000 ft.

RELIABILITY SPECIFICATIONS

MTBF	20,000 hrs with backlight change at 10,000 hrs.
QA Compliance	ISO 9000
Maintainability	<30 minutes

REGULATORY

EMI/RR	MIL-STD-461C (pending); Class A1B Equipment
--------	---

Warranty

1 YEAR STANDARD WARRANTY

Extent of Limited Warranty

1. Z Microsystems, Inc. (Z Micro) warrants to the end-user that Z Micro products will be free from defects in materials and workmanship for a specified time after the date of purchase. The duration of this limited warranty is stated above. Certain additional conditions and limitations of Z Micro's warranty are stated in the User Guide. The warranty on software products applies only to the media upon which the product is recorded. Z Micro does not warrant the operation of any product to be uninterrupted or error free.
2. Z Micro's limited warranty covers only those defects which arise as a result of normal use of the product, and do not apply to any: Improper or inadequate maintenance; Hardware add-in boards, software, or interfacing not supplied by Z Micro; Unauthorized modification or misuse; Operation outside the product's environmental specifications; or improper maintenance.
3. If Z Micro receives, during the applicable warranty period, notice of a defect in a hardware product which is covered by Z Micro's warranty, Z Micro shall either repair or replace the product, at its discretion. Any replacement product may be either new or like new, provided that it has functionality at least equal to that of the product being replaced.
4. If Z Micro is unable to repair or replace, as applicable, a defective product which is covered by Z Micro's warranty, Z Micro shall, within a reasonable time after being notified of the defect, refund the purchase price for the product, provided the product is returned.
5. This Limited Warranty Statement gives the customer specific legal rights. You may also have other rights which vary from state to state in the United States, from province to province in Canada, and from country to country elsewhere in the world.
6. Z Micro offers Extended Warranties and Service Plans. For more information, call Customer Service at 1800-524-7926 x232.

Limitations of Warranty

1. To the extent that this Limited Warranty Statement is inconsistent with the law of the locality where the customer uses the Z Micro product, this Limited Warranty Statement shall be deemed modified to be consistent with such local law. Under such local law, certain limitations of this Limited Warranty Statement may not apply to the customer. For example, some states in the United States, as well as some governments outside the United States (including provinces in Canada), may: Preclude the disclaimers and limitations in this Warranty Statement from limiting the statutory rights of a consumer (for example, Australia and the United Kingdom); Otherwise

Warranty

such limitations; Grant the customer additional warranty rights, specify the duration of implied warranties which the manufacturer cannot disclaim, or not allow limitations on how long an implied warranty lasts.

2. To the extent allowed by local law, the remedies provided in this Warranty Statement are the customer's sole and exclusive remedies.

Limitations of Liability

EXCEPT FOR THE OBLIGATIONS SPECIFICALLY SET FORTH IN THIS WARRANTY STATEMENT, IN NO EVENT SHALL Z MICRO BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER BASED ON CONTRACT, TORT, OR ANY OTHER LEGAL THEORY AND WHETHER ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

FAQ'S -- Frequently Asked Questions

- | | |
|----------------------------|--|
| What equipment is covered? | The packing slip that comes with the equipment lists the equipment covered. |
| What failures are covered? | Any type of workmanship or equipment hardware failures arising from normal use of the equipment is covered. The only exclusions are for problems related to abuse, acts of god, or acts of war. Software problems are not covered. |
| Who do I call? | Telephone or fax the Customer Service Dept. at Z Microsystems:
(858) 657-1000 ext. 232
(858) 657-1001 (fax)
Please have the equipment serial number and a description of the problem ready when you call. It is also handy to know the version of the operating system you are using. |

Warranty

- How long does it take? Your equipment should be returned to you within 30 days of its receipt at the factory. In many cases it will be less (our goal is to have your equipment on its way back within 5 days). However, if the damaged equipment has to be serviced by the original manufacturer (Seagate, NEC, for example), it may take longer.
- Are there any extra costs? The only per incident cost you will incur is **Freight In** to return the equipment to the factory. Your standard warranty covers all of the costs associated with the repair and the return shipment of the covered equipment.

FURTHER HELP

If you are unable to correct any problem yourself, contact:

Z Microsystems at:

(858) 657-1000 x232

Fax: (858) 657-1001

Web Site: <http://www.zmicro.com>

Before calling, please have available as much of the following information as possible:

1. Model and serial number from the label on the monitor.
2. Purchase Order.
3. Description of problem.
4. Computer type and model.
5. System configuration (hardware fitted, etc.).
6. System BIOS version number.
7. Operating System and version number.
8. Display driver version number.
9. Video Adapter type.



NOTE: If possible, stay by the computer. The Z Microsystems Technical Support Representative may wish to go through the problem over the telephone.



NOTE: More help, late-breaking news and details of the latest accessories for these products may be found on the worldwide web at: <http://www.zmicro.com>

Support

REPLACING PARTS

If the Z Microsystems Technical Support Engineer determines that the product needs to be replaced, a Customer Service Representative will issue a Return Material Authorization (RMA) number and return address.

A RMA number is required to return a product to Z Microsystems, regardless of the reason for the return.

The following information is required when returning Z Microsystems products:

1. Model number
2. Serial number
3. Customer ship-to address and any special shipping requirements
4. Specific and detailed description of the problem
5. P.O. Number if out of warranty

PROVIDING FEEDBACK

We value your feedback on our products, their performance, any problems and constructive suggestions. Please send any comments regarding our products in writing to:

Z Microsystems
Customer Service
5945 Pacific Center Blvd.
Suite 509
San Diego, CA 92121-4309

or

<http://www.zmicro.com>
E-Mail: support@zmicro.com



Z Microsystems, Inc.
5945 Pacific Center Blvd., Suite 509
San Diego, CA 92121

Phone: (858) 657-1000

Fax: (858) 657-1001

Web Site: <http://www.zmicro.com>

© 2001 Z Microsystems, Inc. All Rights Reserved



Apollo



Command Console



Quantico



StarGate



Glider



Gemini



Eclipse 17



Z Microsystems

The Leader In
Rugged Displays

www.zmicro.com/products/displays.htm