

**Multi-Tasker™**

MT103-120 is pictured above.

MANUAL PART NUMBER: 400-0185-002

## MT103-118/120

# DUAL 1-IN, 3-OUT VIDEO and S-VIDEO DISTRIBUTION AMPLIFIER CARDS FOR MULTI-TASKER™ ENCLOSURES USER'S GUIDE

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## PRECAUTIONS / SAFETY WARNINGS 1

Please read this manual carefully before using your **MT103-118/120**. Keep this manual handy for future reference. These safety instructions are to ensure the long life of your **MT103-118/120** and to prevent fire and shock hazard. Please read them carefully and heed all warnings.

### 1.1 GENERAL

- Qualified ALTINEX service personnel, or their authorized representatives must perform all service.

### 1.2 INSTALLATION

- To prevent fire or shock, do not expose this unit to rain or moisture. Do not place the **MT103-118/120** in direct sunlight, near heaters or heat radiating appliances, or near any liquid. Exposure to direct sunlight, smoke, or steam can harm internal components.
- Handle the **MT103-118/120** carefully. Dropping or jarring can damage the card.
- Do not pull the cables that are attached to the **MT103-118/120**.
- Insert the card carefully into the slots of the Multi-Tasker™ without bending any edges.
- When removing a card, please make sure that the card to which it is attached is also pulled out simultaneously.

### 1.3 CLEANING

- Clean only the connector area with a dry cloth. Never use strong detergents or solvents, such as alcohol or thinner. Do not use a wet cloth or water to clean the card. Do not clean or touch any component or PCB.

### 1.4 FCC / CE NOTICE

- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

- This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference 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.
- Any changes or modifications to the unit not expressly approved by ALTINEX, Inc. could void the user's authority to operate the equipment.

## ABOUT YOUR MT103-118/120 2

### MT103-118/MT103-120 Dual 1-in 3-out Video & S-Video Distribution Amplifier Card

The **MT103-118/120** is a dual 1-in 3-out Composite (C) Video and S-Video Distribution Amplifier (DA) Card. There is one BNC C-Video input with three BNC C-Video outputs and one S-Video input with 3 S-Video outputs. It is designed for use in Multi-Tasker™ enclosures. When installed in a Multi-Tasker™ enclosure, this DA card enables the connection of a single S-Video and/or Composite video source to up to three displays or recording devices each. On the **MT103-120**, each output may be individually enable or disabled through RS-232 control.

A variety of video signal formats can be accommodated by using multiple DA cards in a Multi-Tasker™ enclosure. For example, two S-Video DA cards can be used to handle the two components of an S-Video signal (Chroma and Luma). To create a component S-Video distribution amplifier, simply install three of the MT S-Video DA cards, one each for the Y, Pr, and Pb (or Y, R-Y, B-Y) signal components. Similarly, the MT S-Video DA series cards can also be used to pass computer video signals: 4 cards for RGBS and 5 for RGBHV.

The **MT103-120** also features Equalization adjustment. The equalization allows the user to adjust the signal when long cable lengths are involved. The Equalization circuitry is good for cable runs up to about 250 feet when a high quality 75 ohm coaxial cabled is used.

## TECHNICAL SPECIFICATIONS 3

FEATURES/ DESCRIPTION	MT103-118/120
<b>GENERAL</b>	
<b>Inputs</b>	
S-Video Connectors	(1) 4-pin Mini-DIN Connector
C-Video Connectors	(1) BNC Connector
<b>Outputs</b>	
S-Video Connectors	(3) 4-pin Mini-DIN Connector

C-Video Connectors	(3) BNC Connector
<b>Approvals</b>	CE/FCC

Table 1. **MT103-118/120** General

MECHANICAL	MT103-118/120
Enclosure Slots Required	One
Weight	0.43lb (0.19kg)
Shipping Weight	1 lb. (0.42kg)
Connector Panel	Black
T° Operating	10°C-40°C
T° Maximum	0 to 50°C
Humidity	90% non-condensing
MTBF (calc.)	55,000 hrs

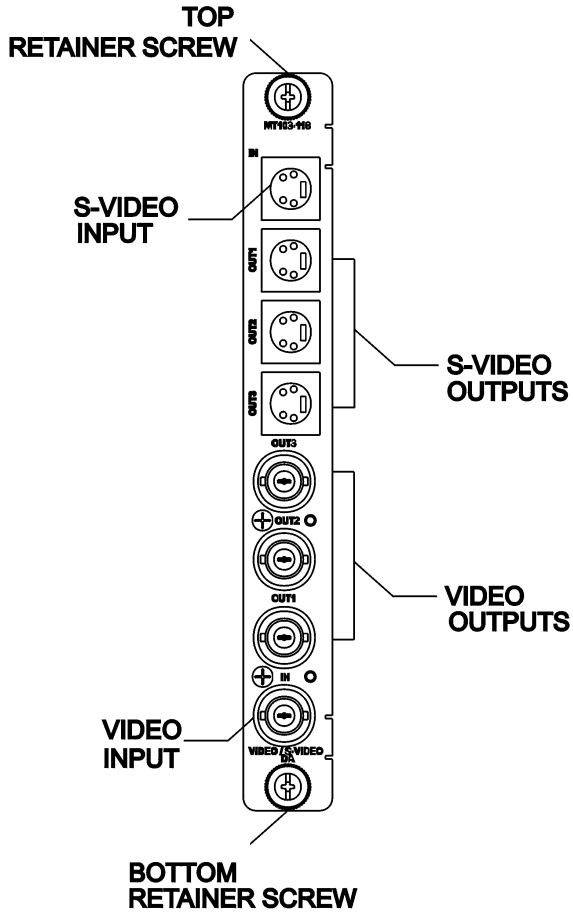
Table 2. **MT103-118/120** Mechanical

ELECTRICAL	MT103-118/120		
<b>Input Signals</b>			
Analog	+/- 1.5V(signal: 1.5V p-p)		
Sync	0 to +5V		
Impedance	75 Ohms		
Type	Differential		
Return Loss	-38dB @ 50MHz		
Maximum DC Offset	10mV		
<b>Output Signals</b>			
Gain	10.5 (+/-5%)		
Impedance	75 Ohms		
Propagation Delay (Sync)	4nS max.		
Rise/Fall Time (Sync)	9nS max.		
Differential Phase Error	01°, @ 4.5 MHz		
<b>Bandwidth</b>			
MT103-118/120	350 MHz @-3dB		
<b>Power</b>			
Power (from Enclosure)	+6V	-6V	<b>Power Consumption</b>
MT103-118/120	200mA	200mA	2.4 watts
<b>Optional Accessories</b>			
MS8102CA	6ft, 15-pin HD Male to 5-BNC Male		
MS8112CA	6ft, 15-pin HD Female to 5-BNC Male		
MS8132MG	1ft, 4-pin mini DIN Male to 2-BNC Male		
MS8133MG	1ft, 4-pin mini DIN Female to 2-BNC Male		

Table 3. **MT103-118/120** Electrical

## PRODUCT DESCRIPTION

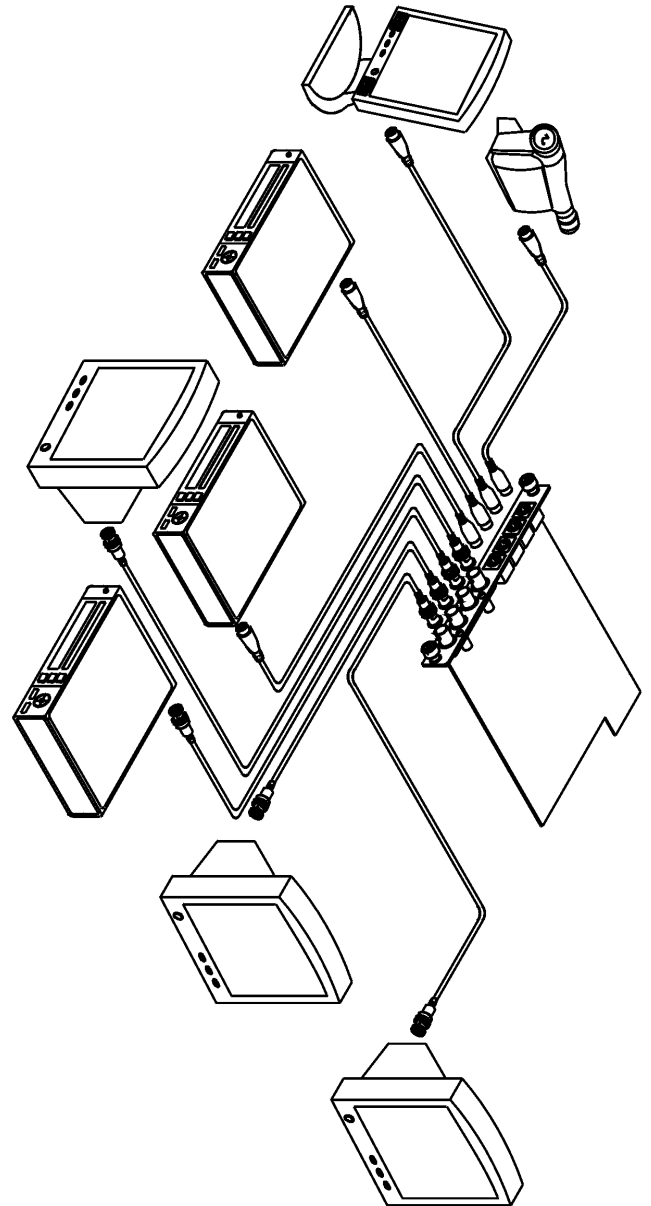
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## APPLICATION DIAGRAM

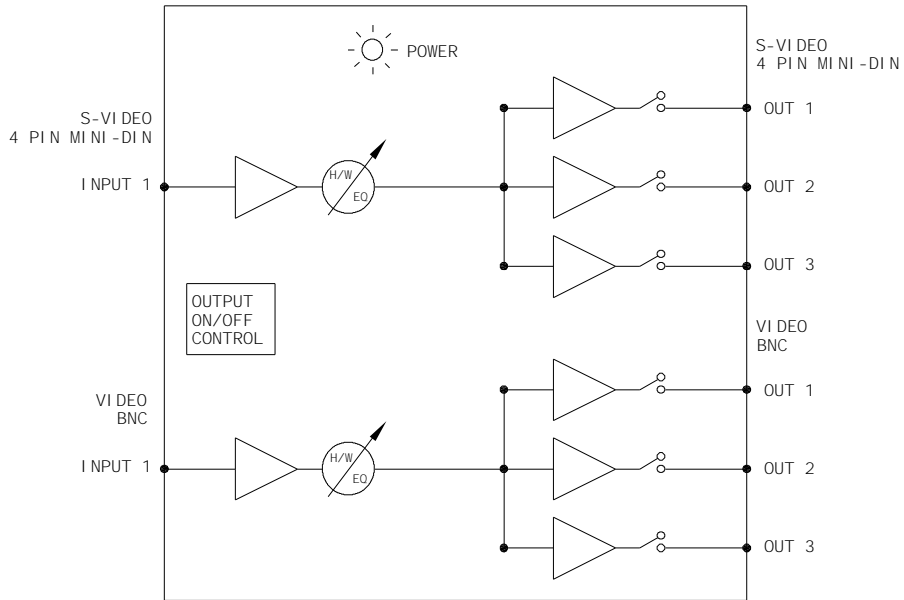
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Application Diagram 1

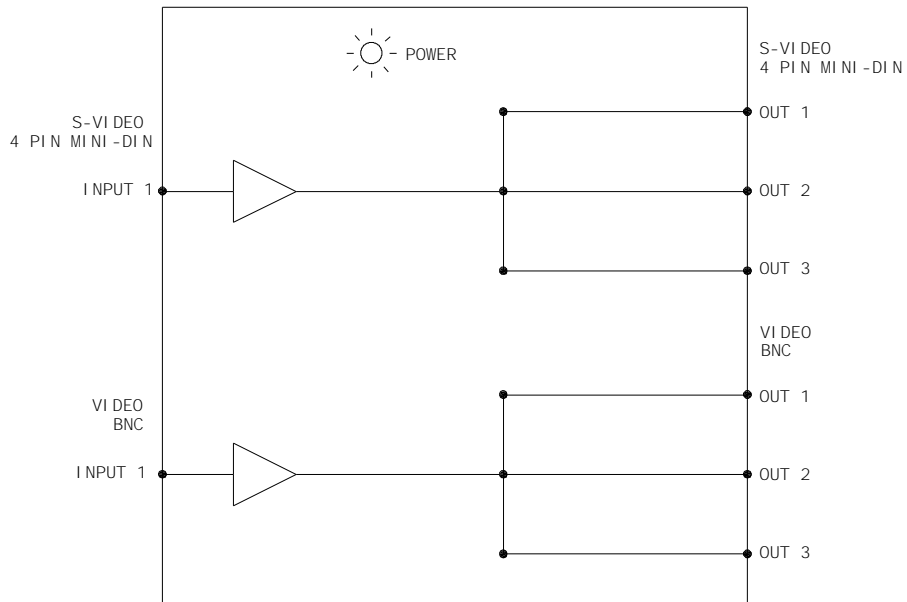


## Application Diagram 2: Internal View of MT103-118/120

### MT103-120



### MT103-118



## INSTALLING YOUR MT103-118/120 6

- Step 1.** Slide the **MT103-118/120** into an available slot in the Multi-Tasker™ Enclosure in order to connect to the bus. Make sure that the **MT103-118/120** card fits into place. Secure the card to the Multi-Tasker™ by tightening the retainer screws located on the top and bottom of the **MT103-118/120** card.
- Step 2.** The LED on the card panel will turn red indicating that the card is in full operation. An LED that is blinking red indicates that the card is experiencing a problem. If the LED is blinking, see Troubleshooting Guide in section 8.
- Step 3.** Connect a coaxial cable from the video source to the input connector of the **MT103-118/120**. Connect the output connectors of the **MT103-118/120** to the display devices through a coaxial cable.
- Step 4.** Starting from the left, identify the slot number where the **MT103-118/120** card is plugged into the Enclosure and note that it is for RS-232 control.

## OPERATION (MT103-120 ONLY) 7

### 7.1 RS-232 CONTROL

The **MT103-120** has many advanced remote control capabilities when used in the Multi-Tasker™ Enclosure and which are accessible through standard RS-232 communication. The actual controlling can be accomplished through a computer control system or any other device capable of sending RS-232 commands.

### 7.2 RS-232 INTERFACE

The RS-232 commands for the **MT103-120** are in a simple ASCII character format.

1. Square brackets “[ ]” are part of the command.
2. Use uppercase letters for all commands.

After processing a command, an OK or ER string will be returned as feedback if "F" is included at the end of a command string or if the unit ID is zero.

Commands such as [ON], [OFF], and [IO] that end in "S" will be saved into memory. Commands not ending in "S" will still be executed but will not be restored when the system is reset (power off & power on again).

### 7.3 DESCRIPTION OF COMMANDS

Each command consists of three parts: function, card ID, and unit ID. [Function, Card ID, Unit ID].

#### Example:

[VERC3U2]

VER = function  
C3 = Card ID  
U2 = Unit ID

For function, see a detailed explanation under each command description.

Card ID is an assigned value from 1 to 19 (1 to 8 or 1 to 4 depending on which enclosure is being used); based on which slot the card is put in. Card ID 0 (C0) is used for the controller (see user's guide for the MT100-100). Changing the position of a card will significantly affect the commands recorded on software definitions or a third party control system.

Unit ID has a value from 0 to 9. Unit ID 0 should be used for single unit operation. If the Unit ID is set to 0, then each command can be used without Ui (use command [SETU0]; see user's guide for the MT100-100).

#### Example:

[VERC3]: for unit ID zero  
[VERC3Ui]: for unit ID other than zero  
[VERC3]: equivalent to [VERC3U0]

#### 1. [VER]

This command displays the software version and card type for the **MT103-120** card.

Command Format: [VERCnUi]

Cn = card ID (n = slot # from 1 to 19)  
(1-8 for MT100-101 or 1-4 for MT100-106)

Ui = Unit ID (i = # from 0 to 9) (refer to the MT100-100 user's guide for explanation)

### Example:

If one **MT103-120** card is in slot #2 of unit 3:

When sending command [VERC2U3], the Multi-Tasker™ Enclosure will return feedback as

MT103-120 690-0125-010

MT103-120 = card type  
690-0125-010 = software version

## 2. [C]

This command receives the status of the card.

Command Format: [CnUi]

Cn = card ID (n = a slot # from 1 to 19)  
(1-8 for MT100-101 or 1-4 for MT100-106)

Ui = unit id (i = 0 to 9) (refer to the MT100-100 user's guide for explanation)

### Example:

If one **MT103-120** card is in slot #2 of unit 3 with S-Video outputs 1 and 2 ON and Video Output 3 ON:

When sending the command [C2U3], the Multi-Tasker™ Enclosure will return feedback as

SVID: 1,2 CVID: 3 C02

SVID: 1,2 = S-Video Outputs 1, 2 are enabled  
CVID: 3 = Video Output 3 is enabled  
C02 = card is in slot 2

If there is no card in slot #2 of unit 3, sending the [C2U3] command will not return any feedback.

## 3. [CiS]

This command saves the current status of the card's output enable configuration. This configuration will be restored after system is reset or powered off then on.

Ci = card number

S = save configuration

If S-Video Outputs 1,2,3 and Video Outputs 1,2,3 are enabled, the feedback after sending the command [C4S], for slot 4, would be:

SVID: 1,2,3 CVID: 1,2,3 C04 Saved

## 4. [ONnSCi]

This command enables one or more of the S-Video outputs to be turned ON.

Sending the command [ON12SC2] will enable S-Video outputs 1 and 2 on card 2.

See command 8 [ON] for further details.

## 5. [ONnVCi]

This command enables one or more of the Video outputs to be turned ON.

Sending the command [ON12VC2] will enable Video outputs 1 and 2 on card 2.

See command 8 [ON] for further details.

## 6. [OFFnSCi]

This command disables one or more of the S-Video outputs.

Sending the command [OFF12SC2] will disable, turn OFF, S-Video outputs 1 and 2 on card 2.

See command 9 [OFF] for further details.

## 7. [OFFnVCi]

This command disables one or more of the Video outputs

Sending the command [OFF12VC2] will disable, turn OFF, Video outputs 1 and 2 on card 2.

See command 9 [OFF] for further details.

## 8. [...S] – Save

This command will save the configuration command being sent in memory. When sending the command [ON1VC4S], after reset or power up, Video output 1 on C4 will be enabled.



## 9. [...F] – Feedback

After processing a command, an OK or ER will be returned as feedback if "F" is included at the end of a command string or if the unit ID is zero.

## 10. [...P] – Path

This command will set the path for the output, but it is not active until the switch command, [SW], is executed. Commands ending in "P" are not executed immediately. The path for outputs on multiple cards or the same card can be loaded. See examples in ON and OFF commands.

## 11. [SW] – Switch

The switch command immediately connects inputs and outputs, which were previously set with the path command on this card or any other cards in the Enclosure.

### Example:

```
[ON12VC6U3P]
[ON23SC7U3P]
[SW]
```

The system will return feedback as OK if the unit ID is zero.

## 12. [HELP]

This command displays all information available for user Multi-Tasker interface commands.

## 13. [WR]

This command groups multiple cards in the Enclosure. Each unit contains a maximum of nine groups.

Command Format: [WRCn...GkUi]

Cn = card ID No. (n = slot # from 1 to 19)  
(1-8 for MT100-101 or 1-4 for MT100-106)

Gk = group number (k = # from 1-9)

Ui = unit number (i = # from 0-9)

### Example:

To group card #1, 2, and 3 as group 5 of unit #1, send the [WRC1C2C3G5U1] command.

After executing this command, card 1, 2, and 3 will be grouped together as group 5 of unit 1

## 14. [CLR]

This command clears the members for a single group or for all nine groups.

Command Format: [CLRGkUi]

Gk = group number (k = # from 1-9)

Ui = unit number (i = # from 0-9)

### Example:

- 1) To clear group #1, send the [CLRG1U1] command. This command clears the members for the specified group only.
- 2) To clear all groups of unit 1, send the [CLRG[ U1] command.

## 15. [G]

This command is used to request group data. With the command, the user can identify which input or output of a particular group is on.

Command Format: [GkUi]

Gk = group number (k = # from 1-9)

Ui = unit number (i = # from 0-9)

### Example:

If group 1 has DA Cards with output 1 and 2 on, while group 2 has SW Cards with input 2 on:

**[G1]:** will return feedback as **[On12G1]**.

**[G2]:** will return feedback as **[On2G2]**.

## 16. [RD]

This command displays the members in each group.

Command Format: [RDGkUi]

Gk = group number (k = # from 1-9)

Ui = unit number (i = # from 0-9)

member = C1 - C19 (card 1 to 19)  
(1-8 for MT100-101 or 1-4 for MT100-106)

### Example:

To read member data for group 1 of unit 1, send the [RD] command. The system will return feedback as C1C2C19 G5U1.

## 7.4 SUMMARY OF COMMANDS

- 1) [VER] Receives software version
- 2) [Ci] Receives status of the card
- 3) [CiS] Saves card configuration
- 4) [ONS] Turns on one or more S-Video output
- 5) [ONV] Turns on one or more Video output
- 6) [OFFS] Turns OFF one or more S-Video output
- 7) [OFFV] Turns OFF one or more Video output
- 8) [...S] Save the command configuration sent
- 9) [...F] Provides feedback upon sending
- 10) [...P] Sets the path, preload for [SW]
- 11) [SW] Switch (outputs the preloaded buffer)
- 12) [HELP] Display all available commands
- 13) [WR] Groups multiple cards
- 14) [CLR] Reset card configuration or clears members of a single group or all groups
- 15) [G] Requests group data
- 16) [RD] Displays the members in each group

## TROUBLESHOOTING GUIDE

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We have carefully tested and have found no problems in the supplied **MT103-118/120**; however, we would like to offer suggestions for the following:

### 8.1 LED IS NOT LIT

**Cause 1:** Card cage is not plugged in.

**Solution:** Plug card cage in. If the LED lights, the problem is solved. If the LED is still not lit, see Cause 2.

**Cause 2:** Card is not plugged in all the way.

**Solution:** Push the card in all the way. If the LED is still not lit, see Cause 3.

**Cause 3:** Card cage slot has a problem.

**Solution 1:** Test the card in other slots of the card cage. If the slot was damaged, the card may work in other slots. If other slots work and the LED lights, the problem is the card cage slot. The card cage may require service. Call ALTINEX at (714) 990-2300. If the other slots do not work and the LED is still not lit, see Solution 2.

**Solution 2:** Take any other known good card with an LED and verify that the slot used is good by seeing if the other card's LED lights in that slot. If it lights, then the original card may be the source of the problem. Call ALTINEX at (714) 990-2300.

### 8.2 LED IS BLINKING RED

**Cause 1:** The CPU on the card is not working properly.

**Solution 1:** Look at the card and verify that there is no damage. If there is no damage, see Solution 2.

**Solution 2:** Verify that all IC's are seated in their sockets. If the LED is still blinking red, see Cause 2.

Cause 2: The MT103-118/120 card and its serial device are not communicating.

*Solution 1:* Turn the system OFF and then ON again. If there is still an error, see Cause 3.

Cause 3: RS485 communication error

*Solution 1:* Make sure that the card is pushed all the way into the slot. If there is still an error, see Solution 2.

*Solution 2:* Turn the system OFF and then ON again. If there is still an error, see Solution 3.

*Solution 3:* Call ALTINEX at (714) 990-2300.

### 8.3 NO DISPLAY

Cause 1: The source has a problem.

*Solution:* Check the source and make sure that there is a signal present and all source connections are correct. If the source is working and there is still no display, see Cause 2.

Cause 2: The card output is not selected.

*Solution:* Select the card output. See RS-232 accessible commands in Section 7. If no display is present, see Cause 3.

Cause 3: Cable connections to the destination are incorrect.

*Solution:* Make sure that cables are connected properly. Also, make sure that the continuity and wiring are good. If there is still no display present, see Cause 4.

Cause 4: The display has a problem.

*Solution:* Make sure that the display is powered. If there is still no display, call ALTINEX at (714) 990-2300.

## ALTINEX POLICY

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### 9.1 LIMITED WARRANTY / RETURN POLICY

Please see the Altinex website at [www.altinex.com](http://www.altinex.com) for details on warranty and return policy.

### 9.2 CONTACT INFORMATION

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