Ross Video Limited

# OTF-8300 & OTF-8301

## openGear Test Fixture User Manual

**Confidential — For openGear Partners**

## OTF-8300 & OTF-8301 • openGear Test Fixtures User Manual

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# openGear Contents

# Introduction

## In This Chapter

This chapter discusses the following topics:

- OTF-8300 and OTF-8301 Test Fixture Overview
- Documentation Terms

## OTF-8300 and OTF-8301 Test Fixture Overview

The openGear OTF-8300 and OTF-8301 Test Fixtures are jigs for testing terminal equipment cards with a openGear form factor. When fitted with an MFC-8300 network controller card, the OTF-8300 and OTF-8301 are capable of testing one or more openGear cards for remote control operation and configuration.

The OTF-8300 is designed to accept a DFR-8310 rear module and a single openGear card.

The OTF-8301 is designed to accept up to two DFR-8321 rear modules and up to three openGear cards. The OTF-8301 also provides connections for the future PSB, as found in the DFR-8321 frame. Cards designed to take advantage of this bus, can be used in the OTF-8301 Test Fixture. For more information on the PSB, refer to the ***openGear DevGuide-Hardware*** document.

This guide provides installation and operation information for both the OTF-8300 and OTF-8301.

## Documentation Terms

The following terms are used throughout this guide:

- "**Test Fixture**" refers to both the OTF-8300 or OTF-8301 unless otherwise stated.
- "**Frame**" refers to the DFR-8300 series as well as any openGear frames.
- All references to the DFR-8300 series frames also includes all version of the 10-slot (DFR-8310) and 20-slot (DFR-8321) frames and any available options.
- "**MFC Controllers**" refers to all variations of the MFC-8300 series Network and Fan Controller Cards unless otherwise stated.
- "**MFC Network Controller Card**" refers to the MFC-8310-N, MFC-8320-S, and MFC-8320-N controller cards that have networking capability.
- "**Operator**" and "**User**" refer to the person who uses the **openGear Test Fixture**.
- "**System**" and "**Video system**" refers to the mix of interconnected production and terminal equipment in which the **openGear Test Fixture** operates.

# Test Fixture Overview

## In This Chapter

The openGear OTF-8300 and OTF-8301 Test Fixtures are jigs for testing terminal equipment cards with an openGear form factor. When fitted with an MFC Network Controller card, the test fixtures are capable of testing an openGear processing card for remote control operation and configuration. This chapter provides installation and operation information for the test fixture.

The following topics are discussed:

- Before You Begin
- Features
- Fixture Installation
- Card Installation
- Cable Connections
- Optional Rear I/O Modules
- User Controls

# Before You Begin

## Static Discharge

Whenever handling the test fixtures and other related equipment, please observe all static discharge precautions as described in the following note:

**ESD Susceptibility**

Static discharge can cause serious damage to sensitive semiconductor devices. Avoid handling circuit boards in high static environments such as carpeted areas, and when wearing synthetic fiber clothing. Always exercise proper grounding precautions when working on circuit boards and related equipment.

## Unpacking

Unpack each test fixture you received from the shipping container, and check the contents against the packing list to ensure that all items are included. If any items are missing or damaged, contact your sales representative or Ross Video directly.

# Features

The test fixture provides the following connectivity and functionality:

- Slots for a MFC controller card and one or more openGear processing cards
- Slot ID switch(es)
- Serial Communication selector switch
- SMPTE Fault BNC
- Ethernet connector
- RossBUS connector
- 2 reference BNCs
- Fault, +12V, and -7V LED indicators
- Power supply and AC cable
- Auxiliary +12V power connector on the OTF-8301
- A DFR-8310 rear module on the OTF-8300 or up to two DFR-8321 rear modules on the OTF-8301

# Fixture Installation

The test fixture is designed to be operated on a grounded workbench in an electronics laboratory environment.

The OTF-8300 has the following installation requirements:

- Height: 3.75 inches (9.53 cm)
- Depth: 14.75 inches incl. PS-8300 (37.47 cm)
- Width: 7.25 inches (19.69 cm)

The OTF-8301 has the following installation requirements:

- Height: 4.13 inches (10.5 cm)
- Depth: 14.37 inches incl. PS-8300 (36.5 cm)
- Width: 7.78 inches (20 cm)

Install the fixture for maximum stability during operation and in such a way as to allow adequate ventilation. Ensure that adequate space exists behind the fixture and on the front of the power supply for airflow exhaust. The fixture's location should be accessible, dry, and dust free.

## Power Supply PS-8300 and Power Cable

The test jig is powered with one PS-8300 power supply. To improve performance and reliability, the PS-8300 has an on-board fan. Turning the power supply off before inserting or removing it from the fixture will increase the lifespan of connectors.

### *Installing the Power Supply*

The PS-8300 is a power factor corrected supply, capable of working with all world AC standards (100-240V). The power supply plugs into the lower left slot as you look at the fixture from the front. Refer to **Figure 1** and **Figure 2**.

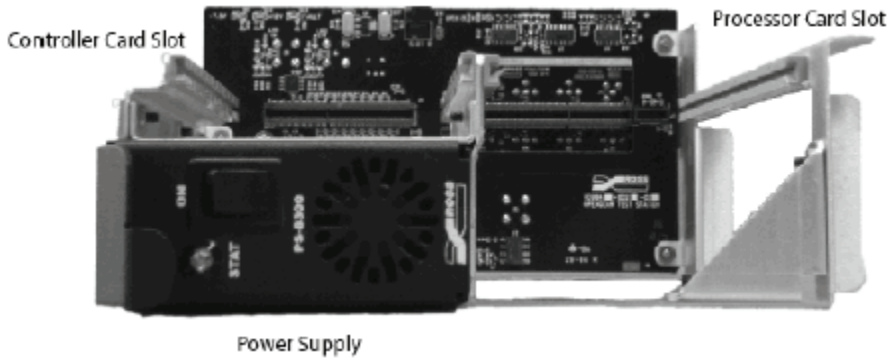


*Figure 1. Power Supply in the OTF-8300*

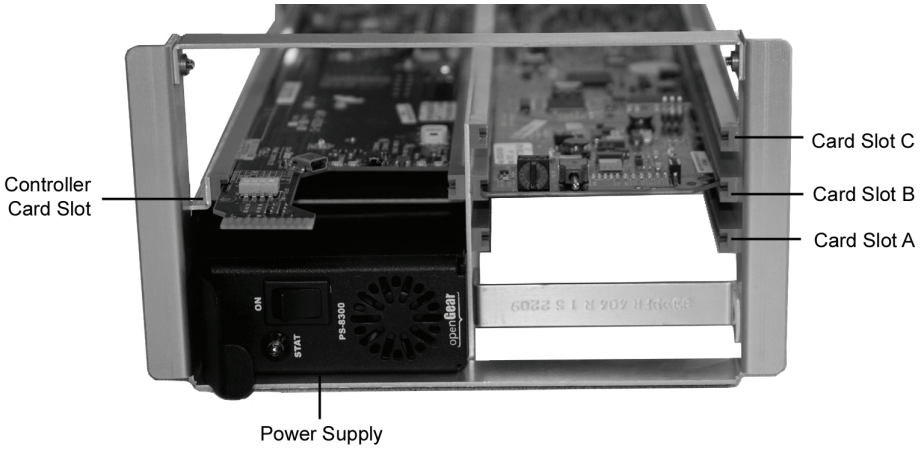


*Figure 2. Power Supply in the OTF-8301*

Use the following procedure to install the power supply:

**Warning**

**Warning**
**Hazardous**
**Voltages**

1. Carefully unpack the power supply from its box, and retain all packing material for future use, if required.
2. Align the power supply with the power slot on the rear lower left side of the fixture.
3. Push the power supply in firmly to ensure a tight connection with the socket at the end of the slot.

**Note**

In case of a power supply failure, contact your dealer or Ross Video.

This completes the procedure for installing the power supply.

## PS-8300 Status LEDs

The power supply has an indicator LED on the front, and an error detection circuit that will indicate the conditions described in **Table 1**.

*Table 1. PS-8300 Status LED Description*

| LED | Color | Display and Description |
|---|---|---|
| **STAT** | Green | When lit green, this LED indicates that the PS-8300 is operating normally. |
| | Flashing Red | When flashing red, this LED indicates that there is an output or under voltage condition on the PS-8300. |

## Power Cable Connection

Use the following procedure to connect the power cable:

1. Connect the supplied power cable's three prong male connector to an AC outlet.
2. Connect the cable's female IEC connector to the fixture socket marked **J5** on the OTF-8300 or the socket marked **AC1** on the OTF-8301.

**Warning**

**Warning**
**Hazardous Voltages**

In some countries, it may be necessary to supply the correct mains supply cord. Use only an approved IEC 320 C-13 type A/C line cord rated for a minimum 10A at 250V and certified for the country of use.

Further, the safe operation of this product requires that a protective earth connection be provided. This protective earth is provided by the grounding conductor in the equipment's supply cord. To reduce the risk of electrical shock to operator and service personnel, this ground conductor must be connected to an earthed ground.

## Fault Reporting

This option is available when an MFC Controller is installed in the Controller Card Slot. If an MFC Controller Card is installed, the red LED error condition listed in **Table 3** will trigger the SMPTE 269M fault reporting circuit, and the signal will be sent to the SMPTE Fault BNC on the front of the fixture. Refer to the ***openGear DevGuide-Hardware*** document for further details.

# Card Installation

After selecting the desired installation slot on the fixture, hold a card by the edges and carefully align the card edges with the slots in the fixture. Then fully insert the card into the fixture until the rear connection plugs are properly seated on the midplane and rear modules.

## openGear Processing Card Slot(s)

### *OTF-8300 Card Slots*

The OTF-8300 supports a single processing card to the right of the MFC controller card slot, as shown in **Figure 1**.

### *OTF-8301 Card Slots*

The OTF-8301 can support up to three cards and two rear modules. The card slots are to the right of the MFC controller card slot, as shown in **Figure 2**.

The three card slots are labeled, from bottom to top, slot A, B and C.

- Slot A is designed to support either a full rear module or one side of a split rear module installed in the lower rear module position.
- Slot B is designed to support one side of a split rear module installed in the upper rear module position
- Slot C is designed to support either a full rear module or one side of a split rear module installed in the upper rear module position.

## MFC Controller Card Slot

The MFC controller card slot, located above the power supply, allows the openGear processing card(s) installed in the test jig to be monitored and controlled via Dashboard. The following controller cards can be used in this slot:

### *MFC-8310 Functions and Controls*

The MFC-8310 controller card performs the following functions:

- Monitors the PS-8300 to ensure that its fan is operating correctly.
- Monitors the status of the openGear processing card(s) in the fixture via the RossBUS.
- Generates alarms if any of the monitored functions develop errors.

### *MFC-8310-N, MFC-8320-S, MFC-8320-N Functions and Controls*

The MFC-8310-N, MFC-8320-S and MFC-8320-N controller cards performs the following functions:

- Bridges the external Ethernet network to the local RossBUS for monitoring and control of any openGear processing card installed in the fixture.
- Performs all MFC-8310 functions.

Refer to the ***MFC-8300 Series openGear Controller Cards User Manual*** for additional details.

# Cable Connections

This section provides instructions for connecting cables to the BNC connectors on the OTF-8300 PCB. Input and output connectors are not provided. Refer to **Figure 3** and **Figure 4**.

- SMPTE Fault
- RossBus
- Ethernet  Reference

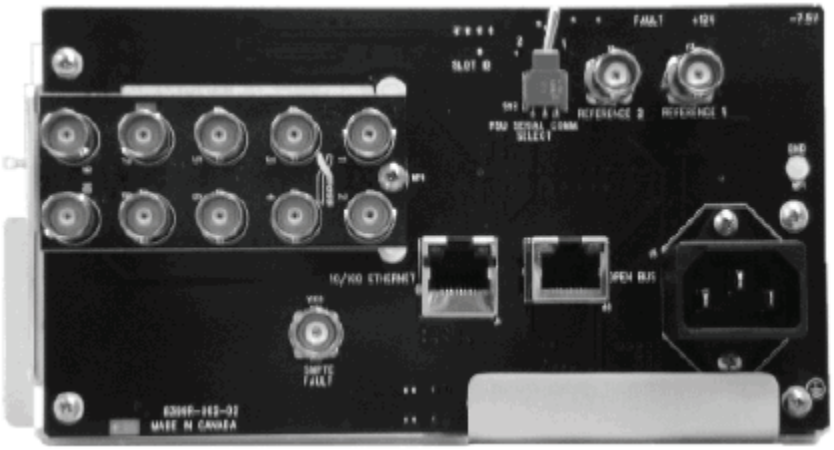

*Figure 3.  OTF-8300 Cable Connections*

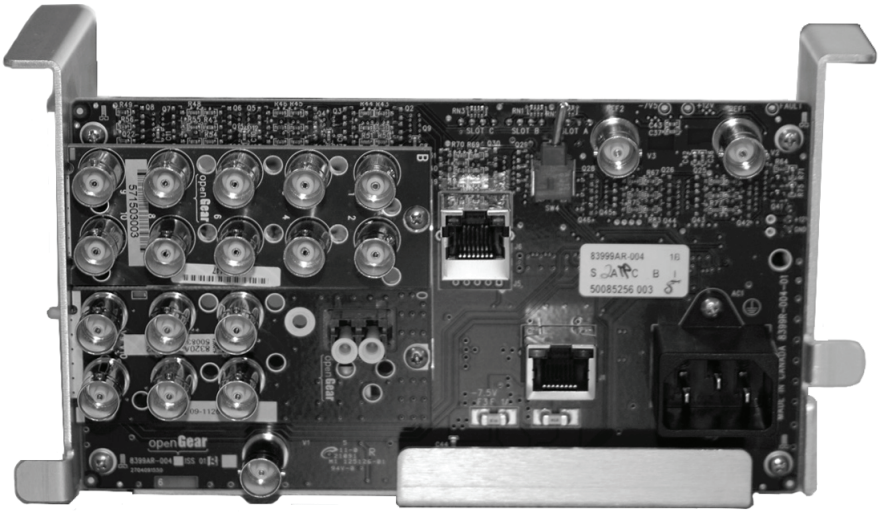

*Figure 4.  OTF-8301 Cable Connections*

## SMPTE Fault

The SMPTE Fault BNC connector may be wired to an external alarm system for reporting alarms in SMPTE 269M format. The circuit can drive a 20mA alarm load. For more details on this type of system, refer to the document ***ANSI/SMPTE 269M - 1999***, available from SMPTE. Refer to the ***openGear DevGuide-Hardware*** for further details on the SMPTE Fault BNC.

The fault report contacts are closed when the card detects an internal failure or a power loss condition. The fault report contacts are closed for about 2 milliseconds every 16ms to report any error for which SMPTE fault reporting has been enabled.

Some internal failures may include:

- Hardware failure of any card or power supply.
- Loss of AC power to any power supply "Soft" errors from any card setup to detect and report such errors.

**Note**

The SMPTE Fault BNC is only present on the DFR-8310 frame.

## RossBUS

This RJ45 connector is used to exchange information data from cards installed in the test fixture to an external monitoring/control system. This is an extension of the CAN bus used for communications within the frame. Only cards having the CAN interface will be able to be monitored and controlled this way. This port is provided to provide a convenient method of monitoring and debugging the CAN bus.

**Note**

Connect only RossBUS compatible devices and cables on this connector otherwise damage can occur to the fixture or to the incompatible device.

The RossBUS connector is only present on the DFR-8310 frame.

## Ethernet

This RJ45 connector is used to connect the optional MFC-8310-N, MFC-8320-S or MFC-8320-N controller cards to an external Ethernet network. This standard 10/100Base-TX RJ45 Ethernet connector is used to exchange information with an external monitoring/control system over an Ethernet network. Only cards having a CAN interface will be able to be monitored and controlled this way.

**Note**

Use up to 100m of CAT-5 Fast Ethernet cable, or better, to connect the frame to an external Ethernet hub or switch. The MFC-8310-N Ethernet port does not have AutoMDIX support and its RJ45 connector is wired as a Network Interface Card (NIC). The Ethernet port does not provide Power-over-Ethernet (PoE).

## Reference

Two BNC inputs are provided to accept two independent reference signals, of the following formats:

- Composite black
- Tri-level sync
- AES/DARS reference

This feature distributes one or two reference signals to all cards in the fixture. Cards which need an external reference use this master reference signal in place of taking the signal from one of the card BNCs. This provides for ease of installation and reduction in reference cabling requirements.

**Note**

> Unlike the frames, the reference BNCs on the test jigs are terminated to 75Ω.
>
> The reference distribution circuitry on the OTF-8300 and OTF-8301 is the same as in the DFR-8310 and DFR-8321 frames respectively. Refer to the ***openGear DevGuide-Hardware*** for more information.

## Auxiliary 12V Power Connection

The OTF-8301 provides an auxiliary 12V connection from the power supply which can be used to power other equipment, such as an impact cooling fan. The connector and test points are located above the MFC Controller Card as shown in Figure 5. The header and test points are also marked on the PCB silkscreen.

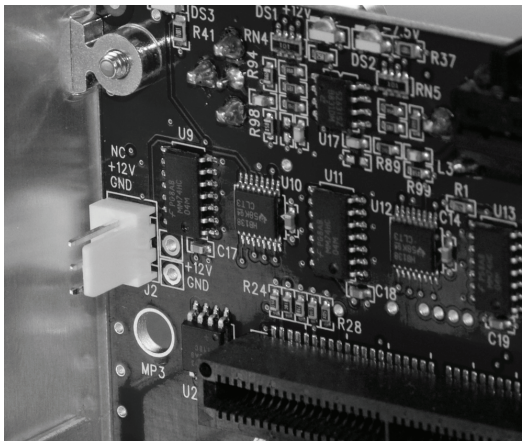


*Figure 5. OTF-8301 Aux 12V Power Connector*

The connector is a 0.100” locking header, with the following pinouts. Note that Pin 1 is towards the bottom of the jig.

*Table 2. Aux 12V Header Pinout*

| Pin Number | Function |
|---|---|
| 1 | Ground |
| 2 | +12V |
| 3 | No Connection |

# Optional Rear I/O Modules

The test jigs are designed to support one or more rear modules to connect to the installed card(s).

The OTF-8300 is designed to support a single DFR-8310 rear module. The OTF-8301 is designed to support up to two DFR-8321 rear modules.

Refer to the section "**Appendix B: Standard I/O Modules**" in the ***openGear DevGuide-Hardware*** document for more examples of available rear modules.

*Figure 6. AES-BNC Rear I/O Module*

*Figure 7. 10-BNC Rear I/O Module*

## *Installing Rear I/O Modules*

Use the following procedure to install a Rear I/O Module to the test jig:

1. Seat the bottom of the rear module in the seating slot at the base of the fixture's back plane.
2. Align the top screw of the rear module with the screw hole on the top edge of the back plane.
3. Using a Phillips driver and the supplied screw, fasten the rear module panel to the back plane. Do not over tighten.

The OTF-8301 has positions for two rear modules, an upper and lower module. The lower position is designed to align with slot A and the upper position is designed to align with slots B and C.

# User Controls

This section provides the following information:

- Slot ID switches
- PSU Serial Communication Select Switch
- LEDs

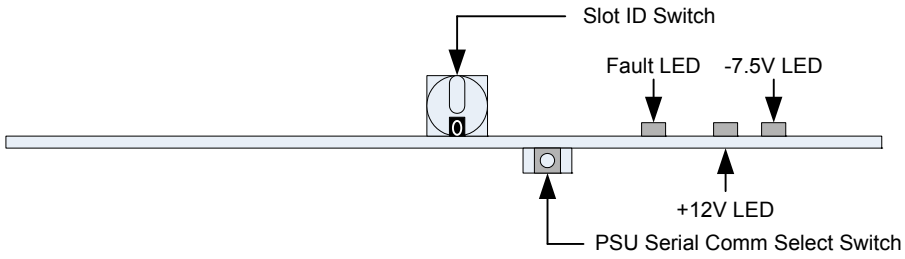


*Figure 8. OTF-8300 User Controls*

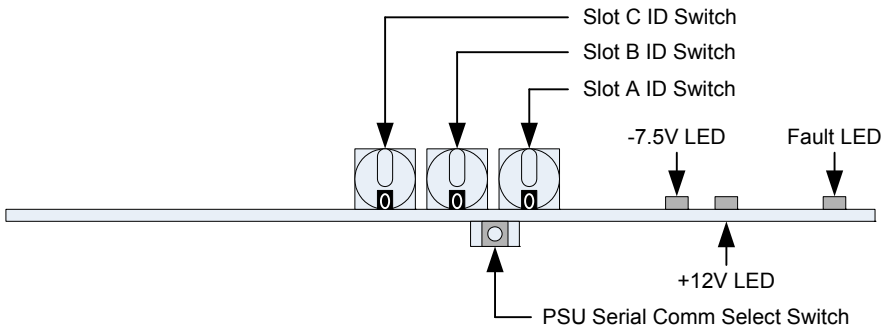


*Figure 9. OTF-8301 User Controls*

## SLOT ID

The Slot ID switch will select different slot ID resistor values on the midplane connector, to be used by the processing card, to determine the slot it is plugged into.

On the OTF-8300, the rotary knob can select one of ten resistor values corresponding to slots 1 to 10.

On the OTF-8301, there are three rotary switches, one for each card slot.

- Slot A ID Switch can select resistor values corresponding to slots 17 to 32.
- Slot B ID Switch can select resistor values corresponding to slots 8 to 23.
- Slot C ID Switch can select resistor values corresponding to slots 1 to 16.

Do not select the same slot ID resistor values on two occupied slots. Doing so will cause conflicts on the internal communications bus.

## PSU Serial Communication Select Switch

Unlike the actual frame, the test jig only supports a single power supply. This switch selects the communications path between the MFC Controller and the installed PS-8300.

With the PCB front edge facing you, use the following switch toggle options to select the communications path to the MFC Controller:

**1** — toggling the switch to position 1 selects the PSU 1 communication path

**2** — toggling the switch to position 2 selects the PSU2 communication path

## LEDs

The back of the fixture features LEDs that display the status of the power supply. LED displays and descriptions are provided in **Table 3**.

*Table 3. LED Displays Descriptions*

| LED | Color | Display and Description |
|---|---|---|
| **Fault** | Red/Green | The top front edge of the card has a Power LED which indicates card status. The Power LED displays green when the card is operational. If the card is not operational or the LED is not displaying green, refer to the section "**Troubleshooting Checklist**" of this manual. |
| **+12V** | Green | When lit, this LED confirms that the power supply is generating a +12V output to the fixture. |
| **-7V** | Green | When lit, this LED confirms that the power supply is generating a -7V output to the fixture. |

# Specifications

## In This Chapter

This chapter provides the Technical Specifications for the test jigs.

# Test Jig Technical Specifications

*Table 4. Test Jig Technical Specifications*

| Category | Parameter | Specification |
|---|---|---|
| **OTF-8300 Mechanical** | Height | 3.75 inches (9.53cm) |
| | Width | 7.25 inches (19.69cm) |
| | Depth | 14.75 inches incl. PS-8300 (37.47cm) |
| **OTF-8301 Mechanical** | Height | 4.13 inches (10.5cm) |
| | Width | 7.78 inches (20cm) |
| | Depth | 14.37 inches incl. PS-8300 (36.5cm) |
| **Processing Card Slot(s)** | Max Power: +12V Rail | 2.0A (24 Watts) |
| | Max Power: -7.5V Rail | 0.2A (1.5 Watts) |
| **MFC Controller Slot** | Max Power: +12V Rail | 1.5A (18 Watts) |
| | Max Power: -7.5V Rail | 0.2A (1.5 Watts) |
| **RossBUS Remote Power** | Max Power: +12V | 2.0A Max. |
| **Reference Inputs** | Number of Inputs | 2 terminating |
| | Level | 1Vpp nominal |
| | Signal | Analog video sync (black burst or tri-level), or AES/EBU DARS |
| | Impedance | 75Ω terminating |
| | Return Loss | >30dB to 30MHz |
| | Max DC on Ref Input | ±1V |
| **SMPTE Fault Reporting** | Alarm Indicator | ANSI/SMPTE 269M-1999 contact closure |
| | Connector | Female BNC |
| | Max Voltage | 24V DC |
| | Max Current | 20mA |
| **Environmental** | Ambient temperature range | 5 ºC to 40 ºC |
| **PS-8300 Power Supply** | Input | 100 - 240VAC, 47-63Hz, 190Watts |
| | Output 1 | +12V, ± 10%, 0.5A - 12.5A |
| | Output 2 | -7.5V, ± 10%, 0A - 2.5A |
| | Total | Sum of both outputs not to exceed 150 Watt maximum |
| **For safety reasons, Ross power supplies do not fit into rack frames of other manufacturers.** | | |

Specifications are subject to change without notification

# Service Information

## In This Chapter

This chapter contains the following sections:

- Troubleshooting Checklist
- Warranty and Repair Policy

# Troubleshooting Checklist

Routine maintenance to this openGear product is not required. In the event of problems with your openGear Test Fixture, the following basic troubleshooting checklist may help identify the source of the problem. If the card still does not appear to be working properly after checking all possible causes, please contact your openGear products distributor, or the Ross Video Technical Support department at the numbers listed under the **Contact Us** section at the end of this manual.

1. **Visual Review –** Performing a quick visual check may reveal many problems, such as connectors not properly seated or loose cables. Check the module, the frame, and any associated peripheral equipment for signs of trouble.
2. **Power Check –** Check the power indicator LED on the distribution frame front panel for the presence of power. If the power LED is not illuminated, verify that the power cable is connected to a power source and that power is available at the power main. Confirm that the power supplies are fully seated in their slots. If the power LED is still not illuminated, replace the power supply with one that is verified to work.
3. **Reseat the Card** – Eject the card and reinsert it in the openGear Test Fixture.
4. **Check Control Settings –** Refer to the Installation and Operation sections of the card manual and verify all user-adjustable component settings.
5. **Input Signal Status –** Verify that source equipment is operating correctly and that a valid signal is being supplied.
6. **Output Signal Path –** Verify that destination equipment is operating correctly and receiving a valid signal.
7. **Module Exchange** – Exchanging a suspect module with a module that is known to be working correctly is an efficient method for localizing problems.

# Warranty and Repair Policy

The openGear Test Fixture is warranted to be free of any defect with respect to performance, quality, reliability, and workmanship for a period of FIVE (5) years from the date of shipment from our factory. In the event that your openGear Test Fixture proves to be defective in any way during this warranty period, Ross Video Limited reserves the right to repair or replace this piece of equipment with a unit of equal or superior performance characteristics.

Should you find that this openGear Test Fixture has failed after your warranty period has expired, we will repair your defective product should suitable replacement components be available. You, the owner, will bear any labor and/or part costs incurred in the repair or refurbishment of said equipment beyond the FIVE (5) year warranty period.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profits) incurred by the use of this product. Implied warranties are expressly limited to the duration of this warranty.

This User Manual provides all pertinent information for the safe installation and operation of your openGear Test Fixture. Ross Video policy dictates that all repairs to the openGear Test Fixture are to be conducted only by an authorized Ross Video Limited factory representative. Therefore, any unauthorized attempt to repair this product, by anyone other than an authorized Ross Video Limited factory representative, will automatically void the warranty. Please contact Ross Video Technical Support for more information.

## *In Case of Problems*

Should any problem arise with your openGear Test Fixture, please contact the Ross Video Technical Support Department. (Contact information is supplied at the end of this publication.)

A Return Material Authorization number (RMA) will be issued to you, as well as specific shipping instructions, should you wish our factory to repair your openGear Test Fixture . If required, a temporary replacement module will be made available at a nominal charge. Any shipping costs incurred will be the responsibility of you, the customer. All products shipped to you from Ross Video Limited will be shipped collect.

The Ross Video Technical Support Department will continue to provide advice on any product manufactured by Ross Video Limited, beyond the warranty period without charge, for the life of the equipment.

***Notes:***

***Notes:***

# Contact Us

**Contact our friendly and professional support representatives for the following:**

- Name and address of your local dealer
- Product information and pricing
- Technical support
- Upcoming trade show information

| | | |
|---|---|---|
| **PHONE** | **General Business Office and Technical Support** | 613 • 652 • 4886 |
| | **After-hours Emergency** | 613 • 349 • 0006 |
| | **Fax** | 613 • 652 • 4425 |
| **E-MAIL** | **General Information** | solutions@rossvideo.com |
| | **Technical Support** | techsupport@rossvideo.com |
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| | **Ross Video Incorporated** | P.O. Box 880,<br>Ogdensburg, New York, USA 13669-0880 |

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