Ross Video Limited

OTF-OG3

openGear Test Fixture User Manual

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OTF-OG3 • openGear Test Fixture User Manual

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openGear Contents

Introduction

In This Chapter

This chapter discusses the following topics:

- OTF-OG3 Test Fixture Overview
- Documentation Terms

OTF-OG3 Test Fixture Overview

The openGear OTF-OG3 Test Fixture jig is for testing terminal equipment cards with an openGear form factor. When fitted with a MFC-8322-N or a MFC-8322-S network controller card, the OTF-OG3 is capable of testing one or more openGear cards for remote control operation and configuration.

The OTF-OG3 is designed to accept up to two DFR-8321 or OG3-FR rear modules and up to four openGear cards. The OTF-OG3 also provides connections for Ethernet links from each card slot to the MFS-8322-N network controller card, as found in the OG3-FR frame. Cards designed to take advantage of this bus can be used in the OTF-OG3 Test Fixture. For more information on the Ethernet connectivity, refer to the ***openGear Development Guide Part I - Hardware***.

This guide provides installation and operation information for the OTF-OG3.

Documentation Terms

The following terms are used throughout this guide:

- "**Frame**" refers to the DFR-8321 or OG3-FR series as well as any openGear frames.
- "**MFC Controllers**" refers to all variations of the MFC-8322 series Network and Fan Controller Cards unless otherwise stated.
- "**MFC Network Controller Card**" refers to the MFC-8322-N, and MFC-8322-S.
- "**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**" refers to OTF-OG3 unless otherwise stated.

Test Fixture Overview

In This Chapter

The openGear OTF-OG3 Test Fixture jig is 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 to ensure that all items are included. If any items are missing or damaged, contact your openGear sales representative or Ross Video directly.

Features

The test fixture provides the following connectivity and functionality:

- Slot for an MFC Controller Card
- On-board Reference and ID circuitry
- Slot for optional Reference card (GFC-8322)
- Slots for up to four openGear cards
- Two Slot ID switches
- Power Supply Serial Communication selector switch
- Ethernet connector (RJ45)
- MFC-8322-N also provides Ethernet connectivity from the MFC-8322-N to each card slot
- RossBUS connector (RJ45)
- Two reference BNCs
- Fault, +12V, and -7V LED indicators
- Power supply and AC cable
- Auxiliary +12V power connector
- Can accommodate up to two DFR-8321 or OG3-FR rear modules

Fixture Installation

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

The OTF-OG3 has the following installation requirements:

- Height: 4.06" (10.3cm)
- Width: 7.693" (19.5cm)
- Depth: 14.3" (36.3cm) including PS-OG3

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-OG3 and Power Cable

The test jig is powered with one PS-OG3 power supply. To improve performance and reliability, the PS-OG3 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-OG3 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**.

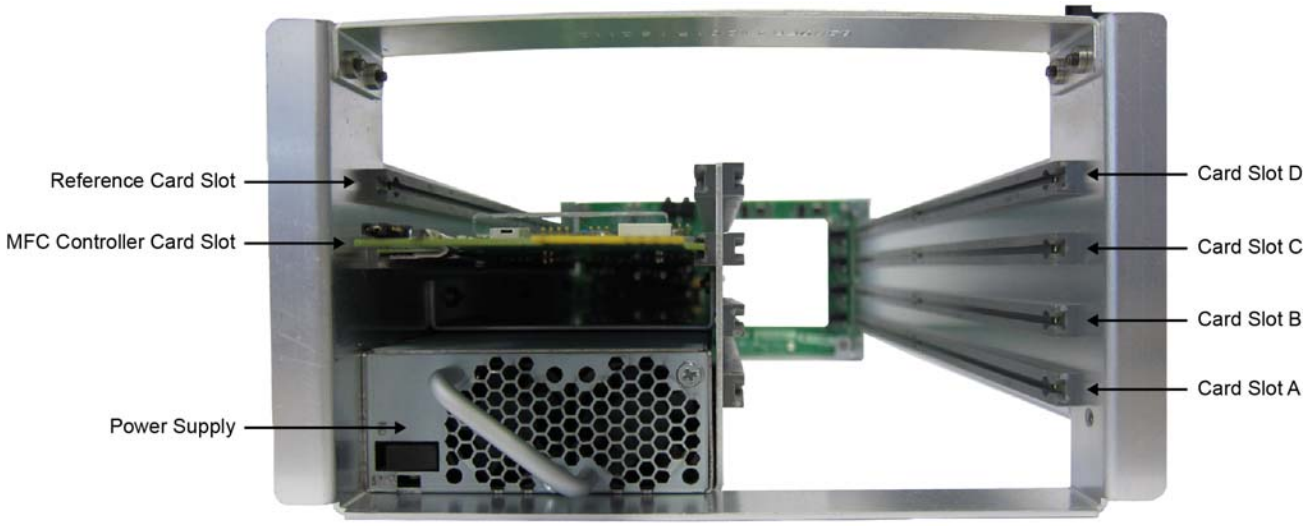

Figure 1. Power Supply in the OTF-OG3

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 openGear dealer or Ross Video.

PS-OG3 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-OG3 Status LED Description

LED	Color	Display and Description
STAT	Green	When lit green, this LED indicates that the PS-OG3 is operating normally.
	Flashing Red	When flashing red, this LED indicates that there is an over or under voltage condition occurring.

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 **AC1**.

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.

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)

The OTF-OG3 can support up to four cards and two rear modules. The card slots are to the right of the MFC Controller Card slot, as shown in **Figure 1**. The four card slots are labeled, from bottom to top, slot A, B, C, and D.

- **Slot A** is designed to support one side of a split rear module installed in the lower rear module position
- **Slot B** 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 C** is designed to support one side of a split rear module installed in the upper rear module position
- **Slot D** 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-8322-N, MFC-8322-S Functions and Controls

The MFC-8322-N and MFC-8322-S controller cards perform 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.
- Monitors the PS-OG3 to ensure that its fan is operating correctly.
- Monitors the status of the openGear processing card(s) in the text jig via the RossBUS.
- Generates alarms if any of the monitored functions develop errors.

Note that the MFC-8322-N also provides Ethernet connectivity from the MFC-8322-N to each card slot.

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

Reference Card Slot

The slot located above the MFC Controller Card slot is intended for a GFC-8322 reference distribution card. This card was designed specifically for use in the OG3-FR frames and includes the circuitry to buffer the frame reference to each slot. Refer to the section "**Reference**" in this guide for more information on configuring the GFC-322 for use in the test jig.

Frame Information

When using the GFC-8322, be aware that the Frame ID (network settings and the frame name) is automatically determined and stored on the GFC-8322 card and not on the OTF-OG3 midplane. If you have not installed a GFC-8322, the Frame ID is automatically determined and stored on the OTF-OG3 midplane. This is important to keep in mind when installing or removing the GFC-8322 from the test jig.

Cable Connections

This section provides instructions for connecting cables to the BNC connectors on the OTF-OG3 PCB. Input and output connectors for the cards are not provided. Refer to **Figure 2** for connector locations.

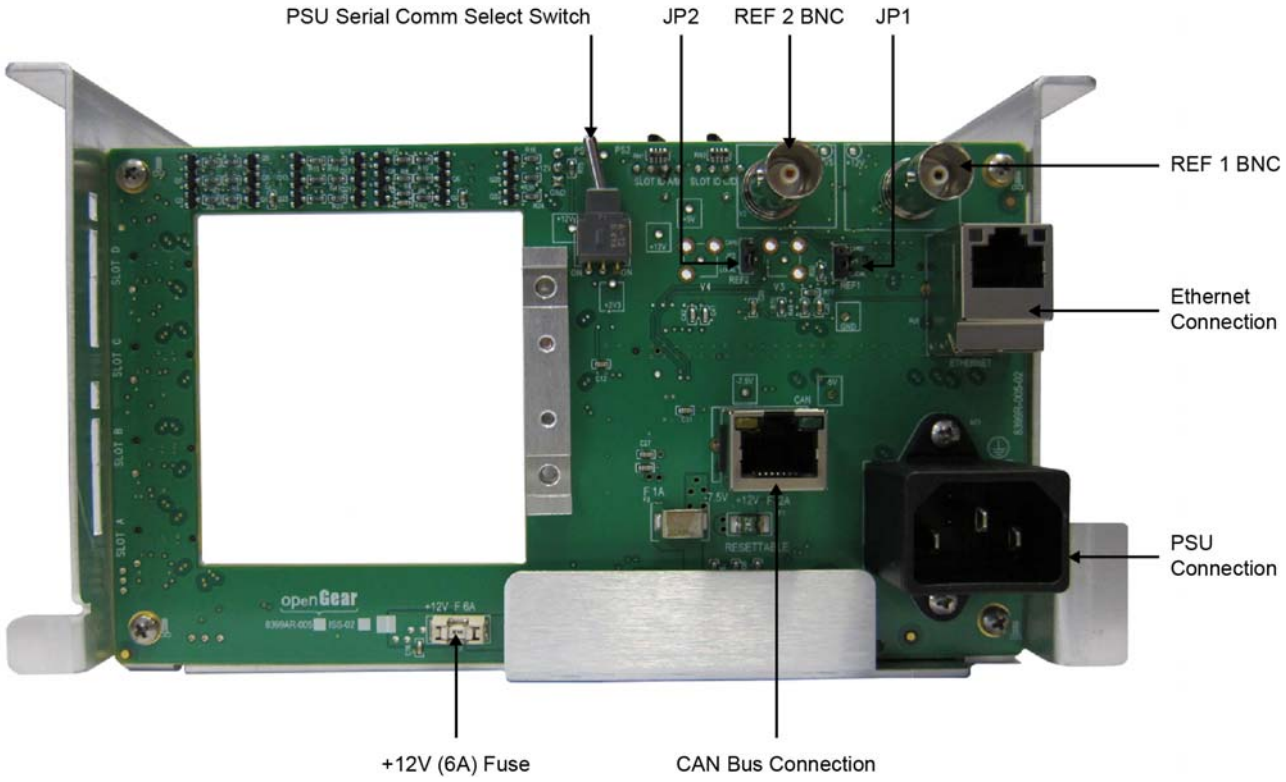

Figure 2. OTF-OG3 Connections

CAN Bus Connection

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 Connection

This RJ45 connector is used to connect the optional MFC-8322-N or MFC-8322-S controller cards to an external Ethernet network. This standard 10/100 Base-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 that the MFC-8322-N supports 10/100/1000 Base-TX while the MFC-8322-S supports 10/100 Base-TX. Refer to the ***openGear Development Guide Part I - Hardware*** for details.

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 Ethernet port does not provide Power-over-Ethernet (PoE).

REF 1, REF 2 BNCs

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-OG3 is the same as in the DFR-8321 and OG3-FR frames respectively. Refer to the ***openGear Development Guide Part I - Hardware*** for more information.

Using the GFC-8322 Reference Card

If you wish to insert a GFC-8322 reference card one must move Jumpers **JP1** and **JP2** to the Card position to access the reference signals on the card. Refer to the section "**Reference Source Jumpers (JP1, JP2)**" in this guide for details on setting these jumpers when using the GFC-8322.

Refer to the ***openGear Development Guide Part I - Hardware*** and the ***DFR-8300 and OG3-FR Series User Manual*** for more information on the GFC-8322.

Auxiliary 12V Power Connection

The OTF-OG3 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 3. The header and test points are also marked on the PCB silkscreen.

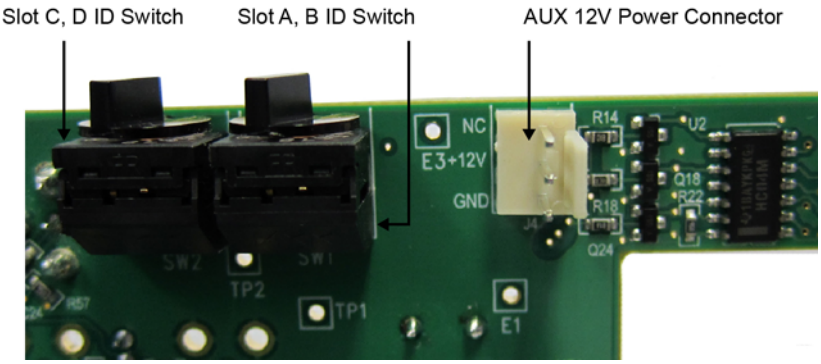

Figure 3. OTF-8301 Aux 12V Power Connector

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 OTF-OG3 has positions for two rear modules, an upper and lower module.

- The lower position is designed to align with Slots A and B.
- The upper position is designed to align with Slots C and D.

An example of a DFR-8321 frame module is show in Figure 4, while Figure 5 illustrates a rear module designed for use in the OG3-FR frames. Notice that the rear module in Figure 4 does not include the notched bottom right corner nor does it include the cutout top edges as seen in Figure 5.

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

Figure 4. 10-BNC Rear Module for the DFR-8321 Frames

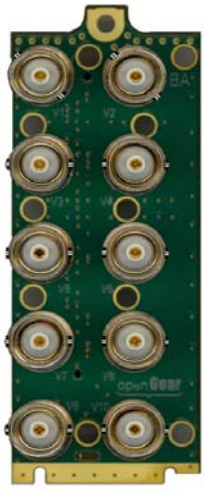

Figure 5. 10-BNC Rear Module for the OG3-FR Frames

Installing Rear I/O Modules

Use the following procedure to install a rear module into the OTF-OG3:

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.

User Controls

This section provides the following information:

- Slot ID switches
- Ethernet (GigE) to Card Connectivity
- PSU Serial Communication Select Switch
- Reference source jumpers (JP1, JP2)
- LEDs

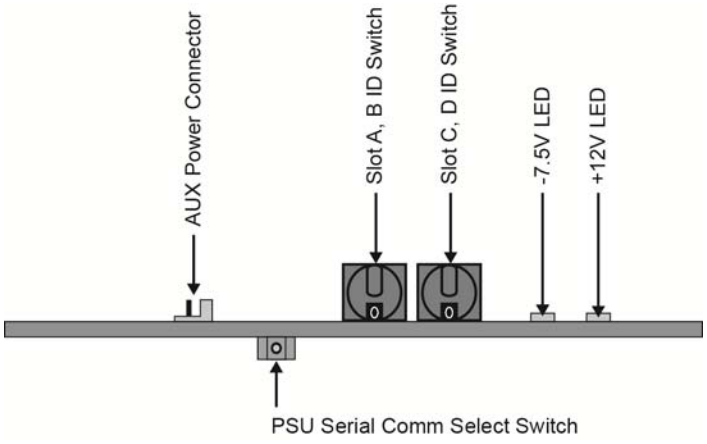

Figure 6. OTF-OG3 User Controls

Slot ID Switches

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-OG3, there are two rotary switches, one for each double card slot.

- **Slot A, B ID Switch** — select resistor values corresponding to Slots 1 to 9 for Slot A, and 2 to 10 for Slot B.
- **Slot C, D ID Switch** — select resistor values corresponding Slots 11 to 19 for Slot C, and 12 to 20 for Slot D.

There is no way to select the same ID for duplicate slots. Slots A and C will always have an ODD Slot ID and Slots B and C will always have an EVEN Slot ID as in the OG3-FR frame.

Note

Slot ID switches do NOT change the Ethernet slot location. Ethernet connections to the MFC-8322-N are fixed. Ensure that if Ethernet connectivity to each card is Slot ID dependent, set *both* Slot ID switches to the **0** position.

Refer to **Table 3** when using the Slot ID switches.

Table 3. Slot ID Switches — Settings

Slot ID Switch Setting	Slot ID A	Slot ID B	Slot ID C	Slot ID D
0	1	2	11	12
1	3	4	13	14
2	5	6	15	16
3	7	8	17	18
4	9	10	19	20
5	9	10	19	20
6	9	10	19	20
7	9	10	19	20
8	1	2	11	12
9	3	4	13	14
A	5	6	15	16
B	7	8	17	18
C	9	10	19	20
D	9	10	19	20
E	9	10	19	20
F	9	10	19	20

Ethernet (GigE) to Card Connectivity

Every slot has an ethernet connection to the MFC Controller Card. Slot A is equal to Ethernet Connection 1, Slot B is equal to Ethernet Connection 2, Slots C is equal to Ethernet Connection 11, and Slot D is equal to Ethernet Connection 12.

Refer to the ***openGear Development Guide Part I – Hardware*** for more information.

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 Card and the installed PS-OG3.

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

1 — toggling the switch to position PS1 selects the PSU 1 communication path.

2 — toggling the switch to position PS2 selects the PSU2 communication path.

Reference Source Jumpers (JP1, JP2)

The OTF-OG3 includes the same buffer hardware as the Reference Card (GFC-8322). JP1 and JP2 on the OTF-OG3 backplane enables you to select whether the reference signals will be buffered locally on the jig or buffered on the GFC-8322.

If you are using the GFC-8322 in the OTF-OG3, setting **JP1** and **JP2** to:

- **Card** — allows the reference signals to be buffered on the GFC-8322.
- **Local** — selects the reference buffers on the OTF-OG3. This allows the OTF-OG3 to operate normally without the presence of the GFC-8322.

LEDs

The back of the fixture features LEDs that display the status of the power supply. LED displays and descriptions are provided in **Table 4**.

Note

The -7V uses a resettable fuse. The +12V has a replaceable fuse.

Table 4. LED Displays Descriptions

LED	Color	Display and Description
+12V	Green	When lit, this LED confirms that the power supply is generating a +12V output to the fixture.
	Off	If the LED is unlit, verify that you have not blown the fuse.
-7V	Green	When lit, this LED confirms that the power supply is generating a -7V output to the fixture.
	Off	If the LED is unlit, there is a short on the -7V rail.

Specifications

In This Chapter

This chapter provides the Technical Specifications for the OTF-OG3.

OTF-OG3 Technical Specifications

Table 5. OTF-OG3 Technical Specifications

Category	Parameter	Specification
OTF-OG3 Mechanical	Height	4.06” (10.3cm)
	Width	7.693” (19.5cm)
	Depth	14.3” (36.3cm) including PS-OG3
Processing Card Slot(s)	Absolute Max Power: +12V Rail	Per card occupying 4 slots: 5A, 60W
		Per card occupying 2 slots: 2.5A, 30W
		Per card occupying 1 slot: 1.25A, 15W
	Absolute Max Power: -7.5V Rail	Per card occupying 4 slots: 0.8A, 6W
		Per card occupying 2 slots: 04.A, 3W
		Per card occupying 1 slot: 02.A, 1.5W
MFC Controller Slot	Max Power: +12V Rail	3A, 36W
	Max Power: -7.5V Rail	02.A (1.5Watt)
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
Environmental	Ambient temperature range	5ºC to 40ºC
PS-OG3 Power Supply	Input	100 - 240VAC, 47 - 63Hz
	Output 1	+12V, ±10%, 0.5A - 28A
	Output 2	-7.5V, ±10%, 0A - 5A
	Total	Sum of both outputs not to exceed 350Watt 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. Verify that the 12V fuse is not blown.
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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