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OE-2

For the SIA-3000

Functions of the OE-2

- Converts optical communications signals into electrical signals.
- Measure Extinction Ratio and Optical Modulation Amplitude.
- Offers built in amplifiers and filters, with fully calibrated paths (changing amplifiers does not require recalibration)
- Built in power meter.
- Works from 770 to 1650nm wavelengths.

Instrument Features

The OE-2 can be configured for 1or 2 optical inputs. Each channel has four front panel, or GPIB, selectable filters, for different communication standards. An additional fifth setting is available that allowing operation at full bandwidth. Along with selectable filters, is the availability to select one of four signal amplifiers. The amplifiers range from 10 dB to 40 dB and can be selected from the front panel, or via GPIB interface. The average current in the photo receiver is measured to determine the average optical power of the input signal. This is only available via the GPIB interface. The OE-2 can operate with either single mode fiber or multi-mode fiber.

Instrument Setup

On the back of the instrument:

- Ensure AC power cable is connected
- Connect the OE-2 to the SIA-3000 with standard GPIB cable.
- Turn on the back power switch first, then use the front “standby” switch for daily operation.

SIA-3000 Software setup:

- Select <Edit> on the main Visi software (pull down) menu. Verify that “GPIB Board Mode” is set to controller. (see Figure 1). Press Apply.

- Select <Edit> on the main Visi software (pull down) menu. Select “Optical Configuration”. The GPIB address assignment window will appear. (See Figure 2) The fields will be empty unless device assignments were previously made. The default address is six unless it is has been changed on the back panel of the OE-2. Select the “ADD DEVICE” button. The OE-2 address will appear in the remote device box. If you have a 2 port/channel OE-2, in the remote device list window, the left port/channel is listed as port A and the right port/channel is listed as port B. If you have multiple OE-2 units connected to the SIA-3000, you will need to assign a separate address for each device. If the OE-2 is not showing up on the device list, select the OE Device Search. This will scan GPIB bus for an optical device. If one is present, the device will appear in the remote device list window.

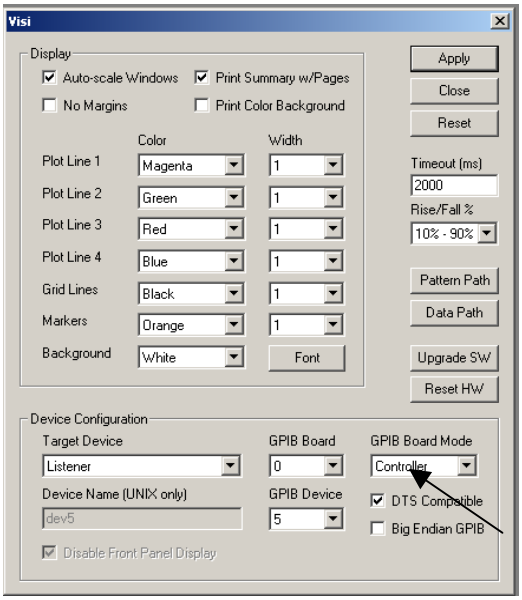


Figure 1. Edit Configuration menu

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- Next, select a designated channel on the SIA that will be used for the input from the OE-2 (Figure 3a). Highlight the device under Optical input (Figure3b). Finally, click on the “ACTIVE” box (Figure3c).

- For a dual channel unit, under the Optical Channel Assignment tab, the Optical Input will read:
  OE-2, GPIB Device 6, Port A
  OE-2, GPIB Device 6, Port B
  You will need to assign a SIA-3000 channel for each port. And make them active on the Optical Channel Assignment page. (Figure 3)

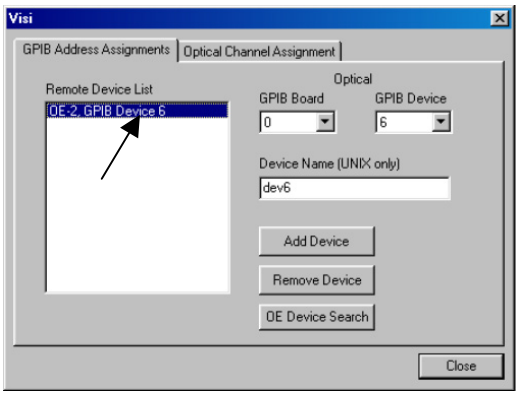


Figure 2. GPIB Address Assignment window

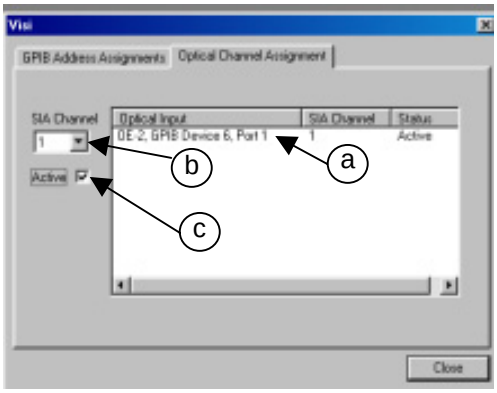


Figure 3. Optical Channel Assignment for a Single Input OE-2.

Dark Level Calibration of the OE-2

The dark level calibration of the OE-2 sets the “dark level” of the OE-2. It is a reference level for which all measurements are made. A calibration must be performed on each port of the OE-2. When the “DARK CALIBRATION” button is pushed, only the port in the “SIA CHANNEL” box will be selected for calibration. A calibration should be performed daily. The OE-2 should be recalibrated if there has been a change of more than 5 degrees Celsius in ambient temperature. Prior to a calibration you need to disconnect all the optical inputs to the OE-2. When you remove the optical inputs, place the protective covers on the end of the fiber optic cables.

To perform a dark level calibration, complete the following steps.

1) Remove all optical signals from the input connectors.
2) From the OE-2 Main Menu, click on Acquire Options. (Figure 4)
3) Select the SIA Channel that you would like to calibrate. (Figure 5a)
4) Select the External Calibration button. (Figure 5b)

Note: You will need to repeat steps 3 and 4 if you have a dual port OE-2. When the calibration has finished, the message “Calibration completed” will appear. (Figure 6) After the calibration has completed, clean the ends of the fiber optic cables and connect to the input port on the OE-2.



Figure 6. Calibration completed.

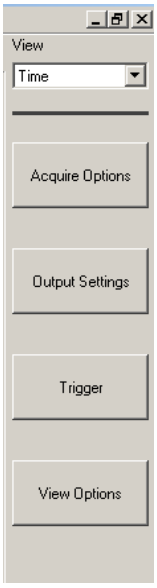


Figure 4. OE-2 Main Menu

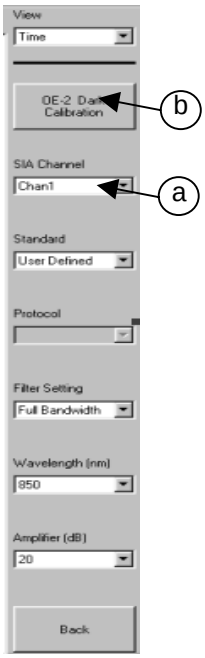


Figure 5. Acquire Options Menu

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The default view in the OE-2 tool is the optical power vs. time view. The Trigger Menu allows you to set up a trigger source and conditions on the SIA to view the optical waveform. The Trigger Menu is accessed from the OE-2 Main Menu (Figure 4). The desired Trigger Channel can be selected in the “Trigger”. (Figure 7)

You can select either auto (for pulse find values) or a specific trigger voltage (user volts) in the “Trigger Method” box. Select the instrument to trigger on either rising or falling edges in the “Trigger Edge” box.

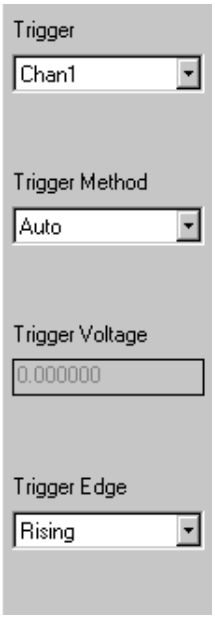


Figure 7. Trigger Menu

Figure 8 shows a split screen view of an Extinction Ratio Measurement and summary page views. To make this measurement, “User Defined” Standard must be selected under the acquire options menu. (Figure 5)

This measurement must be made on a clock signal between 80 MHz and 500 MHz clock frequency. Typically, a K28.7 “clock-like” pattern is used and is 1/10th the data rate.

In this view, you can select specific rise time, fall time, modulation limit levels for your device. Optical Modulation Amplitude can be displayed. The OMA measurements can be made from any standard that is selected under the Acquire Options tab (figure 5). When a standard is selected, the test parameters and associated protocols are set for each standard. The only actions required by the users are selecting the protocol testing to and the necessary gain amplifier for signal. These are located under the Acquire Options tab (figure 5).

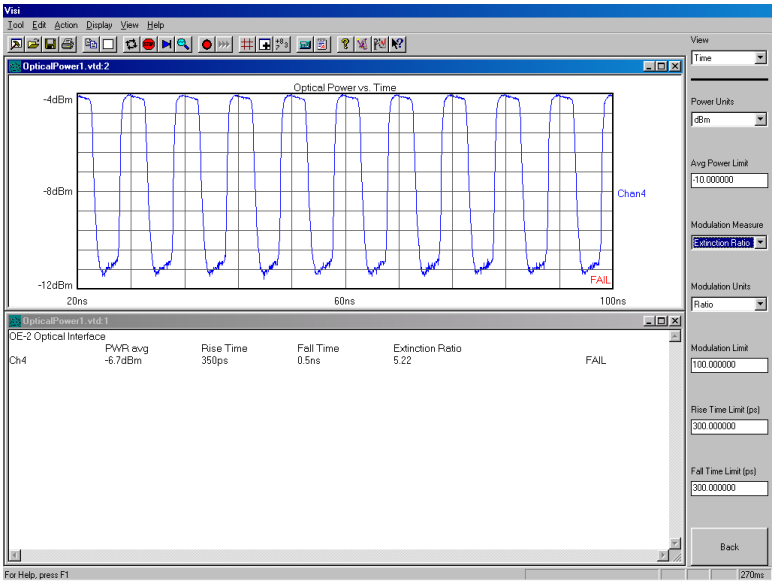


Figure 8. Extinction Ratio View

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General Troubleshooting

Below is a table showing some common errors and how to fix them.

Symptom	Resolution
System will not power up	Check power switch on back of unit.
“Signal” LED not lit	No optical signal present
Flashing Over Range LED	Reduce input signal gain
“Optical Port Not Active” Error	Verify OE-2 channel assignment in the “Optical Assignment” window under Optical configuration menu. Verify GPIB device ID is set correctly.
Unusual wave form display on Optical Power vs. Time display	Verify the Trigger is assigned to the proper channel.
“No Signal” error on Optical Power vs. Time display	Check input signal. Check OE-2 and SIA – 3000 are configured for the same channel.
Can’t view optical channel assignment	Verify GPIB board mode is set to “controller” under Edit Configuration.
Extinction Ratio measurements differ greatly from expected	Perform OE-2 calibration. Verify no optical inputs are connected.

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