

# USER MANUAL

## SDX-1226

### Power Meter



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## THE LASER POWER METER



### 1.1 Introduction

To obtain full performance from the SDX-1226 and the PC Software, we recommend that you read this manual carefully.

The SDX-1226 is a microprocessor-based power meter that uses precision resistors to provide a highly accurate measurement system with no need for external calibration. It provides 6 ranges from 10K $\Omega$  to 1G $\Omega$ . These ranges can be manually selected or selected by remote control when the SDX-1226 is used with the PC based software. The software also provides a current zero function if it is used with the SDX-1153. The SDX-1226 does not provide any current zeroing capability..

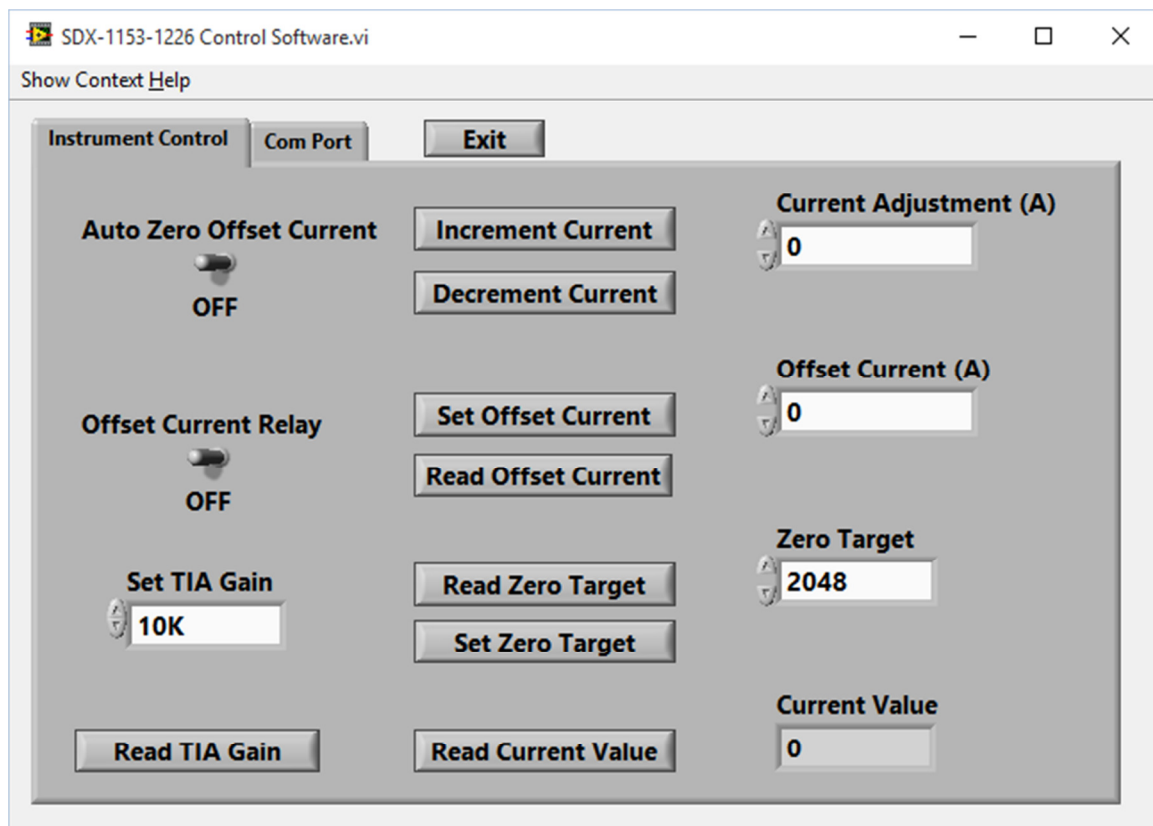


Fig 1.1 SDX-1226 Software user's interface

### Unpacking

Each Gentec-EO SDX-1226 is thoroughly tested prior to shipment.

Visually inspect every SDX-1226 unit after removing it from the shipping containers. If you see any damage, retain all packaging materials and shipping receipts. Any damage claim should be made promptly to the transportation company. Notify the nearest Gentec-EO representative concerning the claim, so that any repair or replacement can be arranged as soon as possible.

## 1.2 Specifications

The following specifications are based on the accuracy of the internal gain resistors, an operating temperature of 18 to 28°C (64 to 82°F) and a relative humidity not to exceed 80%.

Table 1-1 List of Specifications

Power Range	Accuracy	Voltage Zero	Output Voltage	-3dB Bandwidth	Temperature Coefficient
10K $\Omega$	0.01%	$\pm 10\text{mV}$	$\pm 10\text{V}$	> 100Hz	5ppm
100K $\Omega$	0.01%	$\pm 10\text{mV}$	$\pm 10\text{V}$	> 100Hz	5ppm
1M $\Omega$	0.01%	$\pm 10\text{mV}$	$\pm 10\text{V}$	> 100Hz	5ppm
10M $\Omega$	0.01%	$\pm 10\text{mV}$	$\pm 10\text{V}$	> 100Hz	5ppm
100M $\Omega$	0.025%	$\pm 10\text{mV}$	$\pm 10\text{V}$	> 100Hz	10ppm
1G $\Omega$	0.50%	$\pm 10\text{mV}$	$\pm 10\text{V}$	> 100Hz	25ppm

The SDX-1226 is powered by external  $\pm 15\text{V}$  supplies. The external supplies are not included with the SDX-1226. If the remote control feature is used, it requires a USB 2.0 to the host PC. It is recommended that you install the PC software before plugging the SDX-1226 into the PC as the software installer also loads the USB drivers. If these drivers are not present when you plug the SDX-1226 in the first time, Windows will search the internet for them, but it is faster to have them preinstalled by the SDX-1226 software.

## 1.3 Operation in Manual Mode

The SDX-1226 can be operated without the PC software as a stand-alone instrument. To use the SDX-1226, connect the Output BNC to the DVM you wish to use. Connect the photodiode sensor to the input BNC. Select the range you wish to use with the Range switch in the top of the SDX-1226. Note that if you set the Range switch to Remote, the SDX-1226 will default to the 10K $\Omega$  range until a command to change ranges is sent from the host PC.

## 1.4 Operation in Remote Mode

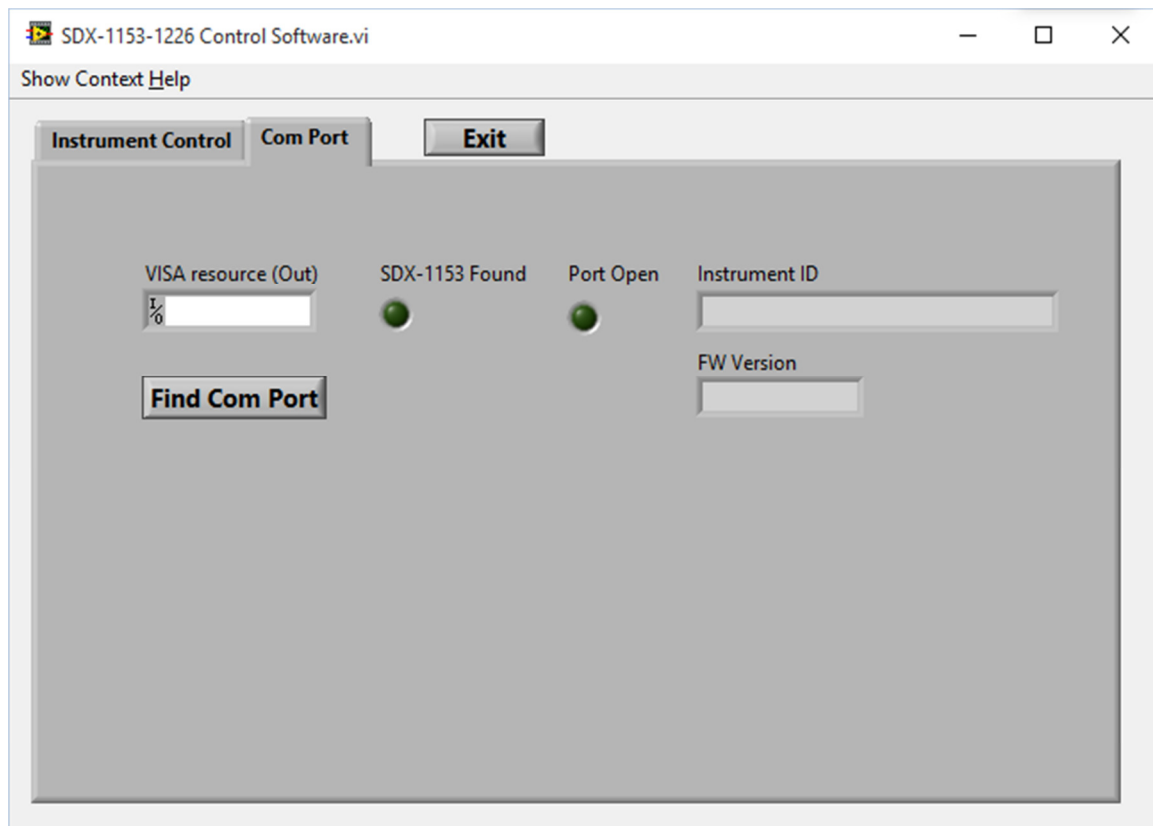
The SDX-1226 can be operated with the PC software as a remotely controlled instrument. To use the SDX-1226, connect the Output BNC to the DVM you wish to use. Connect the photodiode sensor to the input BNC.

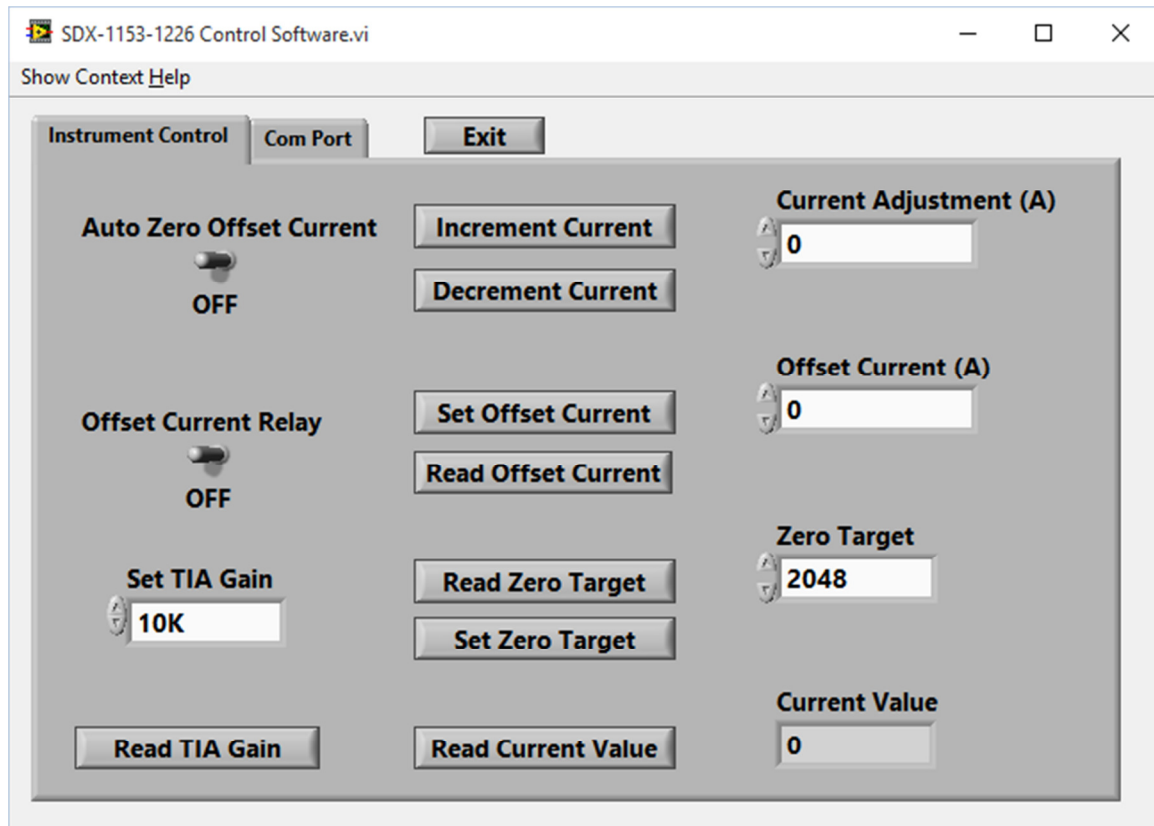
Plug the USB cable into the SDX-1226 and the PC that has had the SDX-1226 software loaded. Note that the required USB drivers are loaded automatically by the software installer.

Select the Com Port tab, and then press the Find Com Port Button.

**Fig 1.2 SDX-1226 Software Com Port Tab**

The SDX-1226 software will attempt to automatically locate the virtual com port that Windows has assigned to the SDX-1226. If it cannot locate it, a panel will appear to allow you to manually select and open the port. Once the port and instrument have been located, the two LEDs will illuminate and the SDX-1226 is ready for remote use. See section 1.6 for details on this subject. The controls and indicators present on the Instrument Controls tab are:





### Set TIA Gain

Sets and displays the TIA Gain if the SDX-1226 is in Remote Mode.

### Read TIA Gain

Reads the TIA Gain from SDX-1226 in Remote Mode or Manual Mode.

### Auto Zero Offset Current

This feature is not used with the SDX-1226.

### Offset Current Relay

This feature is not used with the SDX-1226.

### Increment Current

This feature is not used with the SDX-1226.

**Decrement Current**

This feature is not used with the SDX-1226.

**Current Adjustment**

This feature is not used with the SDX-1226.

**Set Offset Current**

This feature is not used with the SDX-1226.

**Read Offset Current**

This feature is not used with the SDX-1226.

**Read Zero Target**

This feature is not used with the SDX-1226.

**Set Zero Target**

This feature is not used with the SDX-1226.

**Zero Target**

This feature is not used with the SDX-1226.

**Read Current Value**

This feature is not used with the SDX-1226.

**Current Value**

This feature is not used with the SDX-1226.

**Exit**

Exits the SDX-1226 software and closes any open com ports.

All of these descriptions are available when running the software by selecting the Show Context Help item on the menu bar.

## Installation and communication



### 1.5 Installation

The SDX-1226 instrument is not required for the SDX-1226 software installation. Do not plug the SDX-1226 into your PC until the SDX-1226 software has been installed as the installer loads the required USB drivers.

Connect the SDX-1226 USB port, located on the back panel of the instrument to the host device serial connector using the proper cable. The SDX-1226 comes with a standard USB cable.

#### 1.5.1 To Install USB drivers for Windows™:

Installing the Labview software also installs the USB drivers. The drivers are not on the CD, but are embedded in the installer files. Labview first installs the SDX-1226 software, and then it runs the “USB driver installer-R2” automatically.

### 1.6 Custom Software Development

The SDX-1226 uses a Virtual Com Port, so any software that can access an RS232 port can be used to write custom control software.

#### 1.6.1 Connecting to the SDX-1226 with HyperTerminal

To verify the USB installation and find the COM port number click:

**Start → Settings → Control Panel → System → Device Manager**

Scroll down to **Ports (COM & LPT)** and SINGLE click that line. One of the options should be

##### **USB-to-Serial (COM#)**

Note the COM port number. You need it for the next step.

You may use any serial communications software that you are familiar with. These instructions are for HyperTerminal because it is widely available on PCs with Windows™. Click:

**Start → Programs → Accessories → Communications → HyperTerminal**



To save communication settings, enter a name for the connection. In the drop down menu “**Connect using**” select the COM port that the USB driver was installed on (Section 1.7). Click **OK**.

Input the following settings into the communications parameter window that appears next.

<b>Bits per second</b>	<b>9600</b>
<b>Data bits</b>	<b>8</b>
<b>Parity</b>	<b>None</b>
<b>Stop bits</b>	<b>1</b>
<b>Flow control</b>	<b>None</b>

Click **OK** to begin entering serial commands in the HyperTerminal window. The commands you type do not appear in the HyperTerminal window, unless you set the HyperTerminal up to do so. Only the response from the M-LINK is displayed. If you prefer to see the commands you are typing, on the HyperTerminal window click the **File** menu and execute the following sequence:

**File** → **Properties** → **Settings** (tab) → **ASCII setup** → select “**Echo typed characters locally**” → **OK**

In the HyperTerminal window type **VER**, press ↵ **ENTER**. If the response you receive tells you the firmware version of your SDX-1226, you are successfully connected and ready for serial command action.

### 1.6.2 SDX-1226 Serial Commands

All commands and replies are followed by a carriage return (0x0D) and a line feed (0x0A). Unless otherwise noted, if a command is used with no arguments it will become a query. All commands are case insensitive.

All commands reply with:

Ok if the command executed correctly.  
Err if the command could not be executed.

All Queries reply with the item that was queried or Err if the query could not be executed.

The host software should wait for an instrument reply before executing a subsequent command or query.

VER	Queries the Firmware Version. No arguments are used. Example.
-----	--

	Send: verCRLF Reply: 1.00.00CRLF														
IDN	Queries the ID String. No arguments are used. Example. Send: idnCRLF Reply: SDX-1226 InstrumentCRLF														
TIA	Sets or queries the gain. Example. Send tia0CRLF. The SDX-1226 will set the gain to 10K $\Omega$ .  Send tiaCRLF. The SDX-1226 will return the current gain index.  <table> <thead> <tr> <th>Index</th><th>Gain</th></tr> </thead> <tbody> <tr> <td>0</td><td>10K<math>\Omega</math></td></tr> <tr> <td>1</td><td>100K<math>\Omega</math></td></tr> <tr> <td>2</td><td>1M<math>\Omega</math></td></tr> <tr> <td>3</td><td>10M<math>\Omega</math></td></tr> <tr> <td>4</td><td>100M<math>\Omega</math></td></tr> <tr> <td>5</td><td>1G<math>\Omega</math></td></tr> </tbody> </table>	Index	Gain	0	10K $\Omega$	1	100K $\Omega$	2	1M $\Omega$	3	10M $\Omega$	4	100M $\Omega$	5	1G $\Omega$
Index	Gain														
0	10K $\Omega$														
1	100K $\Omega$														
2	1M $\Omega$														
3	10M $\Omega$														
4	100M $\Omega$														
5	1G $\Omega$														
DAT	Query Only. The host will send the value read by the internal 12 bit ADC, in counts. 4095 counts are nominally 1V at the output, and 0 counts are -1V at the output. This is a nominal value and is used only to provide a reference for the zeroing algorithm.														