

User Manual  
**6313C**  
**Laser Source**

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# Statement

This manual is the second version of the User Manual of 6313C Laser Source.

The information contained in this user manual is subject to change without notice.

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**Do not disassemble or modify any part which is not described in this manual. Disassembly may result in declining of the electromagnetic shielding performance, damage to parts in the instrument, etc., thus affecting the product reliability. If in warranty period, free maintenance service is no longer available.**

 Statement:

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## OVERVIEW

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### Overview

6313C is a handheld optical laser source. It is mainly used for the transmission and loss measurement of optical fiber cable and optical passive device in the process of field operation and maintenance. It also meets the test requirements of optical fiber CATV and optical fiber user network. Three modules are available:

6313C Module NO.	001	002	003
Central Wavelength	1310/1550nm±20nm	850/1300nm±20nm	1310/1550nm±20nm 850/1300nm±20nm
Output Port	1×FC/UPC	1×FC/UPC	2×FC/UPC



## OVERVIEW

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The optical laser source is pleasing in appearance, original in structure, small in size, easy in carrying with clearly displayed panel and flexible button operation. The optical laser source can be powered by external 220V charging adapter, embedded rechargeable lithium ion battery or 3 AA alkaline batteries with its intelligent switching of batteries. It is suitable for field operation and maintenance of optical fiber communication engineering.

There are four chapters in this manual.

The first chapter introduces the purpose and characteristics of the 6313C laser source.

## OVERVIEW

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The second chapter describes the characteristics of the front, rear and side panels, as well as the operation and functions of the buttons.

The third chapter introduces the working principle and technical parameters of 6313C.

The fourth chapter introduces the maintenance and simple repairing methods of 6313C.

We truly hope that CETI can bring convenience and shortcut for your work. Please contact us if you have any questions.

## INSTRUCTIONS


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# **INSTRUCTIONS**

## 2 Operation Guidance

### 2.1 Button Instruction and Instrument Constructions

#### 2.1.1 Button Instruction and the Configuration of the Front and Rear Panels

a **【Power】** button , turn on/off the instrument. The charging indicator lies below **【Power】** button, it will be turned on when the battery is charging; It will be turned off when the battery is fully charged.

b **【Backlight】** button , turn on/off the backlight.

## OPERATION GUIDANCE

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c **【Mode】** button, choosing the working mode of the laser. All the output modes of working lasers can be switched among CW, 270 Hz, 1 kHz and 2 kHz.

d **【▲】/【▼】** button, pressing this button means to incrementally/ decreasingly set the attenuation of the output power of the optical laser source. The attenuation will change by 1dB each time you press this button. The adjustment range is 6dB.

**Module NO. 6313C-001**

e **【λ1】** button, pressing this button once to turn on 1310 nm wavelength laser meanwhile turn off 1550 nm wavelength laser, twice to turn off 1310 nm wavelength laser.

f **【λ2】** button, pressing this button once to turn on 1550 nm wavelength laser

## OPERATION GUIDANCE

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meanwhile turn off 1310 nm wavelength laser, twice to turn off 1550 nm wavelength laser.

### **Module NO. 6313C-002**

e **【λ1】** button, pressing this button once to turn on 850 nm wavelength laser meanwhile turn off 1300 nm wavelength laser, twice to turn off 850 nm wavelength laser.

f **【λ2】** button, pressing this button once to turn on 1300 nm wavelength laser meanwhile turn off 850 nm wavelength laser, twice to turn off 1300 nm wavelength laser.

### **Module NO. 6313C-003**

## OPERATION GUIDANCE

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e **【λ1】** button, pressing this button to turn on/off 1310 nm/1550 nm wavelength laser meanwhile switch between the two wavelengths, light output lies on the left interface, press **【▼】** button to change wavelength.

f **【λ2】** button, pressing this button to turn on/off 850 nm/1300 nm wavelength laser meanwhile switch between the two wavelengths, light output lies on the right interface, press **【▼】** button to change wavelength.

The LCD displays the real-time wavelength, working mode, attenuation and battery indicator of working laser. It will display “OFF” when there is no working laser, and the instrument get into protection shutdown mode automatically.

## OPERATION GUIDANCE

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The front panel of this instrument includes a button operation area and a LCD area, while the rear panel has a support frame and a battery compartment. The instrument can stay stable on a horizontal plane when the support frame is rotated 90°. The battery compartment is designed for dry cell, and the instrument can be supplied by 3 AA batteries, as shown in Fig. 2-1.



## OPERATION GUIDANCE

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## OPERATION GUIDANCE

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Fig.2-1 The Configurations of the Front Panel and the Rear Panel

### 2.1.2 The Configurations and Instructions of the Side Panel



Fig. 2-2 The configurations of the side panel

This instrument uses a general Micro-USB interface to supply power and charge,

## OPERATION GUIDANCE

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the input voltage is 5 V. Each side of the instrument is provided with a shoulder belt interface. It enables the users to attach shoulder belt to the instrument according to their needs and makes the instrument easy to carry.

### **2.1.3 The Configurations and Instructions of the Top**

There is a dust cap at the top of the instrument, which can protect optical fiber connectors and keep optical fiber output interfaces from being polluted by the dust. The spindle of the dust cap lies in the upper left corner, rotate it from right to left and it will be opened, and the maximum angle is about 135°.

## OPERATION GUIDANCE

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Fig. 2-3 The Open Direction of the Dust Cap

The instrument has two standard FC/UPC optical fiber connectors, as shown in Fig. 2-3. Users can change them into FC/UPC, SC/UPC, ST/UPC, LC/UPC removable optical output connectors according to their needs.

### **2.2 Methods of Applications**

#### **2.2.1 Initial State**

When the instruments leave the factory, the rechargeable batteries in accessories have been installed in the instruments as embedded rechargeable batteries. If the rechargeable batteries are the only power supply, please make sure that the battery power is adequate. It is suggested that users should charge the batteries with regulated DC power adapter. The instrument can be used after the battery is fully charged. When the instrument is supplied by regulated DC power adapter, it can function normally even if the batteries are still charging.

#### **2.2.2 Operation Steps**

### 2.2.2.1 Turn On/Off

Press **【Power】** button for about 3 seconds and the instrument will be turned on. After the startup, the LCD displays “OFF” and the lasers doesn't work. Then press **【Power】** button for about 2 seconds, the instrument will be really turned off. After the shutdown, the LCD displays nothing.

### 2.2.2.2 Backlight

Press **【Backlight】** button and release it, the backlight will be turned on. Repeat the previous action to turn off the backlight.

### 2.2.2.3 Wavelength Selection

The user can press **【 $\lambda 1$ 】** button or **【 $\lambda 2$ 】** button to select wavelength according to

need. The LCD displays the working wavelength. The output optical power is very steady after the laser being preheated for over 15 minutes.

### **2.2.2.4 Mode Selection**

Press **【Mode】** button to select the optical power output modes. And the output modes of optical power have four kinds: CW、270 Hz、1 kHz and 2 kHz. The default working mode of the laser is CW, and the LCD displays the real-time optical power output mode.

### **2.2.2.5 Attenuation Selection**

While optical power output, pressing **【▲】** button or **【▼】** button can set the corresponding attenuation, and the LCD can display the attenuation within

[-1dB]~[-6dB].

### **2.2.3 Automatic Shutdown Protection**

To prevent the instrument being turned on by error and save electricity, when all the lasers don't work and the LCD displays "OFF", the instrument will shutdown automatically after being in standby for about 20min.

### **2.2.4 Battery Management**

#### **2.2.4.1 Battery Indicator**

The LED below **【Power】** button lights when the instrument is in condition of recharging, and it goes out after recharging. The real-time battery status will be displayed on the LCD. Users should recharge the battery timely when it is down



to the last one, otherwise the battery will enter the intelligent switching state.

### **2.2.4.2 Intelligent Switching of Batteries**

The priority order for instrument power supply is power adapter supply/mobile power supply > embedded rechargeable battery supply > dry cell supply. When the rechargeable battery is supplying power, the dry cell won't supply power; when the rechargeable battery is getting low, dry cell power supply will be turned on, then the rechargeable battery won't supply power and the LCD won't display the rechargeable battery power.

## OPERATION GUIDANCE

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**1. The output laser density of the light source is very high. please do not look at the laser directly.**

**2. The standard package for the output port of this light source is FC/UPC connector. It is not allowed to connect the port with other types of connectors. Otherwise it will cause permanent damage to the port.**

**3. During the usage, the interface of optical fiber jumper that connected to the output port of the light source must be clean and dry. When connecting the jumper to the port, please aim at the locating slot then tighten it and remember to avoid over tightening.**



**Attention:**

## OPERATION GUIDANCE

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**Attention:**

4. The LCD only displays the power of rechargeable batteries. There is no indicator when the rechargeable batteries don't supply power.
5. The instrument can be charged when it has embedded rechargeable batteries and dry cells.
6. Dust cap operation should not be too hard, lest broken off.

## TECHNICAL SPECIFICATIONS

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# **TECHNICAL SPECIFICATIONS**

### **3 Working Principle & Technical Parameters**

#### **3.1 Working Principle**

The working principle block diagram of 6313C laser source is shown in Fig. 3-1. Part of the backward light that output by the laser is transformed into directly proportional photocurrent after being tested by the internal photoelectric detector PIN. Then it will be amplified by the power controller, and after comparing it with DC reference signal, it will be added to the drive circuit of the laser. The output optical power varies according to the change of environment, the error signals will be added to the drive circuit then change the drive current, so that the output optical power of laser will tend to be steady.

## WORKING PRINCIPLE & TECHNICAL PARAMETERS

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Attenuation circuit changes the output optical power by CPU settings.

Protection circuit can prevent the laser from being damaged in abnormal circumstances.

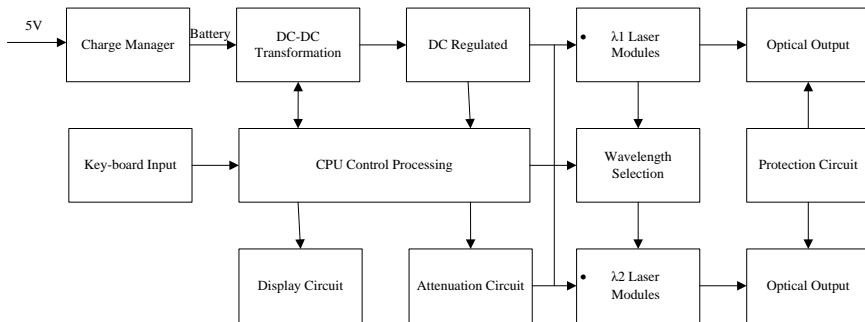


Fig. 3-1 6313C Laser Source Functional Block Diagram

## WORKING PRINCIPLE & TECHNICAL PARAMETERS

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### 3.2 Technical Parameters

#### 3.2.1 Technical Parameters

6313C Module NO.	001	002	003
Central Wavelength	1310/1550±20nm (9/125um)	850/1300±20nm (62.5/125um)	1310/1550±20nm (9/125um) 850/1300±20nm (62.5/125um)
Output Port	1×FC/UPC	1×FC/UPC	2×FC/UPC
RMS Spectrum Width	≤5nm		

## WORKING PRINCIPLE & TECHNICAL PARAMETERS

Output Power	$\geq -3\text{dBm}^1$
Short-Term Stability	$\pm 0.05\text{dB}/15\text{min}^1$
Long-Term Stability	$\pm 0.15\text{dB}/8\text{h}^1$
Power Output Mode	CW/270Hz/1kHz/2kHz

Note: 1. The test temperature is  $23\text{ }^\circ\text{C} \pm 5\text{ }^\circ\text{C}$

### 3.2.2 Acclimation

Operation Temperature:  $0\text{ }^\circ\text{C} \sim +50\text{ }^\circ\text{C}$

Storage Temperature:  $-40\text{ }^\circ\text{C} \sim +70\text{ }^\circ\text{C}$

Operation Humidity:  $5\% \sim 95\% \text{RH}$



## WORKING PRINCIPLE & TECHNICAL PARAMETERS

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Power Supply:

Power adapter (Input 100~240V AC, 50Hz; Output DC 5V,  $\geq 1\text{A}$ )

Embedded rechargeable batteries(Nominal Voltage 3.7V,  $\geq 1000\text{mAh}$ )

3 AA alkaline batteries (not included in accessories)

### **3.2.3 Mechanical Characteristics**

Size:  $\leq 86 \times 186 \times 40$ (Width $\times$ Height $\times$ Depth, mm)

Weight:  $\leq 0.5\text{kg}$

## MAINTENANCE INSTRUCTIONS

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# **MAINTENANCE INSTRUCTIONS**

## **4 Maintenance and Repair**

### **4.1 Cautions**

Rational usage and careful management can let the instrument maintain its performance index for a long time and extend its service life. Please pay attention to the following items when the instrument is in use:

a The output port of the instrument is FC/UPC connector, do not use other types to connect with it, otherwise it will result in permanent damage to the instrument. In order to ensure the temperature stability of optical fiber insertion loss, please choose high quality standard FC/UPC type of optical fiber. If it is necessary to use

## MAINTENANCE & REPAIR

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other types of connectors, the corresponding converting adapters will be needed.

b Cleaning optical fiber interface with nonwoven cloth before using this instrument, the cleanliness will infect the stability of optical laser source. The repeated connection of FC/UPC connector can cause wear and tear, please try to reduce the connecting times.

c The instrument should be free from mechanical vibration, collision, drop and other mechanical damage.

d The optical output ports should not be touched by hard objects, dirt, acid, alkali and corrosive materials. The ports should be covered with protective caps and kept from being eroded by dust or other harmful chemicals.

## MAINTENANCE & REPAIR

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e 850nm and 1300nm output are multi-module fiber, please do not use fiber with different core radius to connect to them, otherwise it will cause a large loss of optical output.

f If the instrument has not been used for a long time, please recharge it within 6 months to prevent damage caused by excessive battery discharge.

g The instrument is a low power consumption product. When the battery level is too low, the backlight cannot be turned on; When the battery level is relatively low, the backlight will flicker or darken, and users should recharge it timely or turn off the backlight.

h During the use of the instrument, it is normal that the battery indicator will

## MAINTENANCE & REPAIR

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follow the power fluctuation of the rechargeable batteries.

- i When the instrument is charging, the indicator flashes as a normal phenomenon. When the battery is in a critical state, the charge can be stopped.

### **4.2 Maintenance**

Before using the instrument, firstly check whether the external regulated DC supply, power supply battery and the ordinary jumper connected to the output port of the optical laser source are intact or not and the connection is reliable or not.

Table 4-1 Faults and Solutions

Faults	Reasons	Solutions
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## MAINTENANCE & REPAIR

The instrument cannot start	Battery is out of power	Recharge the battery
	Didn't connect to external power supply	Power supply with AC/DC adapter
	No battery in battery compartment	Install dry cells
Buttons do not respond	The buttons got stuck	Make sure that no button has been pressed down
Backlight flicker	Low battery power	Use adapter to charge/Supply power
Unable to turn on the backlight		

## MAINTENANCE & REPAIR

Low output power	The interface of the optical fiber is polluted	Use absolute alcohol to wipe the interface clean
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There is no part inside the instrument that can be repaired by users, if it is certain that the instrument breaks down, please contact us.

### **4.3 Warranty**

The warranty period is 18 months. During this period, if the user is in compliance with the rules of transportation, storage and use, our company will repair or replace products whose quality is under the product standard for free.

The instrument should be packed and stored in a dry ventilated indoor place within



## MAINTENANCE & REPAIR

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-40°C ~ +70°C; It should be put in a private packing box and kept from violent collision.

