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LET'S GO IN THE GRANDWAY

GRANDWAY OPTICAL INSTRUMENTS SERIES

# *User's Guide to the FHS2 Series*

## *Dual-wavelength Laser Source*

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## *Dual-wavelength Laser Source*



## 1 Introduction

The FHS2 laser source offers excellent stability, portability and facile adjustments for accurate optical fiber testing. Single output connector serves multi-wavelengths - - 850 nm , 1300 nm 1310nm,1490nm, 1550nm.

FHS2 can be used to test single mode optical fiber of long distance and local network. Also it can work with optical power meter to measure the loss of optical fiber.

## **2. Warranty**

### **One Year Limited Warranty**

**Grandway** products are warranted against the defective components and workmanship for a period of one year from the date of delivery to the original customer. Any product found to be defective within the warranty period would be returned to **Grandway** authorized service center for repair, replacement and calibration.

### **Exclusions**

The warranty on your equipment shall not apply to defects resulting from the following:

- Unauthorized repair or modification including battery replacement
- Misuse, negligence, or accident

### **Returning Product**

To return product, you may contact Grandway to obtain additional information if necessary. To serve you better, please specify the reasons for the return.

All delivery and mails should be sent to the following address:

*Grandway Customer Service  
6F, Xin'an building No. 99 Tianzhou Road  
Shanghai, 200233 P.R. China*

## **Contacting Us**

Tel: +86-21-54451260/61/62/63

Fax: +86-21-54451266

E-mail: [overseas@grandway.com.cn](mailto:overseas@grandway.com.cn)

Technical support e-mail: [gwservice@grandway.com.cn](mailto:gwservice@grandway.com.cn)

Website: [www.grandway.com.cn](http://www.grandway.com.cn)

### **3 Safety Information**

#### **Warnings!**

- Never look directly into optical outputs or a fiber while the equipment is on. Invisible laser beam may damage your eyes.
- Do not short-circuit the terminal of AC adapter / charger and the batteries. Excessive electrical current may cause personal injury due to fumes, electric shock or equipment damage.
- Connect DC power cord with the equipment and wall socket properly. While inserting the DC plug, make sure there is no dust or dirt on the terminals and both plugs are fully seated. Incomplete engagement may cause fuming, electric shock or equipment damage and may result in personal injury.
- Do not operate the equipment near hot objects, in hot environments, in dusty/humid atmosphere or when condensation is present on the equipment. This may result in electric shock , product malfunction or poor performance.

## **4 Preparing for Operation**

### **4.1 Unpacking the instrument**

#### **Packing material**

We suggest that you keep the original packing material. Using the original packing material is your guarantee of protecting the instrument during transit.

#### **Checking the package contents**

The standard accessories of FHS2D02 are as follows:

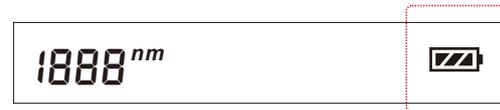
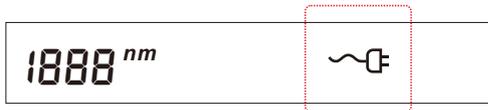
- Main unit(including battery)
- Quality Check Report
- DC 6V Adapter
- Carrying Case
- User's Guide

#### **Checking for damage in transit**

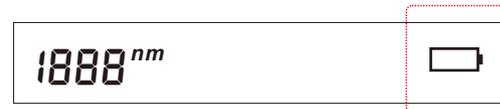
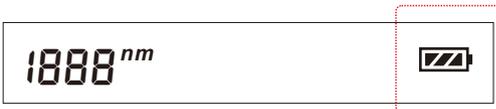
After unpacking the instrument, check to see whether it was damaged in transit. This is particularly likely if the outer casing is clearly damaged. If there is damage, do not attempt to operate the instrument or to repair it without authorization. Doing so can cause further damage and you may lose your warranty qualification.

## 4.2 Power Supply

There are battery indicator and power plug on the screen to show the power supply. When you do not connect the DC 6v charger, the adapter indicator will disappear on the screen.



When you use the battery, the battery indicator on the screen will show the remaining charge. An empty battery indicator means the power is almost out. When the battery charge is extremely low to supply the necessary power, the instrument will automatically switch off . Please change the battery or recharge it



## 5 Specifications

### Optical Specifications

Model	FHS2D02/FHS2D02F	FHS2D03/FHS2D03F	FHS2T01/FHS2T01F	FHS2Q01F/FHS2Q02F
Output wavelength(nm) <sup>①</sup>	1310&1550±20nm	850&1300±20nm	1310&1490&1550±20nm	850/1300/1310/1500(FHS2Q01F) 1310/1490/1550/1625(FHS2Q02F)
Laser	Class I			
Spectral Width	3nm typical value			
Long term Stability(15min) <sup>②</sup>	±0.05dB@1300,1310 ±0.1dB@850,1490nm			
Short term Stability(8hr) <sup>②</sup>	±0.2dB@850,1490nm ±0.1dB@1300,1310,1550nm			
CW output power	-5.0dBm±0.5dB			
Modulated Wavelength	270Hz,1kHz,2kHz			
Available Connector	FC/PC,SC/PC,ST/PC(optional) (APC is available at the time of ordering)			
Power	2 units of AA rechargeable batteries			
Adjustable Range	±3dB, 0.1dB/step / N/A For FHS2D02F & FHS2D03F & FHS2T01F			N/A

**NOTE:** ① ±5% is effective under 1550nm, CW, 23°C±3°C, humidity≤70%

② 25 min preheat @ 25°C

## General Specifications

<b>Operation Temperature</b>	-10 °C~+50 °C
<b>Storage Temperature</b>	-20 °C~+70 °C
<b>Humidity</b>	<90%
<b>Size(H×W×D)</b>	160mm×76mm×45mm
<b>Weight</b>	About 0.26 kg(including batteries)

**NOTE:** Please be aware that Grandway will not be responsible for the damage caused by customer's improper usage of AC power supply, especially when the instrument is working by internal batteries. The working hours of instrument might show a difference under a different circumstances and batteries status

## 6 Operation

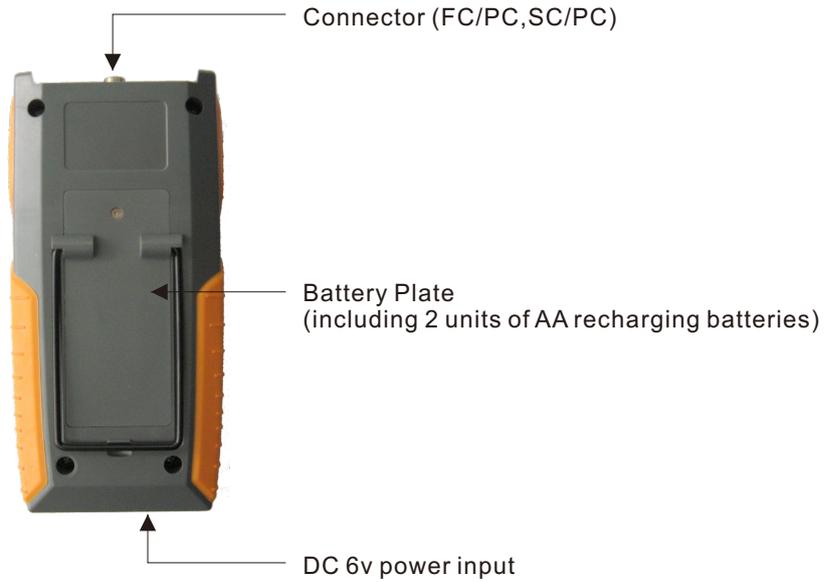
### 6.1 Display and controls

#### 6.1.1 Front(Panel Board)

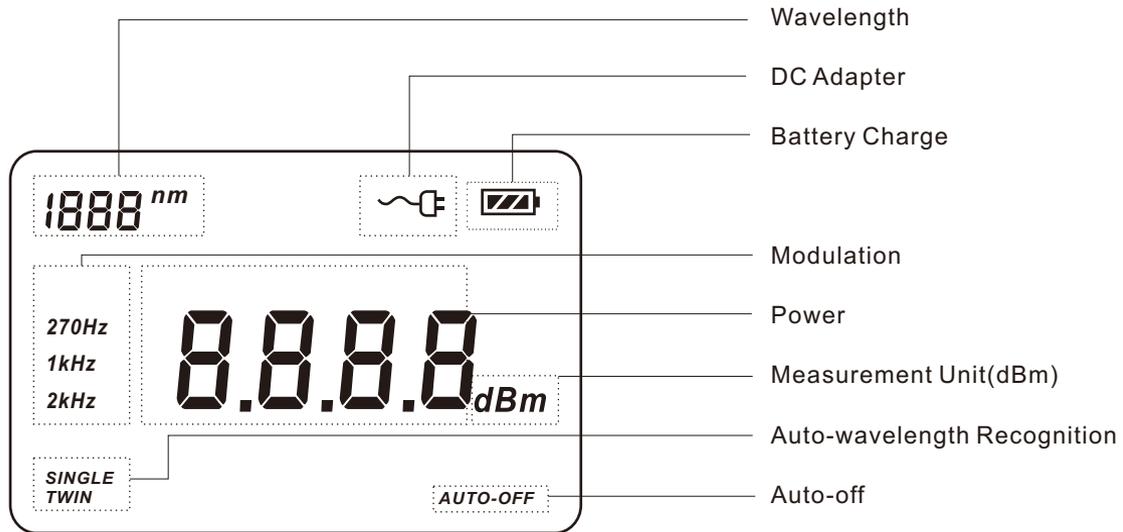


No.	Key	Function
1		Wavelength Shifting Key: Switches working wavelength.
2		Modulated Wavelength Shifting Key: Switches modulated wavelength and continuous wavelength.
3		Output Power Increase and Decrease: Increase or decrease output power by 0.1dB and the adjustable range is $\pm 3$ dB.
4		SINGLE: Auto-wavelength recognition is off. TWIN: Auto-wavelength recognition is on.
5		Switches backlighting on/off.
6		Switches Instrument on/off. Long keypress while powering on to activate the instrument without Auto-off function.
		Switch between Single Mode and Multimode

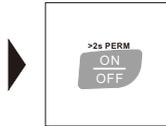
**6.1.2 Back & top**



6.1.3 LCD



## 6.2 Turning the instrument on and off



Press the “ON/OFF” key briefly.  
The instrument powers on. (See the figure)  
Press the “ON/OFF” key briefly again.  
The instrument powers off.

### Note: Auto-off function

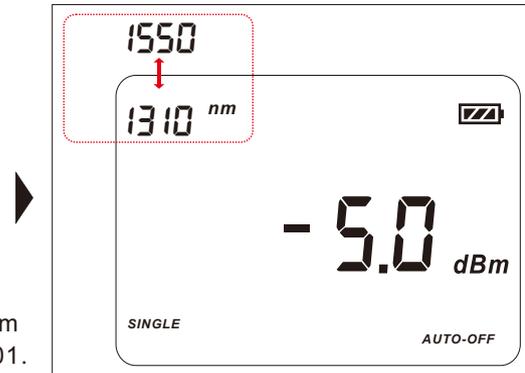
- 1 The instrument powers off automatically if no key press in 10 minutes.
- 2 Press the “ON/OFF” key for about 2 seconds to power on the instrument with "Auto-off" function deactivated.



## 6.3 Switching the wavelength



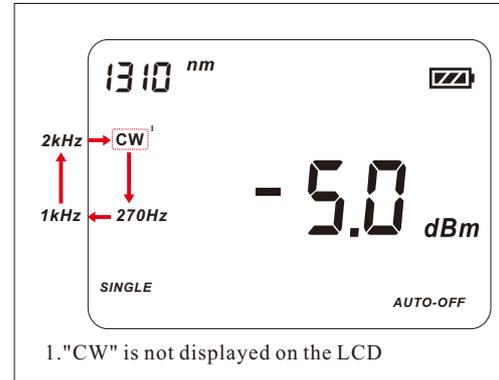
Press the “λ” Key to switch the wavelength between 1310nm, 1550nm for FHS2D02, 850nm, 1300nm for FHS2D03, 1310nm, 1490nm and 1550nm for FHS2T01.



## 6.4 Frequency Output



The instrument defaults to CW when it switches on. When it is set to CW, there is no frequency on display. Press the "CW/Hz" Key to select the output among 270Hz, 1kHz and 2kHz.



## 6.5 Auto-wavelength Recognition



Press the "TWIN" Key to turn on and off the auto-wavelength recognition function.

Note:1). It is suggested to turn off the "TWIN" code when you do not use it. The optical power output of laser source will be fluctuated.

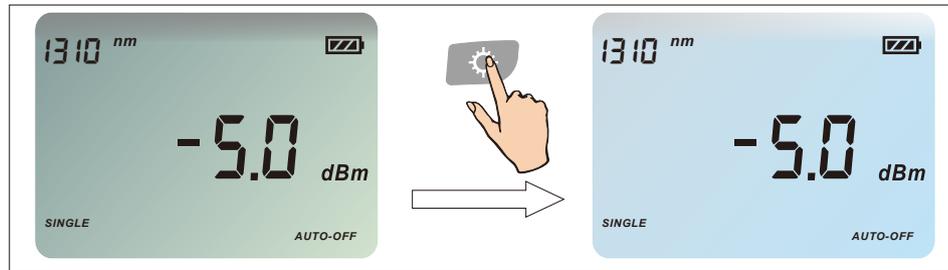
2). The function of "TWIN" and Modulation cannot work together. When the "TWIN" is on, modulation of laser source module is closed automatically.

3). Wavelength will be shifted automatically according to the recognition when the "TWIN" of power meter module is on. In another word, the modulated signal of 270Hz, 1kHz and 2kHz cannot be recognized and received at the moment.

## 6.6 Switching backlighting of the LCD on and off

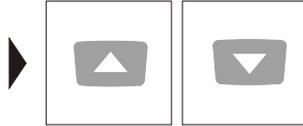


Press the backlighting Key to switch the backlighting of the LCD on and off.



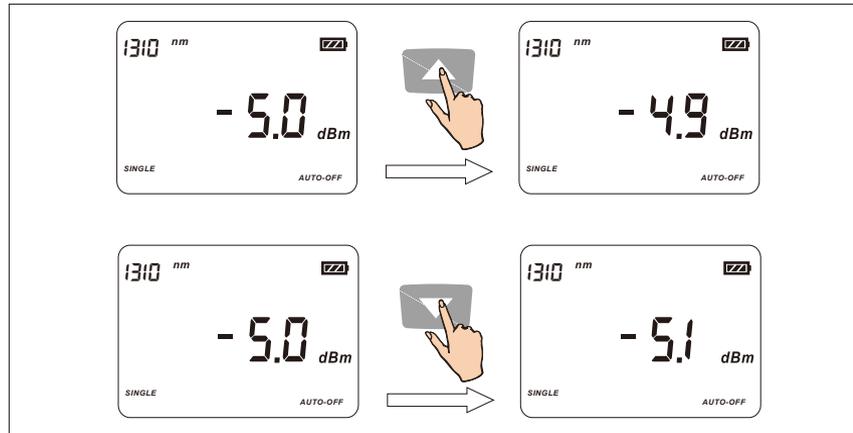
## 6.7 Setting the output power

(Available for FHS2D02/FHS2D03/FHS2T01 )



Press the “” key to increase the output power. The measurement range is from -2 dBm to -8 dBm. Each time you press it, the value increases by 0.1 dBm.

Press the “” key to decrease the output power. The measurement range is from -2 dBm to -8 dBm. Each time you press it, the value decreases by 0.1 dBm.



## 6.8 Connecting with Optical Power Meter

It can work with optical power meter to measure the loss of optical fiber accurately.



## **7 Maintenance**

- ➔ Please disconnect the DC adapter/charger and cover the protective dust cap once you finish using.
- ➔ It is a good idea to clean the connector and the instrument when they get dirty through use. Optical cleaning pads and anhydrous alcohol is recommended. And please be careful not to get the detergent inside the instrument.
- ➔ To ensure the measurement accuracy, please send the instrument to Grandway Service Center for calibration once a year.

NOTE: Specifications, terms and conditions are subject to change without notice.

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