WS1524J Optical Switch

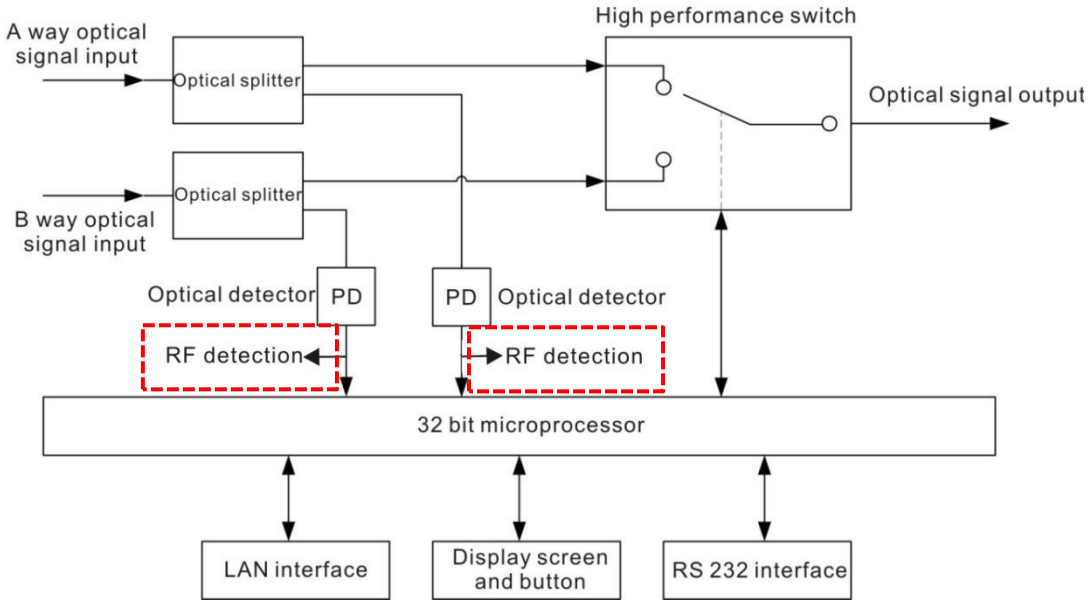
1 Product Overview

Optical switch is important equipment in optical fiber transmission system, and mainly used for backup switching 2 way or multi way optical signal, so as to automatically switch to backup channel when there is something wrong with main channel and guarantee system's regular and continuous operation. We have normal optical switches and enhanced optical switches. Enhanced optical switches have RF detection function. It also can switch automatically when RF signal has a fault. Adopt imported high-performance switching devices and built-in perfect embedded automatic monitoring system to ensure excellent performance.

2 Features

- Use imported high-performance switching devices.
- control the switch status and setup to the automatic switch mode or the manually switch mode.
- Microprocessor, automatic monitoring and real-time monitoring the working status of the optical switch
- 160×32 dot matrix LCD monitor on the front panel, accurately display all working status parameters.
- 19″1U height standard rack mount,
- Standard network management transponder, support WEB network management and SNMP network management

3 Block Diagram



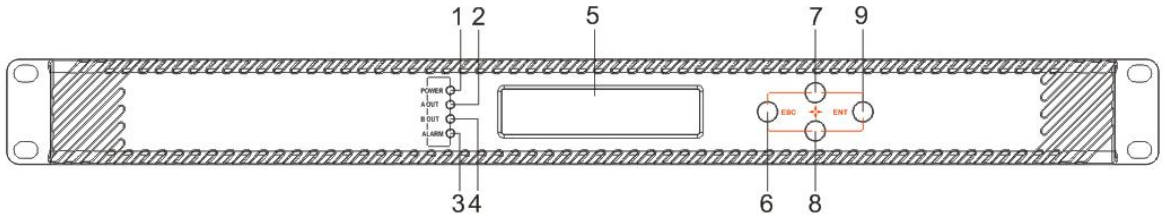
Note: The red dotted frame in the figure is only for enhanced optical switch.

4 Technique Parameter

Item	Unit	Technique parameter		Remark
Type		Ordinary type	Enhanced type	
Wavelength	nm	1200 – 1600		
Insertion loss	dB	≤1.3		Testing at 1310nm, 1490nm, 1550nm
Switching time	ms	≤ 500		
Return loss	dB	≥ 55		
Max input optical power	mW	500		
Input optical power operating range	dBm	-15dBm - +24dBm		
RF detection optical signal range	dBm	No this function	-2dBm- +24dBm	Enhanced optical switchs have this function: the input optical signal within this range has the RF detection function. And according to the detected RF signal to switch.
Switching life		≥10 million times		
Optical connector type		FC/APC or SC/APC		
Supply voltage	V	AC160V - 250V (50 Hz)		
Power consumption	W	≤ 2		
Operating temperature range	℃	-5 - +55		
Maximum operating relative humidity	%	Max 95% No condensation		
Storage temperature range	℃	-30 - +70		
Maximum Storage relative humidity	%	Max 95% No condensation		
Dimension	mm	483(W)×270(D)×44(H)		

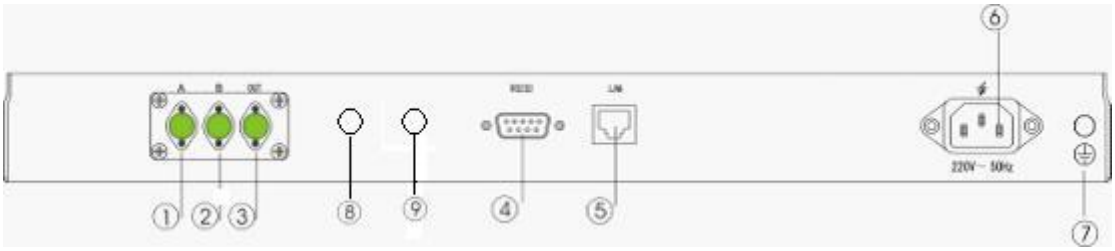
5 External Function Description

5.1 Front panel description



NO.	Item	Remark
1	Power indicator	When the power inside is working,the light is on.
2	A way output status indicator	When switch is at A, the light is on.
3	Warning indicator	When warn, red light is on, and detail please refer to menu.
4	B way output status indicator	When switch is at B, the light is on
5	160×32 dot matrix LCD monitor	Used for displaying all parameters.
6	ESC Exit key	
7	Up key	
8	Down key	
9	Enter key	

5.2 Rear panel description



1	A way optical signal input	The interface type can be specified by the users.
2	B way optical signal input	The interface type can be specified by the users.
3	Optical signal output	The interface type can be specified by the users.(**When the equipment is working normally, invisible laser danger warning!**)
4	RS232 interface	Used for configuring the network management parameters.
5	LAN interface	RJ45 interface，used for local network management.
6	Power input	
7	Rack Earth Stud	Used for connecting equipment with earth wire.
*8	Output RF signal test port of A way	Enhanced optical switch
*9	Output RF signal test port of B way	Enhanced optical switch

6 Menu system

6.1 Main menu

Name	Display		Description
System Starting	xxxxxxx		Manufacturers' logo
	xxxxxxx		Equipment model
	xxxxxxx		Start countdown / lock status
Suspend Page	xx.x A	Out: xx.x	Current input optical power and output channel
	xx.x B		
Main Page	1.Disp Parameters		Entry of parameter display
	2.Set Parameters		Entry of parameter setup
	3.Alarm Status		Entry of alarm information

6.2 Display Menu

Channel A Power:	xx.x dBm	Current input optical power of A way，accurate to 0.1 dBm
Channel B Power:	xx.x dBm	Current input optical power of B way，accurate to 0.1 dBm
Work Wavelength:	1550nm	Current working wavelength
Control Mode:	MANUAL	Current working mode of switch
Switch Threshold:	x.xdBm	Current switch threshold of automatic switching mode
Current Channel:	A	Current working input channel
Channel A RF:	x.xxV	*Input RF signal voltage of A way（Enhanced optical switch）
Channel B RF:	x.xxV	*Input RF signal voltage of B way（Enhanced optical switch）
S/N:	xxxxxxx	Serial number
Box Temperature:	xx.x℃	Current box temperature
IP Address:	xxx.xxx.x.x	IP address
Subnet Mask:	xxxx.xxx.xx	Subnet Mask

Net Gateway:	xxxxxxxx	Gateway
Mac:	xxxxxxxx	MAC address
Software Version:	x.xx	Software system version

6.3 Setup Menu

Set Optical Power Unit	Optical power unit in the switch display menu
Set Work Wavelength	Set work wavelength, for correcting input power detection
Set Buzzer Alarm	Open or close the buzzer alarm
Set Control Mode	Set equipment's switching mode. Press "Enter", and then set the switching mode.
Set Work Channel	Set working channel (this menu appear only with manual switching mode). Press "ENTER", can switch manually between A and B
Set Switch Threshold	Set switch threshold of automatic switching (this menu appear only with automatic switching mode). When input power of A way is less than this value, it will be automatically switched to B way. When input power of A way is more than this value, it will be automatically switched to A way
Set Save RF Ref	*Keep the current RF Voltage of A and B ways as RF detection reference Voltage.
Set RF Mode	*Set RF operating menu, press enter key, select "ON"or"OFF"to open or close the RF automatic switch function.
Set Channel A Low Alarm	Set Channel A input optical power low alarm threshold
Set Channel B Low Alarm	Set Channel B input optical power low alarm threshold
Set Local IP Address	Set IP address
Set Subnet Mask	Set subset mask
Set Gateway	Set gateway
Restore Factory Config	Restore factory config
Note: The menu with * is only for enhanced switch	

*6.4 Quickly set use instructions of enhanced optical switch RF automatic switching

Optical signal and RF signal normally input**:**

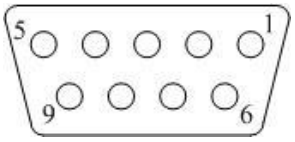
Set Parameters	Enter into the setup menu
↓	
Set Control Mode	Choose the "AUTO" mode
↓	
Set Switch Threshold	Set switch threshold of optical signal
↓	
Set RF Mode	Choose "ON", open the RF detection
↓	
Set Save RF Ref	keep current RF value of A and B ways.

7 Communication Setup Descriptions

7.1 Communication Interface Description

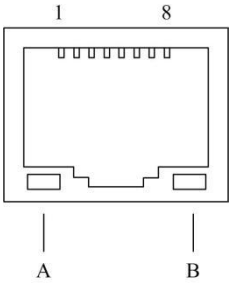
1) RS232 communication interface adopts DB9 standard connector, the pin definitions as follow:

The serial communication uses the standard NRZ form, 1 starts bit, 8 data bits, 1 stop bit and the baud rate is 38400.



1：No Connect	2：TX	3：RX
4：No Connect	5：GND	6：No Connect
7：No Connect	8：No Connect	9：No Connect

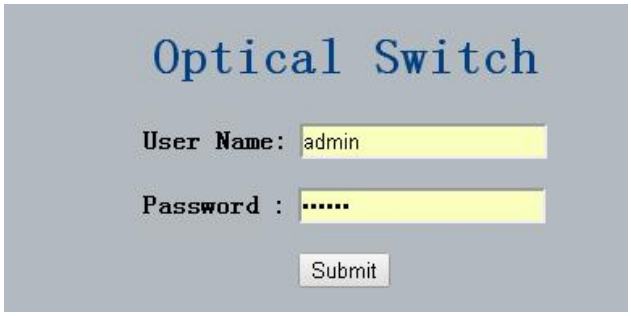
2) LAN communication interface adopts RJ45 standard connector, the pin definitions as follow:



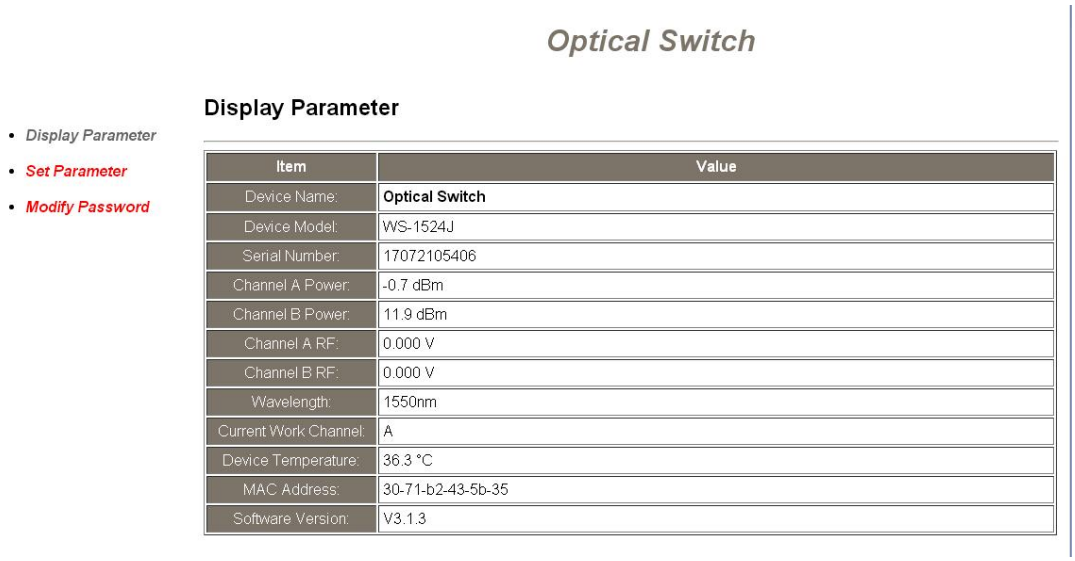
1：TX+	2：TX-	3：RX+
4：No Connect	5：No Connect	6：RX-
7：No Connect	8：No Connect	
A：Green light: when the light is flickering, LAN port is sending the data.		
B：Yellow light: when the light is on, the network connect is normal.		

7.2 WEB Network Management

1）Opening the IE browser and entering the equipment IP address leads to the following interface:



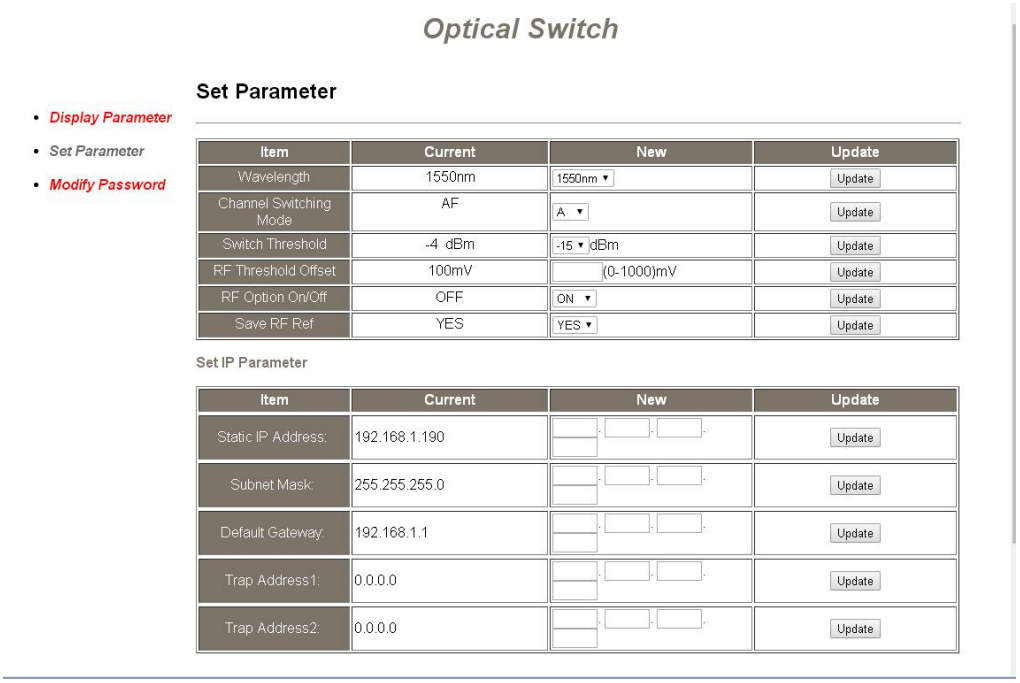
2）Enter the user name **admin** and password **123456** (factory default), to show the following interface:



There are 3 sub-interfaces:

1. **Display Parameter** interface: Describes the equipment display menu.
2. **Set Parameter** interface: Change the equipment parameters in this interface.
3. **Modify password** interface: Change the login password in this interface.

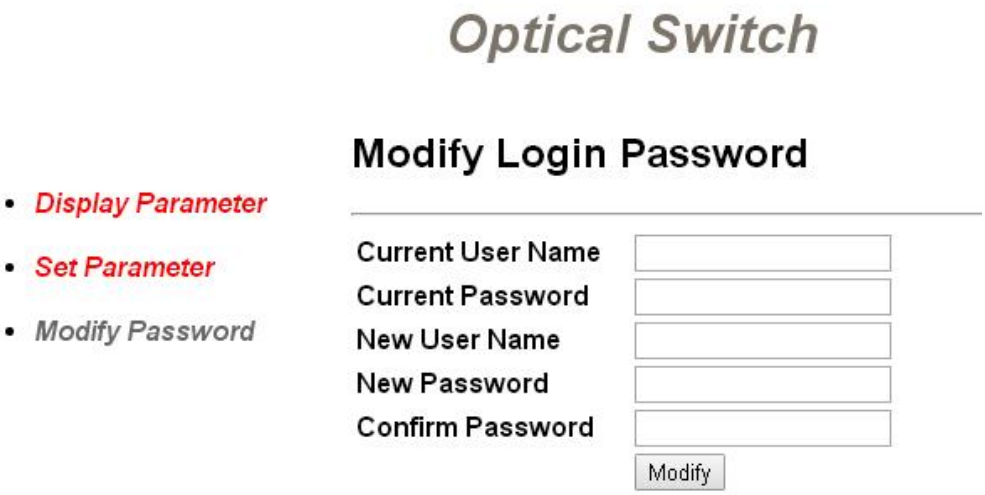
3）Click **Set Parameter** to open the following interface:



The **Item** shows the changeable parameters, **Current**—the current parameters; **New**—select or enter the new parameters; **Update**—update the parameters.

The update steps: Find the item which needs to be changed, select a new value, and click the **Update** button.

4）Click **Modify password** to open the following interface:



8 Attention

- Ensure the package is not defaced. If the equipment is damaged due to transportation or other reasons, please don't electrify to avoid worse damage.
- Before powering on, make sure that the grounding terminals of the chassis and power socket are reliably grounded, which can effectively protect against surges and static electricity.
- Optical switch is a professional equipment,its installation and debugging must be operated by professional technicians. Read this manual carefully before operating to avoid damage to equipment caused by fault operation or accident harm to the operator.
- When installing and debugging optical equipment, invisible laser beams may be emitted inside the fiber connector.Avoiding permanent harm to the body and eye, the fiber connector should not aim at the human body and human should not look directly at the fiber connector with the naked eye!
- There must be no shielding outside the ventilation holes of the device. Poor ventilation will cause the index to decrease, and in serious cases will cause damage to the device.
- When cleaning the fiber end face, you must confirm that the optical source is turned off.
- When the fiber connector is not in use, put a dust cover to avoid dust pollution and keep the end surface of the optical fiber clean.
- When installing the fiber connector, apply appropriate force to avoid damage to the adapter. Otherwise, the output optical power may decrease.