AIMA-OPSW OPTICAL A/B PROTECTION SWITCH

Product User Manual

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Technetix Group Limited
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1 Precautions

WARNING!

This equipment is intended for indoor applications. To prevent fire or electrical shock, or damage to the equipment, do not expose units to water or moisture.

- You should carefully read and thoroughly understand the contents of the manual before installing and using this equipment.
- A typical connector is the SC/APC 8°.
  Note: An 8° angle polished optical connectors must be used.
- At any time, there may be dangerous voltage inside the device.
- Do not power up before the cover and the panels of the equipment are installed and the enclosure is closed.

Cleaning

Only use a damp cloth for cleaning the front panel. Use a soft dry cloth to clean the top of the unit. **DO NOT** use any spray cleaners or chemicals of any kind.

Outage or overload requiring service and repairs

Unplug the unit and refer only to Technetix's qualified service personnel.

Servicing and repairs

DO NOT attempt to service this unit yourself. Refer all servicing needs to Technetix's qualified service personnel only.

WARNING!

Exposure to class 3A laser radiation is possible. Access should be restricted to trained personnel only. Do not view exposed fibre or connector ends when handling optical equipment.

2 About This Manual

2.1 Chapter Overview

1. Precautions
2. About This Manual: Preface
3. Overview: Application module overview, including the module features, technical specifications, and ordering information.
4. Module Characteristics: The appearance of the equipment, port, and introduction of other components
5. Installation: Installation procedure
6. Module Configuration & Alarms: Web management configuration instructions.
7. Troubleshooting
8. Product Warranty
9. Declaration of Conformity.

Appendix A: Default Alarm Parameters

Appendix B: dB Conversion Table

2.2 Related Documentation

The following documents may be used in conjunction with this manual:

- Technetix.AIMA3000 - Product User Manual
- Technetix.AIMA ASMM - Product User Manual
- AIMA3000 NMS Web Management System Product User Manual
- Technetix.NMS3-EPSM - Basic Inventory Management
- Technetix.NMS3-EPSM - Basic Alarm Management
- Technetix.NMS3-EPSM - Basic System Management
- Technetix.NMS3-EPSM - Basic Template Management

2.3 Document Conventions

Before you use the manual, please familiarize yourself with the format used in this manual.

'*' Asterisk: Points marked with an asterisk means there are corresponding notes on the page

2.4 Technical Support

If you need help in the process of setting up and maintaining an FT5X, please contact Technetix's technical support staff:

Europe:
Technetix BV
Kazemat 5
NL-3905 NR Veenendaal
P.O. Box 385
NL-3900 AJ Veenendaal
The Netherlands

Phone: +31 318 58 59 59
Email: customer.service.vdl@technetix.com

3 Overview

3.1 Product Description

The Optical A/B Protection Switch (OPSW) is designed to plug into Technetix's latest generation Advanced Intelligent Multi-services Access platform - the AIMA3000.

The high isolation and impedance matched optical switch is microprocessor controlled and will operate in standalone mode without the need of management software.

Switching is based on the measurement of optical and RF signals. These signals are compared to preconfigured minimum and maximum thresholds parameters stored in the firmware tables.

Manual operation of the OPSW or the configuration of the optical and RF thresholds can be set through the web interface using a computer, a mobile device, or through Technetix's NMSE management software.

3.2 Product Key Features

- Plug-and-play with the AIMA3000 platform
- Three adjustable optical input levels to suit different optical input ranges:
  High: +10 dBm ~ +25 dBm (251.18 mW ~ 316.22 mW)
  Middle: 0 dBm ~ +15 dBm (1 mW ~ 31.62 mW)
  Low: - 10 dBm ~ + 5 dBm (0.1 mW ~ 3.16 mW)
- Fast switching time of 15 ms
- Non-Revert and Revert operating modes with user-adjustable delay
- Adjustable minimum thresholds of -10 dBm ~ +25 dBm on both inputs.
  Operators can define the maximum and minimum parameters for automated switching
- Optical switching based on optical or RF power levels
- Comprehensive status monitoring through the built-in web interface
- Remotely upgradeable firmware and auto upload/download of configuration files through ASMM web interface or use Technetix's NMSE
- Bulk firmware updates through Technetix's NMSE
- FCC, CE and RCM[1] compliant

[1] See Declaration of Conformity for current status.

3.3 Specifications

Optical Performance

Optical wavelength	1270 ~ 1630 nm
Optical input range	-10 ~ +25 dBm
Insertion loss with connectors	2 dB maximum
Switch accuracy of optical	< 0.5 dB
Optical crosstalk	55 dB maximum
Optical return loss	45 dB maximum
Optical connector type (with optical safety shutter)	SC/APC, FC/APC, LC/APC, E2000/APC
Alarms	Front-panel LEDs, SNMP Traps
Switching time	< 15 ms

RF Performance (Test port on the front panel)

RF power range[1]	0 ~ 30 dBmV/ ch, 77 ch NTSC
Switch accuracy of RF	< 1 dB
RF Connectors	75 Ω Mini-SMB

General

Power supply[1]	Powered via AIMA3000 backplane
Power consumption	< 6.0 W
Operating temperature	-5 ~ +55 °C
Operating humidity	90 % (Non-condensing)
Storage temperature	-25 ~ 70 °C
Storage humidity	90 % (Non-condensing)
Dimensions (W x D x H)	24.6 mm x 402 mm x 152.5 mm
Weight	0.88 kg
Network management	Technetix NMSE or through ASMM's Web interface

[1] dBµV=60+dBmV

3.4 Block Diagram

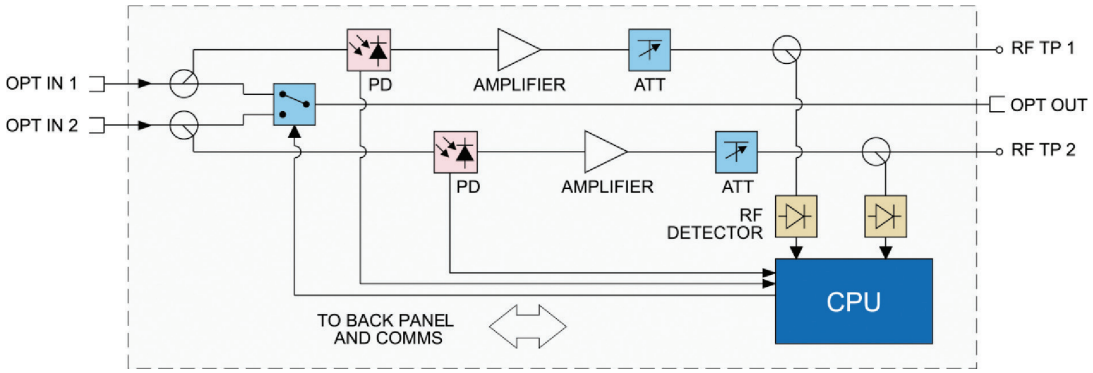


Figure 3 1 OPSW Block Diagram

3.5 Order Details

A-OPSW-[Y]-[Z] Optical A/B Protection Switch

Options:

Y Optical Connector Type

S	SC/APC*
F	FC/APC
L	LC/APC
E	E2000/APC

Z Bandwidth

1G	45-1000 MHz

*Standard option. Contact a PBN Sales Representative for availability of other options.

4 Module Characteristics

4.1 Module Appearance and Port Layout

4.1.1 Overview

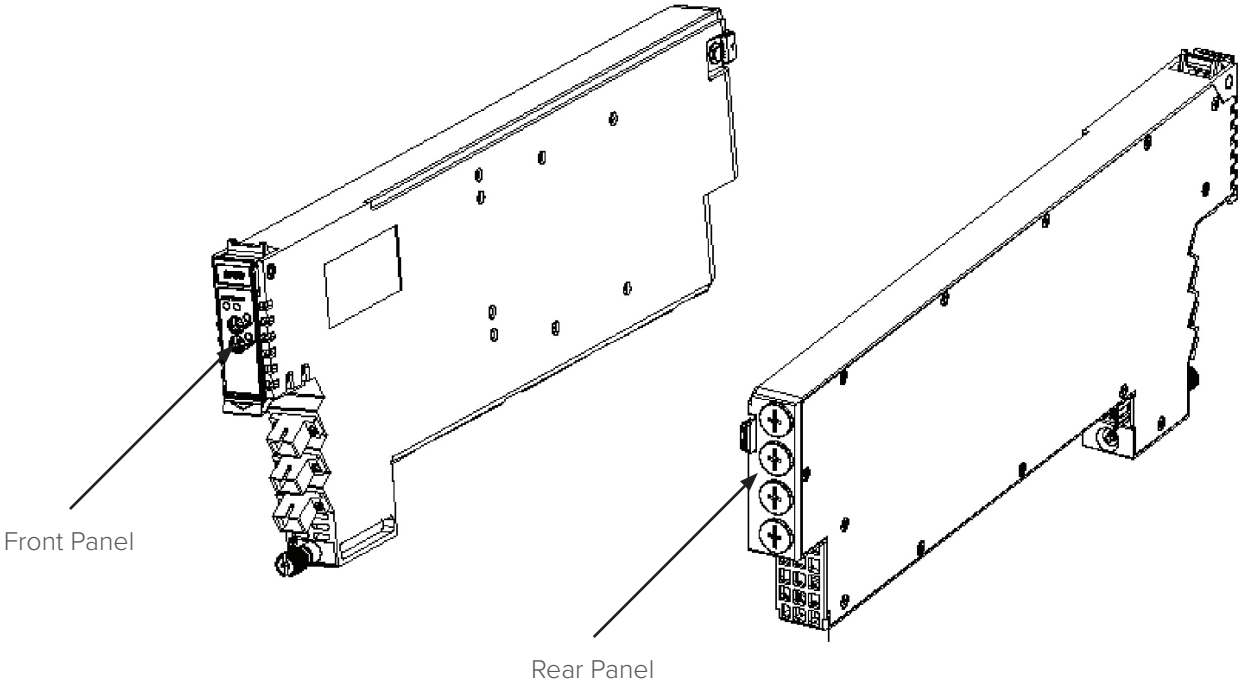


Figure 4.1 Module Appearance

4.1.2 Front Panel Layout

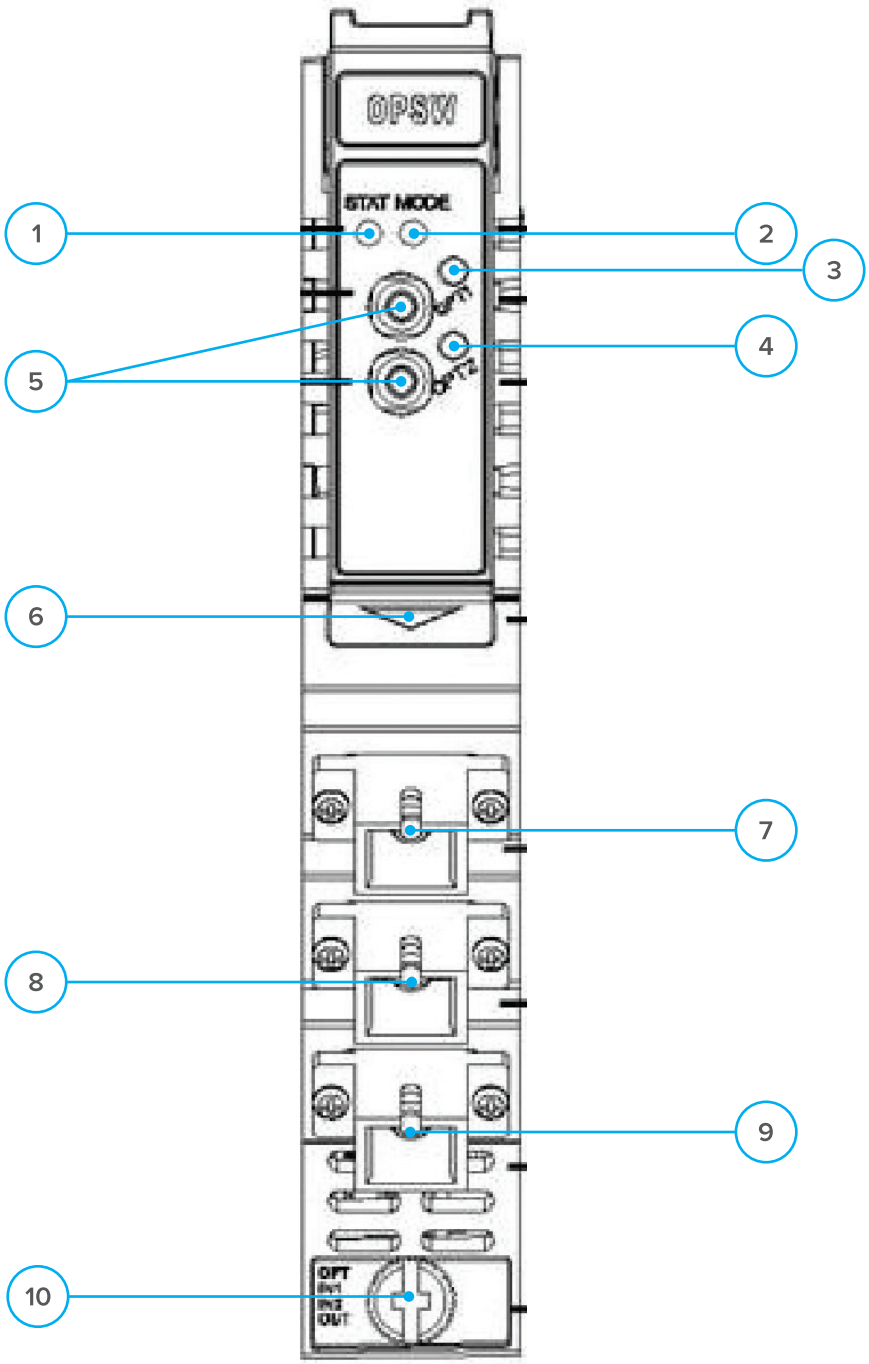


Figure 4-2 OPSW Front Panel Layout

Table 4-1 OPSW Front Panel Functions

Item Number	Item	Description
1	MODE LED	Module Mode Indicator AGC: Green MGC: Green Light Blinking, once per second
2	STATUS LED	Module Status Indicator Normal: Green Minor Alarm: Orange Major Alarm: Red
3	OPT1 LED	Input A status indicator (if choosing A, light blinks once per second) ON: Green Minor Alarm: Orange Major Alarm: Red
4	OPT2 LED	Input B status indicator (if choosing B, light blinks once per second) ON: Green Minor Alarm: Orange Major Alarm: Red
5	RF1/RF2	RF test ports of input A/input B
6	Orange tab-retaining clip	Plug and anchor the module The tab-retaining clip will pop out after pressing the orange release tab
7	OPT IN A	Optical input A
8	OPT IN B	Optical input B
9	OPT OUT	Optical output
10	Mounting Screw	Fasten OPSW Module

WARNING!

"OPT OUT" emits a non-visible laser radiation when working.

4.1.3 Rear Panel Layout

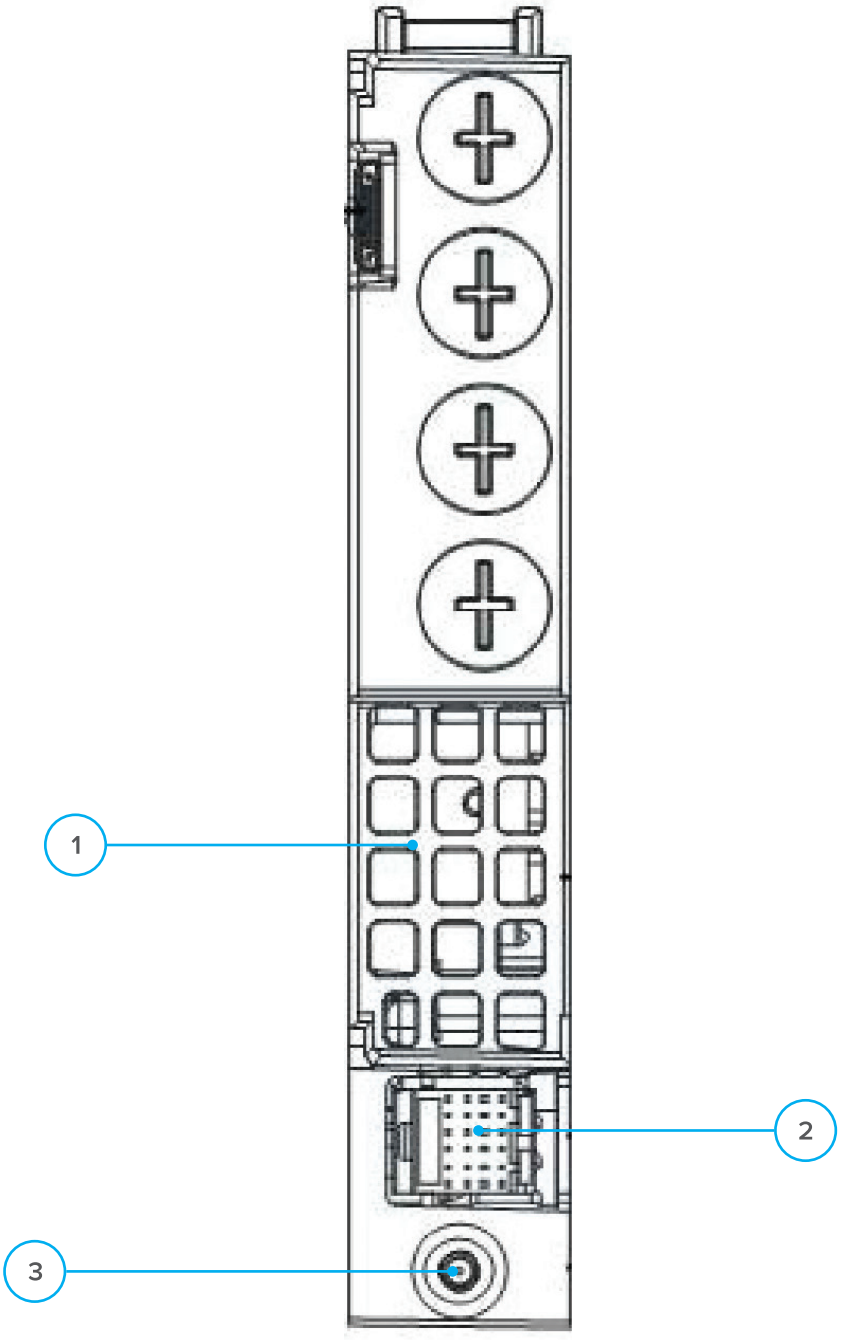


Figure 4-3 OPSW Rear Panel Layout

Table 4-2 OPSW Rear Panel Functions

Item Number	Item	Description
1	Air vent	Module air vent allowing air to flow out of the module
2	Multi-pin connector	Power supply and communication port
3	Locating pin	Used to position the module in the chassis

4.2 Technical Decription

4.2.1 Block Diagram

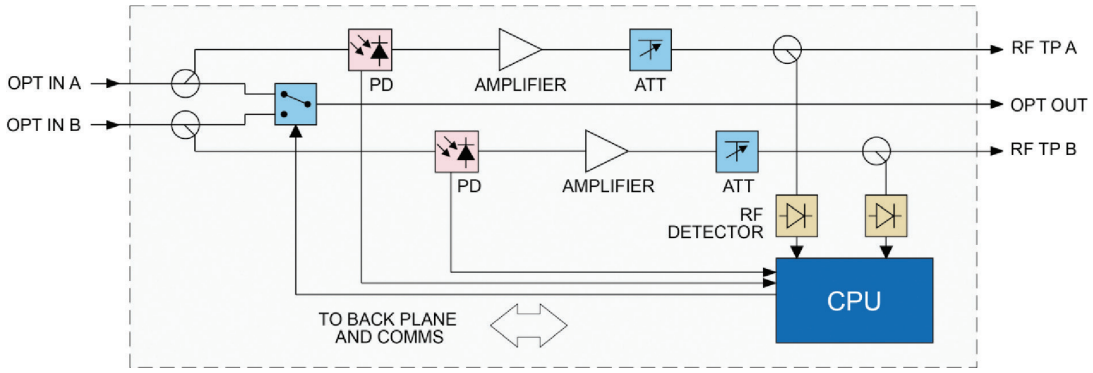


Figure 4-4 OPSW Block Diagram

Table 4-3 OPSW Block Diagram Glossary

Parameters	Glossary
OPT IN A also labeled InputB	Optical input A
OPT IN B also labeled InputA	Optical input B
OPT OUT	Optical Output
RF TP A	RF A test port
RF TP B	RF B test port
PD	Detect A/B
Amplifier	Amplifier
ATT	Adjustable attenuator
RF Detector	Detect RF
TO BACK PLANE AND COMMS	Data Bus

4.2.2 Technical Overview

The OPSW switching module consists of three major parts. The first part is the optical input and output, which includes two optical input ports: **OPT IN A** and **OPT IN B**, and one optical output port: **OPT OUT**. Two optical signal are separated from this section by an optical divider, which is used to test the power of **OPT IN A** and **OPT IN B**.

The second part is signal testing, which includes two optical testing circuits and two RF testing circuits.

The last part is the microprocessor controller and monitor, which is used to perform monitoring functions and to select which one of the two optical input signals is used. This microprocessor also communicates with the ASMM Inter-Integrated Circuit (I^2C) System. Users can manage the OPSW through the ASMM by using a tablet computer or PC (see the installation section of this manual).

4.3 Functional Overview

4.3.1 Optical Input Switching

InputA of the OPSW switching module is the primary input. The isolation between Input A and Input B is more than 55 dB. Both inputs (Input A and B) signal levels are separated by an optical divider in the optical section, then go through the optical testing circuit and then are individually monitored by a microprocessor and compared against the threshold parameters set by the administrator. **InputA** is the default input. In event of signal loss at **InputA** and only the signal at **InputB** is within the set parameters, the OPSW unit will switch to the **InputB** port. When both optical inputs are within the set parameters, **InputA** is re-enabled to the optical output port after the user set **"Restore Time"**. When the signal at the **InputB** port is not within the user configured setting, the OPSW will not switch between A or B. In this case, the inputs can be switched using the ASMM's web interface.

Only the **“High Optical Input Level”** supports the RF switching. If both of the two optical inputs are carrying RF signals where both optical and RF signals are within the set parameters, when there is a signal loss at InputA, the OPSW unit will switch to InputB.

4.3.2 The Switched InputA Restore Function Introduction

The Switched **InputA** Restore Function is called the **“Port-Configuration-Revert Enable”**, when this is set to **“On”**, after **InputA** is restored or within the set parameters, it will switch back to **InputA** after a user defined restore time. If **“Revert Enable”** is set to **“Off”**, the signal will not automatically switch back to **InputA** from **InputB**.

4.3.3 RF Input Level Measurement

There is no effect on the RF testing ports regardless of whether the optical output switch is connected to **InputA** or **InputB**. RF input level measurement would work only when the optical input carrying the RF signal is within the **“High Optical Input Level”**.

5 Installation

5.1 Preparatory Work for Installation

Before installing this device, you must ensure that the unit is intact and ready for installation.
Unpack and check the unit: Open the box to check for any damage that may have occurred during shipment.
If damage is found, please contact a Technetix customer support representative.

Necessary equipment and tools for installation:

Table 5-1 Necessary equipment and tools for installation

Tools/Modules	Description
Phillips screwdriver PH1/PH2	For use with the AIMA3000 chassis
FT5X module	The module to install into the AIMA3000 chassis

5.2 Installation Steps

To install the module follow the instructions below:

1. Unpack the device
2. Install the module
3. Connect the fiber optic tail of the optical input to the first and second optical connectors of front panel to test the two optical inpit signals
4. Connect the optical output signal to a fiber optic tail

5.3 Unpacking

Unpack the module. Keep the packaging materials for future transport needs.

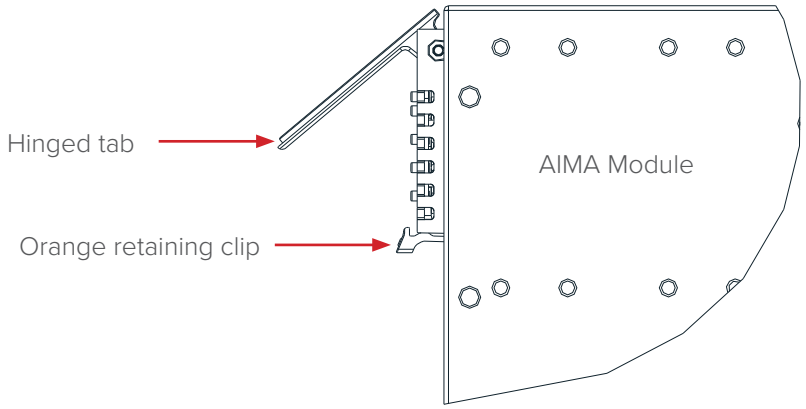
Check the package manifest, record the product module type, serial number, purchase date, and any other relevant information to facilitate later management and maintenance.

Table 5-2 Package Manifest

No.	Description	Qty
1	OPSW module	1
2	Product User Manual (CD)	1
3	Individual test sheet (Certificate of Performance)	1

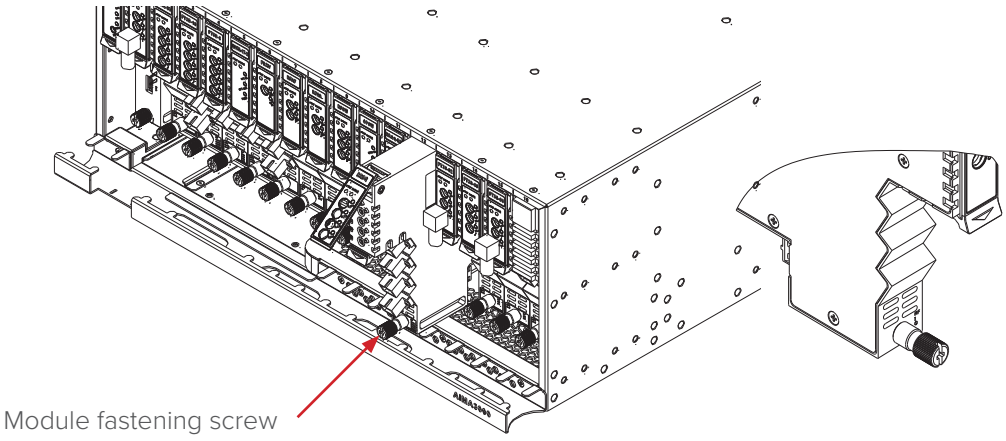
5.4 Module Installation

1. Gently depress the orange retaining clip and release the hinged tab



2. Hold the AIMA module casing upright, align it with the AIMA3000 slide rails for the correct slot, and insert the module until it reaches the multi-pin connector.

   DO NOT use excessive force when inserting the module, but ensure the RF connectors at the rear of the module are securely connected with the chassis's RF connectors.



CAUTION!

The module MUST be installed correctly to ensure a proper connection of the module's multi-pin connector and the backplane.

Tip:
When inserting the module into the guide rails, vertically tilt the module slightly to check that the guides are properly seated on the rails. The module is guided to the correct position using the large metal fastening screw on the lower part of the front panel.

3. After the module is inserted, gently push the hinged tab until it snaps into the orange retaining clip. While pushing down on the hinged tab, the AIMA module will mate with the power bus and will lock in into the chassis.

CAUTION!

If force is required to insert a module, then it may not be correctly seated on the slide rails, or the mounting screw may be misaligned.

4. When the module is fully seated within the chassis, on the bottom of the AIMA module, fasten the spring-loaded mounting screw. **Only use fingers to fasten the mounting screw. DO NOT use a screwdriver**.

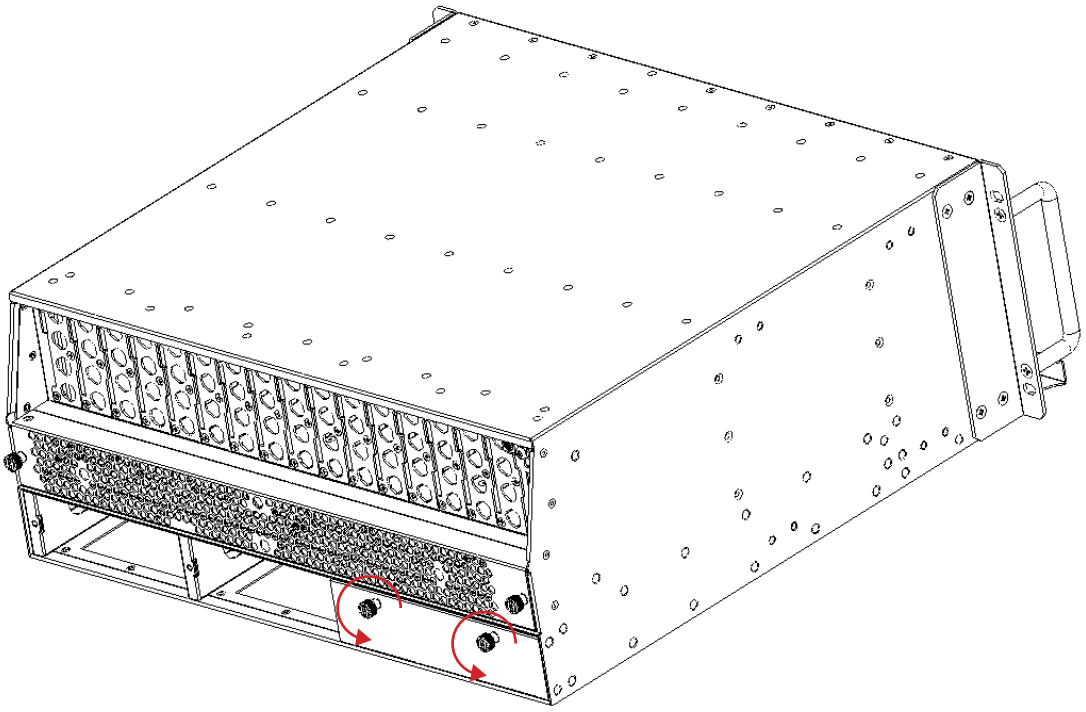
5.4.1 Connecting Optical Cables

For the convenience of the user, the AIMA3000 Chassis has a Sliding Fibre Guide to help the operator to arrange the cables. For the specific steps to connect the fibre, please refer to the instructions in section 5.4.2.

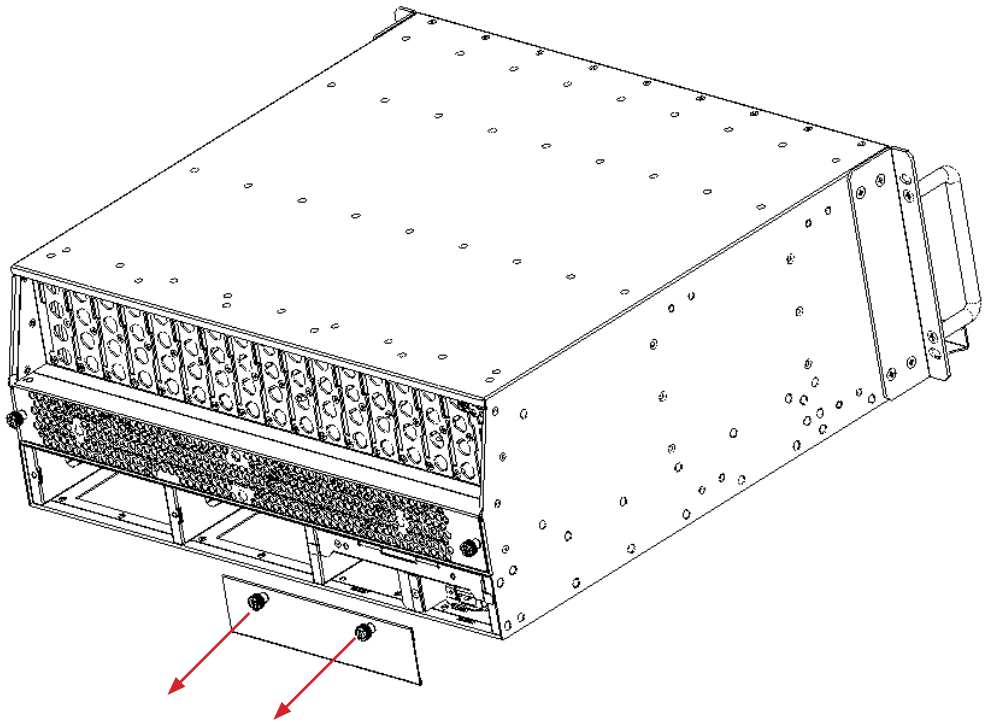
5.4.2 Using the Sliding Fibre Guide

The sliding fibre guide is located in the lower-left corner of the chassis if looking at the front of the chassis, and is designed to help installation of the optical fibre cabling. To access the sliding fibre guide you will need to first remove the rear panel located on the back of the chassis.

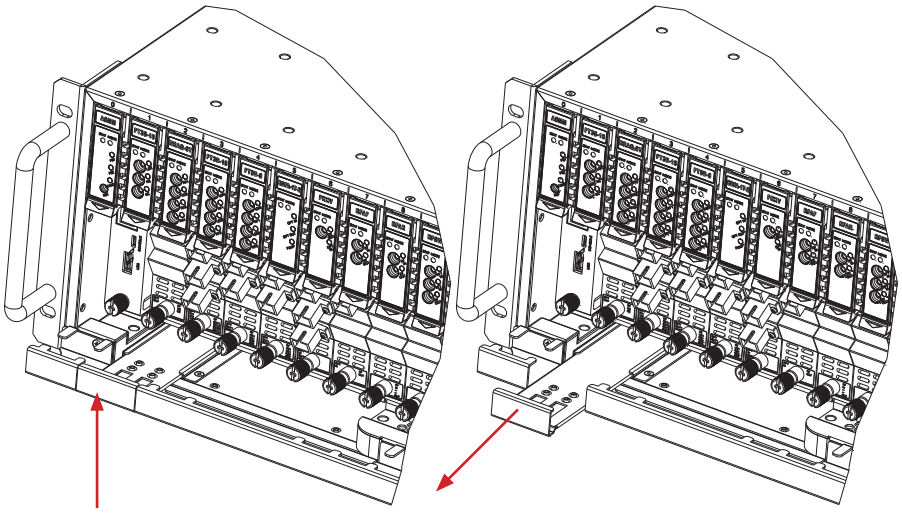
1. Unscrew the two thumbscrews on the rear panel.



2. Then, pull the panel forward.

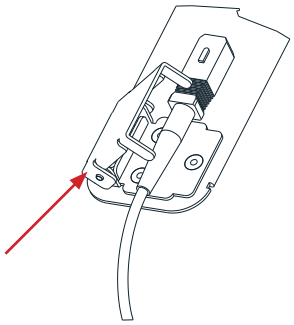


3. Then lift up the handle and slide the fibre guide out of the front of the chassis.



DO NOT remove the dust cap from the fibre connector until right before connecting it to the input port.

4. Raise the clip, insert the fibre connector, and then lower the clip over the connector.



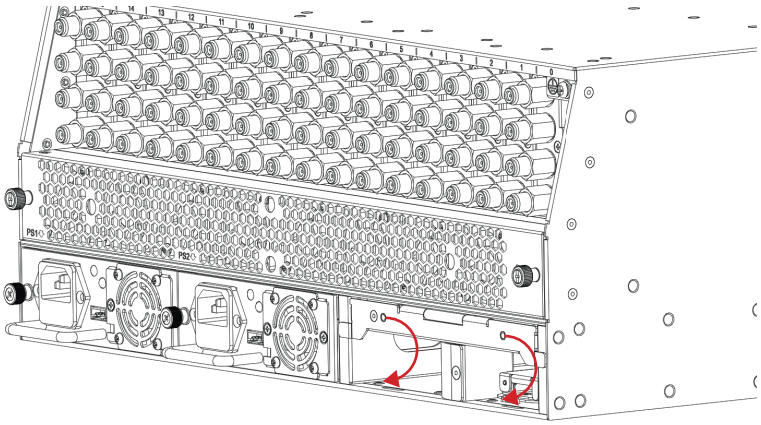
When using the sliding guide, put the fibre connector in the clip and slide it in from the rear to the front, through the chassis. Ensure that the optical fibre tail does not become trapped or pulled tightly.

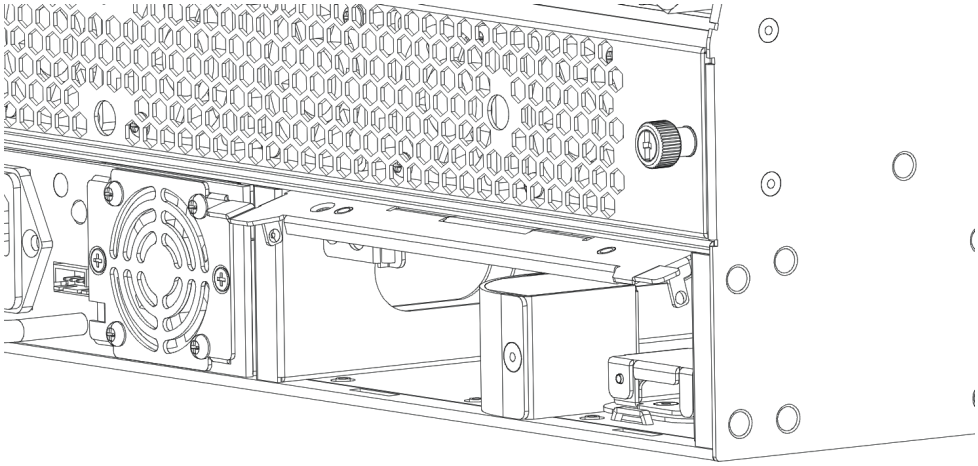
Fibre clip (at rear, for up to two connectors) **Handle (at front)**

5.4.3 Using the Fibre Tray

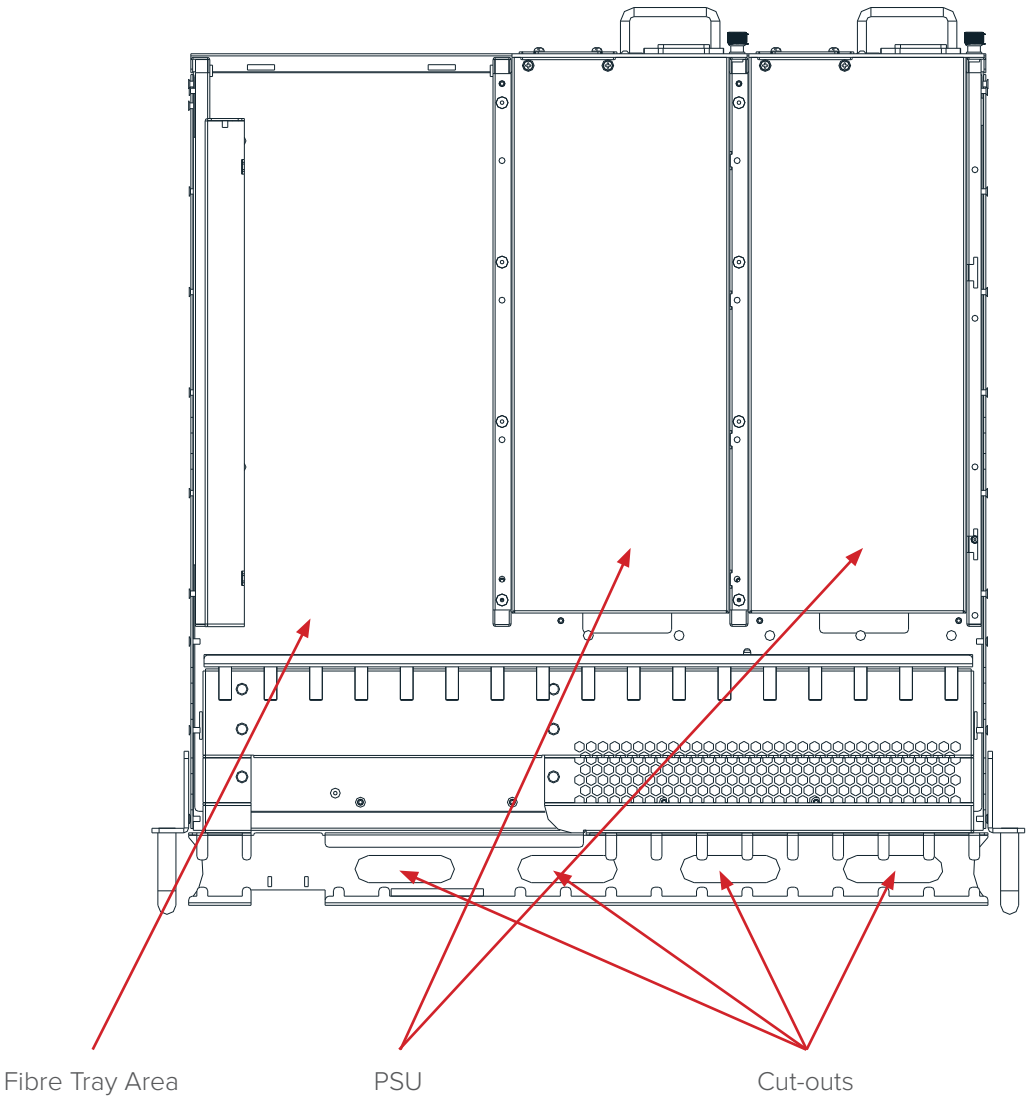
All optical fibres must be organised in a tidy manner in the chassis's fibre tray, which provides enough space for up to 64 optical fibres. This allows for easy positioning and future replacement of optical fibres. Along the front of the chassis, there are cut-outs for keeping the optical fibres in position.

1. When organising the optical fibres, lift up the metal flap at the rear of the panel above the sliding guide. This will allow fibre cables to be moved away from the sliding guide rails.





2. Use the Fibre Guide Tool to organise the cables and wires in the fibre tray to prevent tangles and the blocking of the guide rails.



5.4.4 Cleaning the Fibre Connector Ends and the Front-panel Optical Ports

To obtain a good quality optical input signal, optical fibre input ports and fibre connector ends must be carefully cleaned.

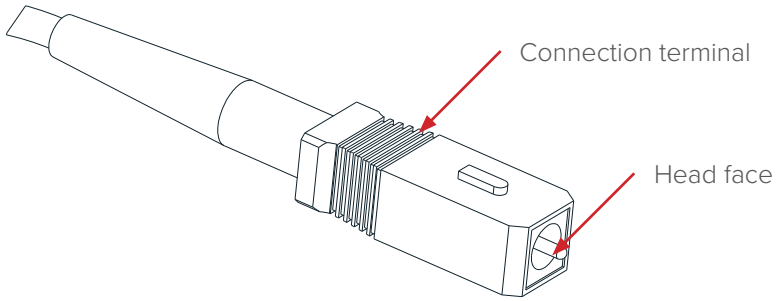


Figure 5-1

When cleaning the optical fibre-connector end, remove the dust cap and then use a lint-free cloth dampened with a static dissipative solvent to clean the angled surface. Dry the surface using a dry lint-free cloth.

To clean the front-panel optical port, use a special lint-free swab that is designed for this purpose. Dampen it with a static dissipative solvent. Apply slight pressure to the internal angled surface of the optical port, while rotating the swab 90 degrees back and forth. You may need to remove excess solvent using a dry lint-free swab. Alternatively, a cleaning pen such as the one click cleaner can be used.

SC one click cleaning pen

www.oneclickcleaner.com

5.4.5 Connecting the Optical Fibres

Carefully lift up the hinged cover of the optical input port, align the raised tab on the connector with the slot in the port. Insert the connector until the connector is securely held in place indicated by a clicking sound.

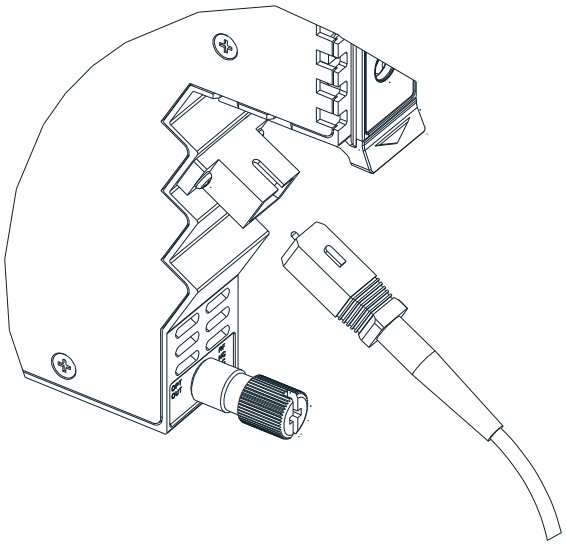


Figure 5-2

5.5 Check Module LEDs

When the module has been installed, and power is supplied from the chassis, the status LEDs will show a blinking green light indicating that the module is starting. If the input signal is normal, the **STATs LED** will show a green light, and if **OPT IN A** and **OPT IN B** have a normal input signal, status indictors will show a green light.

5.6 Check Module LEDs

After the input signal has been confirmed, the optical power of the optical output port should be tested. Use the optical power meter to test the output levels; the output values should be in accordance with the technical specifications. Before testing, the optical power meter must be calibrated.

Before measuring optical signals, verify the interfaces are clean and undamaged.

CAUTION!

The device output optical power measurement procedure and regular maintenance must be performed by highly trained personnel. All procedures and maintenance must be comply with the necessary safety precautions indicated with using FT5X optical transmitter module.

WARNING!

Module emits an invisible laser when working. Avoid direct contact with the laser connector. DO NOT look directly at the fibre connector.

6 Module Configuration & Alarms

The module configuration settings can be configured using the web interface and Technetix NMSE (network management software). This manual only provides details on the web interface. For login details and network setup, please refer to the AIMA-ASMM user manual. If the same module is reinserted in the same slot, the ASMM will restore the previous settings if the module is set to “Auto Download” in the configuration.

6.1 Login to the System Management Web Page

All module configurations, alarms, and monitors are managed by the ASMM module.

Establish network connectivity through the **RJ-45 Ethernet Port 0** on the top of the rear panel of the ASMM. An administrator can also connect through a local network on a switch/hub if both the module and user are on the same subnet.

6.1.1 Configuration using a PC

Manually configure your network interface card to have an IP address of 192.168.25.x with the subnet mask of **255.255.255.0**.

Connect an Ethernet cable between the ASMM's front **LOCAL RJ-45 Ethernet port** and the PC.

Use a web browser to open the AIMA3000 web configuration interface at the default IP address of **192.168.25.168.**

Enter the default Username **(admin)** and Password **(Technetix)** to log in to the AIMA3000 system configuration web interface.

Default user name: **admin**
Default password: **Technetix**

If you manually change the ASMM's IP address and forget it, you can still connect to the "Backup IP" address at 10.10.10.10. The IP of the client PC must be set to 10.10.10.9. Typically the front RJ-45 Ethernet port should be used to access the web interface, the "Backup IP" is only supported after HW_A04259_4 and FW_S08471 01.01.16.

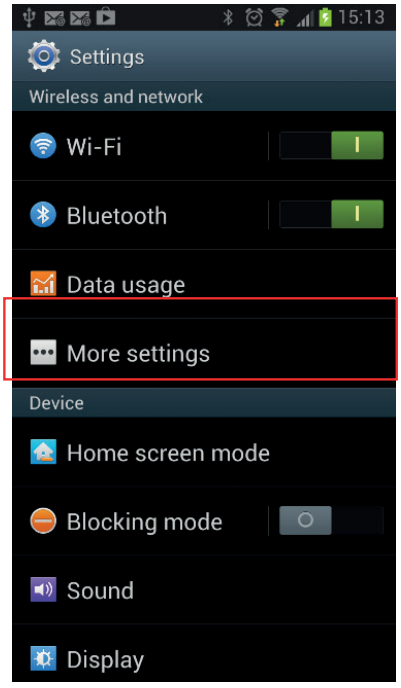
6.1.2 Configuration using an Android device

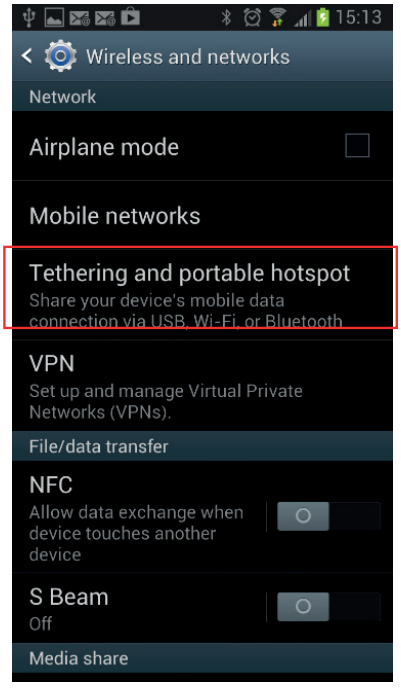
1. Install the app for the Android device:
   If you do not have the application, contact a Technetix representative for the download information.

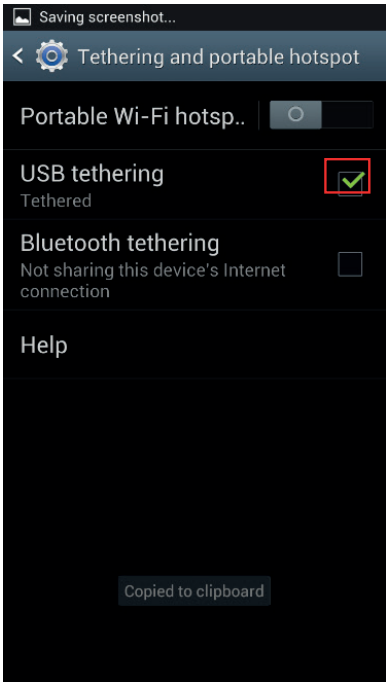
2. Then go back to settings.

3. Connect the Android device to the ASMM USB interface with a **USB2.0 cable**. Go to the Android setting menu. Select **"More Settings"** in **"Wireless and Network"** setting and select **"Tethering and portable hotspot"** setting and select "Tethering and portable hotspot" and enable **"USB Tethering"**. After **"USB Tethering"** is enabled, the word "tethered" will appear on the screen and stay in the notification bar.

Note: The operator must reconnect the USB cable to the Android device after it is restarted.



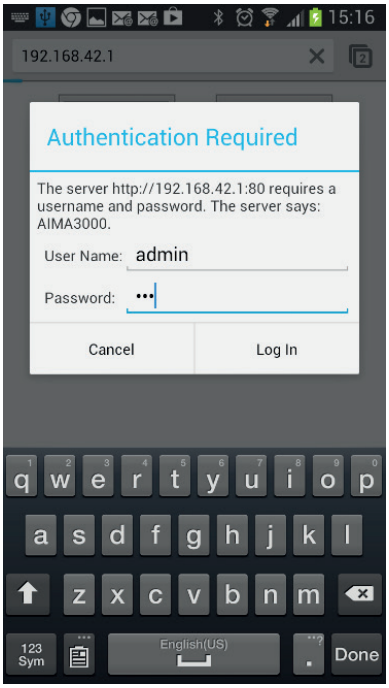


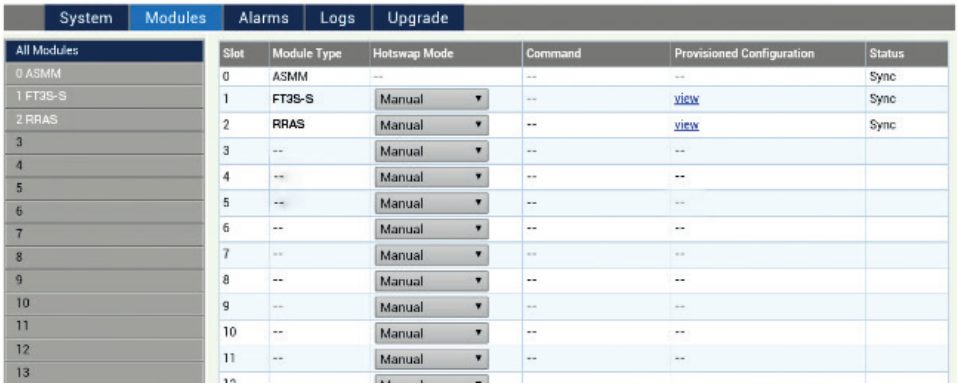


4. Open up your internet browser on your Android device. Then type in 192.168.42.1, the AIMA-ASMM login page will show up.

5. Enter the login information and password to access the ASMM's web interface.

   Default user name: **admin**
   Default password: **Technetix**





Note:

1. The Android application may work on your device but USB app was developed by Technetix for the Lenovo Ideapad running A1_07 on Android 2.3.4. The default IP of ASMM is 192.168.42.1 because the default IP of Lenovo Ideapad running in USB host mode is 192.168.42.129.

2. Please disconnect the USB cable from the ASMM when resetting, attaching, or removing the ASMM for the chassis.

6.2 Restoring Factory Defaults

Loading factory default can restore the device to the factory default setting.

Detailed operations:

In the web interface, click the modules tab and click the module to be reconfigured on the left column of the interface **(Figure 6-1)**. Click the **Apply** button in the Factory Default section. When finished, the device configuration will be reset. For more details about the factory default configuration please refer to the factory restore and upgrade configuration parameters table shown in **Table 6-1**.

Note:

All the powers displayed on the webpage are total power.

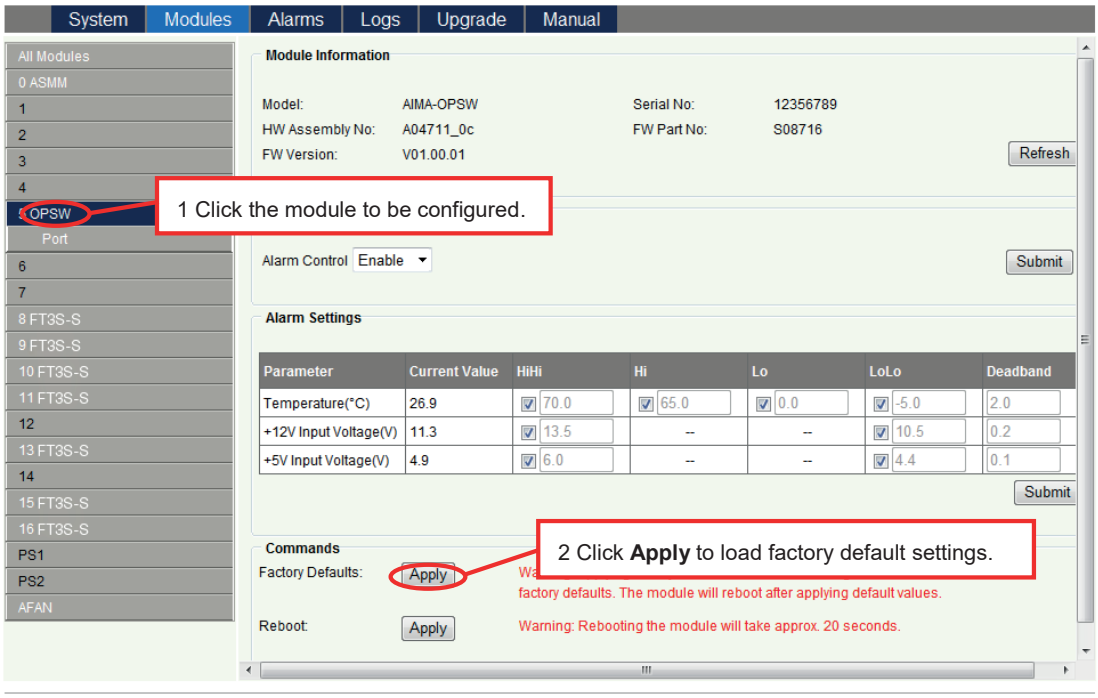


Figure 6-1

Table 6-1 Factory default and upgrade configuration parameters table

Parameters	Configuration	Factory Default Value	After Software Upgrade
Alarm Control	ON / OFF	ON	Retention
Switch Mode	Automatic / Manual	Automatic	Retention
Revert Enable	ON / OFF	ON	Retention
Switch Control	Path A / Path B	Path A	Retention
Wait to Restore Time	1-10 s	10 s	Retention

6.3 Reboot

The module can be rebooted remotely, shown in **Figure 6-2** below.

Detailed operations:

Click the Modules tab, click the corresponding OPSW module, and click the **Apply** button in the commands section next to the word Reboot. Next, click on **Submit** to confirm then the module will automatically restart. The configuration of the module will not be lost after rebooting.

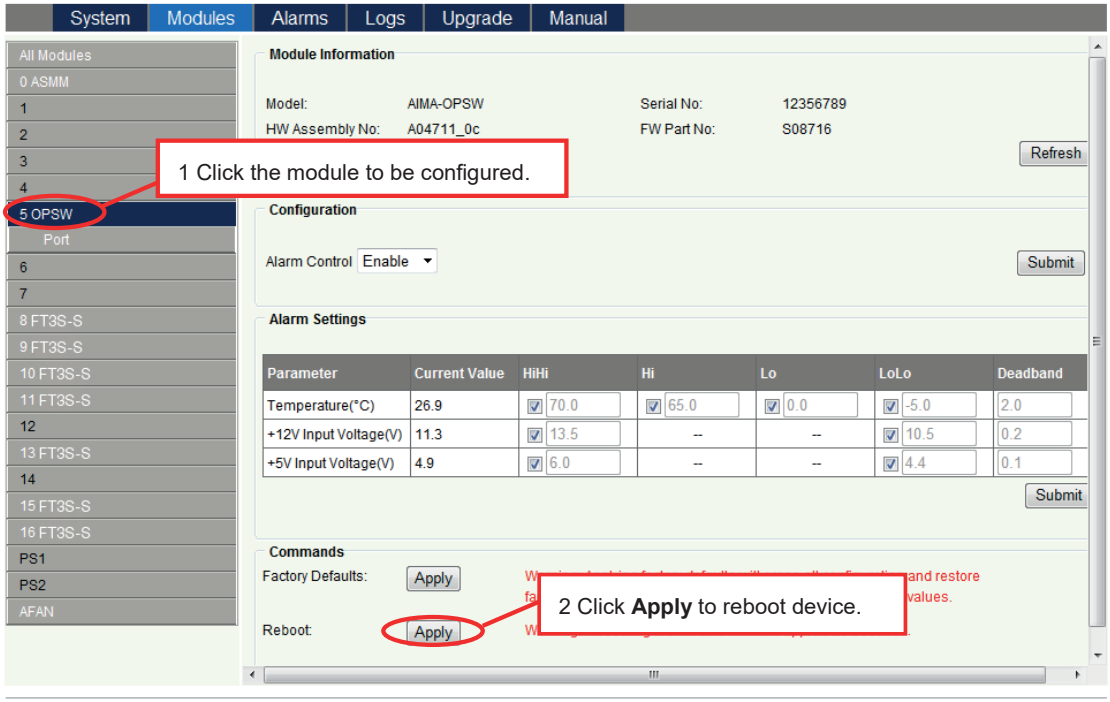


Figure 6-2

6.2 Port Configuration

We recommend the operator learn the module LEDs status meanings, configuration ports, and how the module works prior to installation.

The module's configuration applies a module-port hierarchy management system. The operator can view the corresponding pages to check modules, port hardware information, and configuration information.

Modules Page

On the modules page as shown in **Figure 6-3**, the operator can view the configurations and module information. Please see **Table 6-2** for the modules configuration parameters in detail.

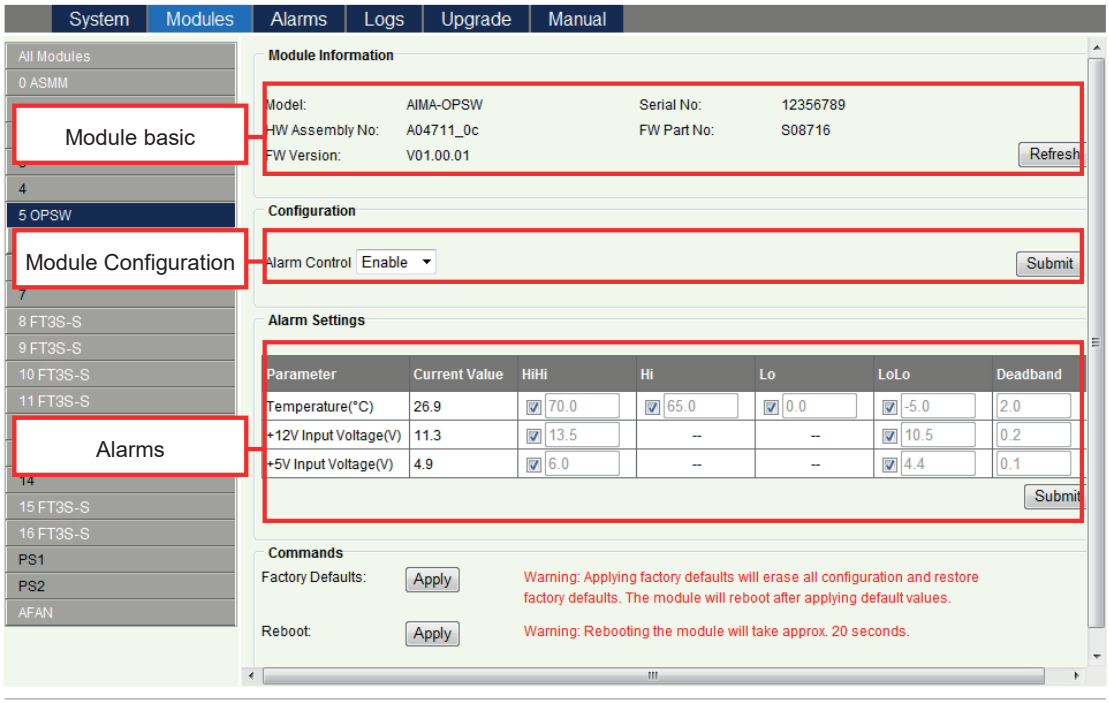


Figure 6-3

Table 6-2 Modules Configuration Parameters

Items	Sub Items	Effect and Configuration Method	COnfiguration
Module Information	Model	-	-
	HW Assembly No.	-	-
	FW Version	-	-
	Serial No.	-	-
	FW Part No.	-	-
Configuration	Alarm Control	Control Laser ON or OFF	ON / OFF
Alarm Settings	Critical High	Alarm level setting, alarm parameters are not allowed to be changed	
	Warning High		
	Warning Low		
	Critical Low		
	Dead Band		

Port Page

The port page is shown in **Figure 6-4** below where operator can view Port Information. Please refer to **Table 6-3** for a more detailed description.

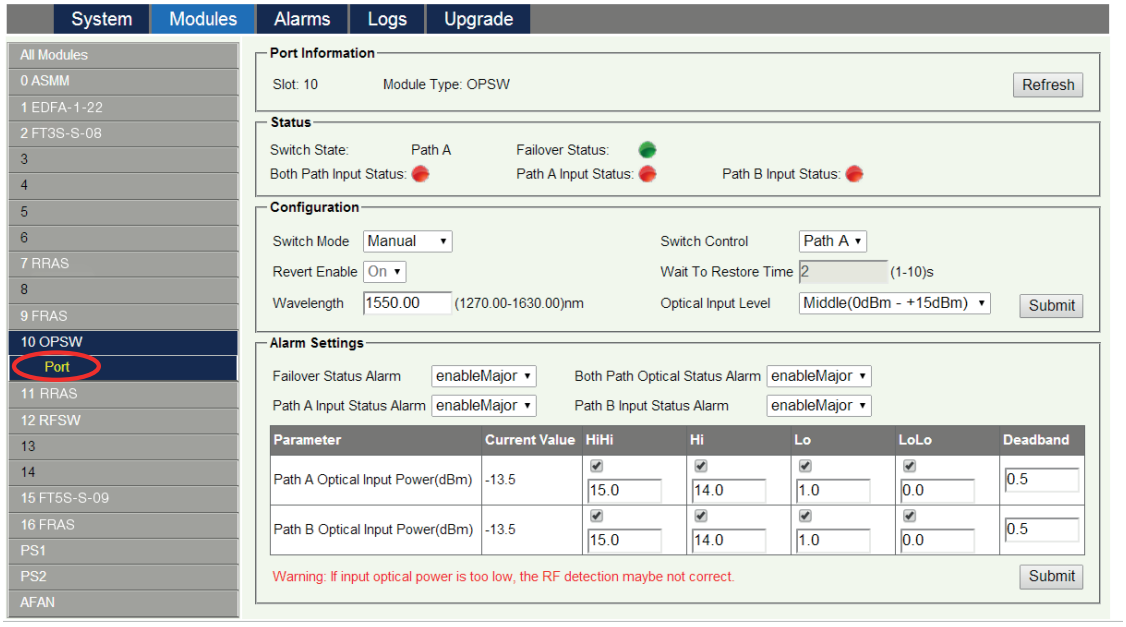


Figure 6-4

Table 6-3 Port Configuration Parameters Description

Items	Sub Items	Effect and Configuration Method	Configuration
Module Information	Slot	-	-
Status	Switch State	-	-
Configuration	Switch Mode	Control switch mode	Automatic / Manual
	Switch Control	Path A / Path B	Path A / Path B
	Revert Enable	Revert from B to A	On / Off
	Wait To Restore Time	Change Factory Default OMI Value based on individual needs	
	Wavelength		1270.00 nm -1630.00 nm
	Optical Input Level	Change optical input level based on power	High: +10 dBm ~ +25 dBm (251.18 mW ~ 316.22 mW) Middle: 0 dBm ~ +15 dBm (1 mW ~ 31.62 mW) Low: - 10 dBm ~ + 5 dBm (0.1 mW ~ 3.16 mW)
Alarm Settings	Critical High	Alarm level setting, Note: alarm parameters are allowed to be changed	
	Warning High		
	Warning Low		
	Critical Low		
	Dead Band		

6.4.1 Revert Function

To enable the Switch to use the input restore function please set **"Revert Enable"** to **"On"**. If the system is using **InputB** and **InputA** receives a signal, this function will restore **InputA** after the **"Wait to Restore Time"** has been completed. However, if the **"Revert Enable"** function is selected to **"Off"**, the signal will not automatically be switched back to **InputA** from **InputB**. The setup screen is shown in **Figure 6-5**.

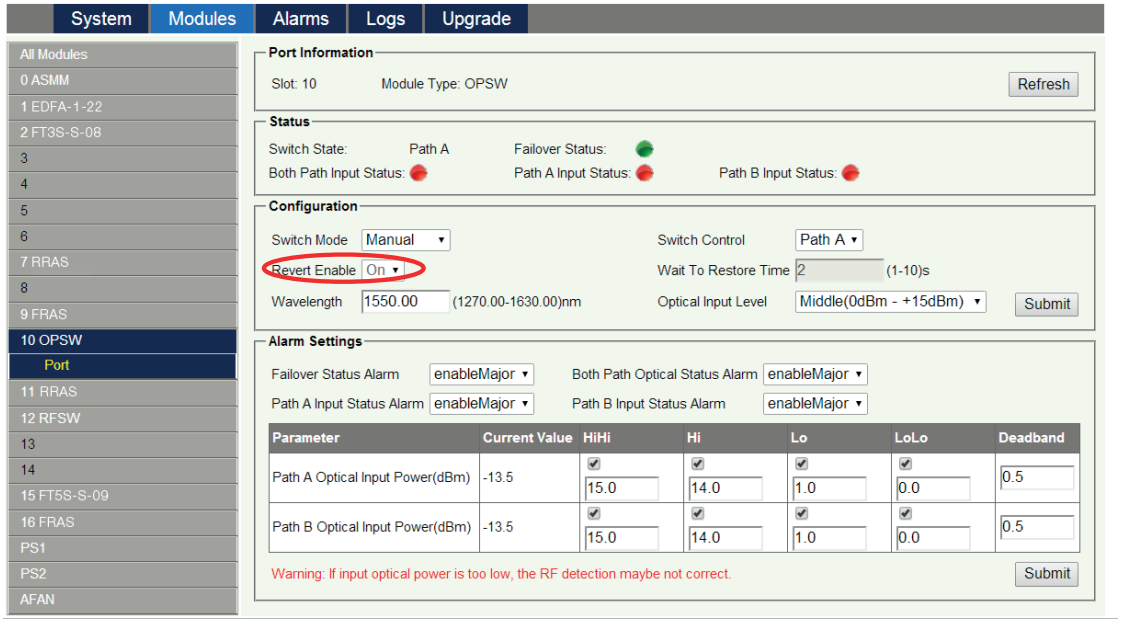


Figure 6-5

6.5 Alarms Monitoring

All alarm information is monitored by the ASMM module. If an alarm occurs, the operator can view the associated pages to find more detailed alarm information.

6.5.1 Alarm Status Pages

Click the Alarms tab on the menu bar on the top row of the page to display an overview of the alarm indicators of all the installed modules as shown in Figure 6-6 below.

The status has three conditions:

- Normal: Green Light
- Minor Alarm: Orange Light
- Major Alarm: Red Light

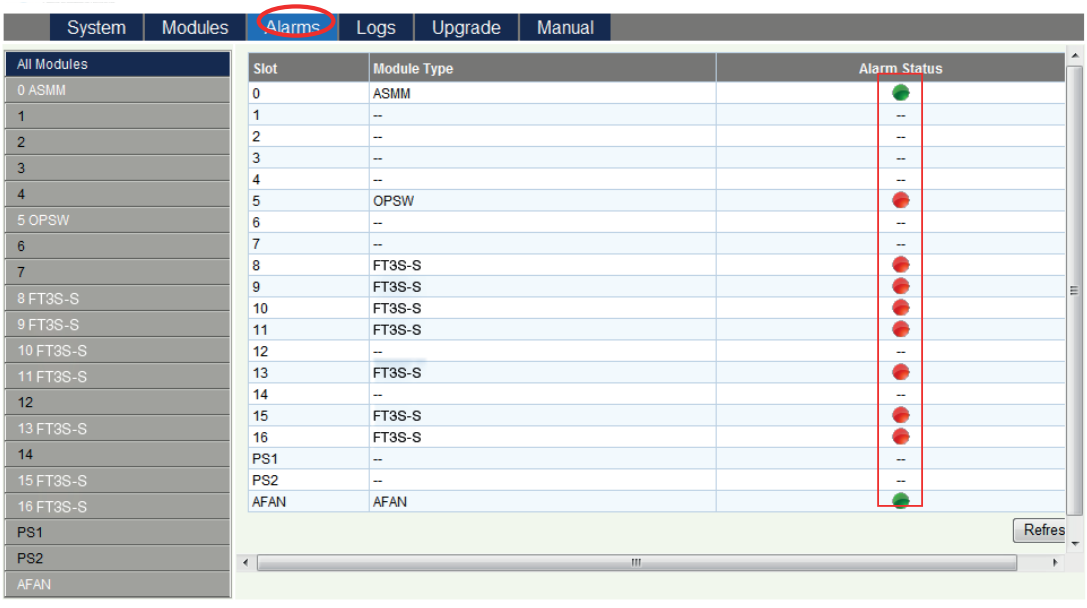


Figure 6-6

6.5.2 Module operating voltage and temperature alarm

By clicking on the corresponding module, as shown in the following figure, the module's alarm information will appear. By clicking on OPSW under the Modules tab located in the top row, the operator can view the modules' temperatures and power supply voltage alarms. The operator can utilize the status indicators to judge whether the module is working properly.

The status has three conditions:

- Normal: Green
- Major Alarm: Red
- Minor Alarm: Amber

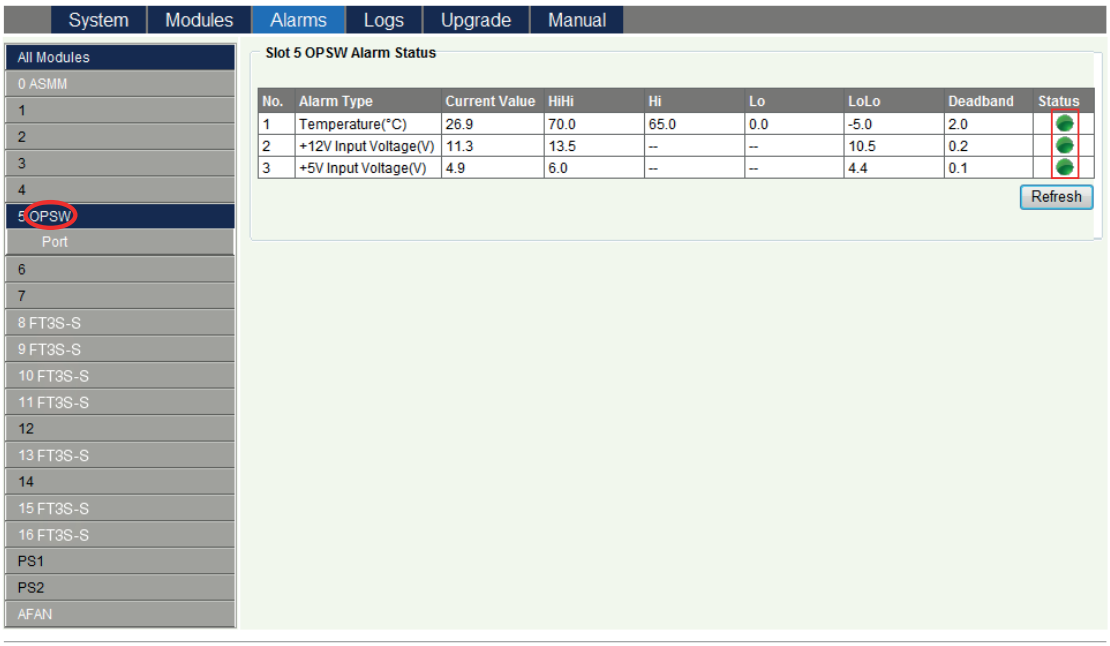


Figure 6-7

Use the status indicators to determine if the module is working properly. If the device is replaced or reset, click on **"Refresh"** to immediately poll the alarm information.

6.5.3 Module Port Alarms

Click on Module Port, as shown in Figure 6-8, here the operator can view the Input Total Power and RF Output Power.

Status has three conditions:

- Normal: Green
- Minor Alarm: Amber
- Major Alarm: Red

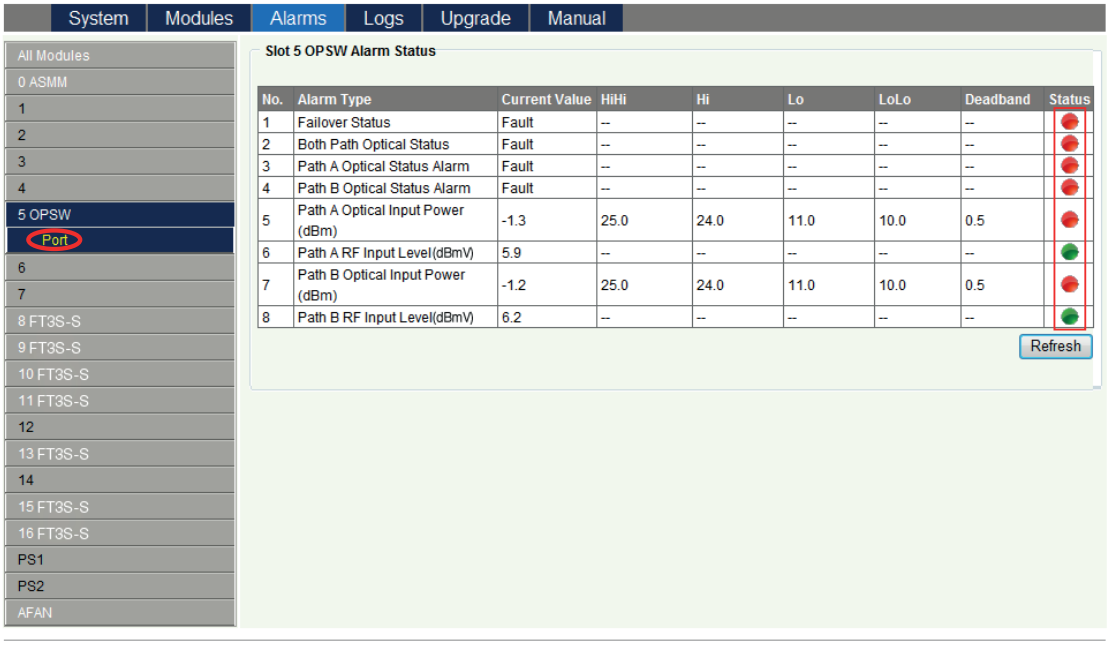


Figure 6-8

6.5.4 Alarm Monitoring Configuration

Monitoring Function ON / OFF

Click on the Alarm Control pull-down menu to enable or disable the Monitoring Function.

6.5.5 Temperature, +12V, +5V Voltage Alarm Levels Management

By default, the temperature, +12 V, and +5 V voltage alarms are all set to ON. The check boxes (☑) shown in **Figure 6-9** controls the detection. If an alarm is unchecked, it is not being monitored.. The parameters instruction is shown in **Figure 6-9, Table 6-4** below.

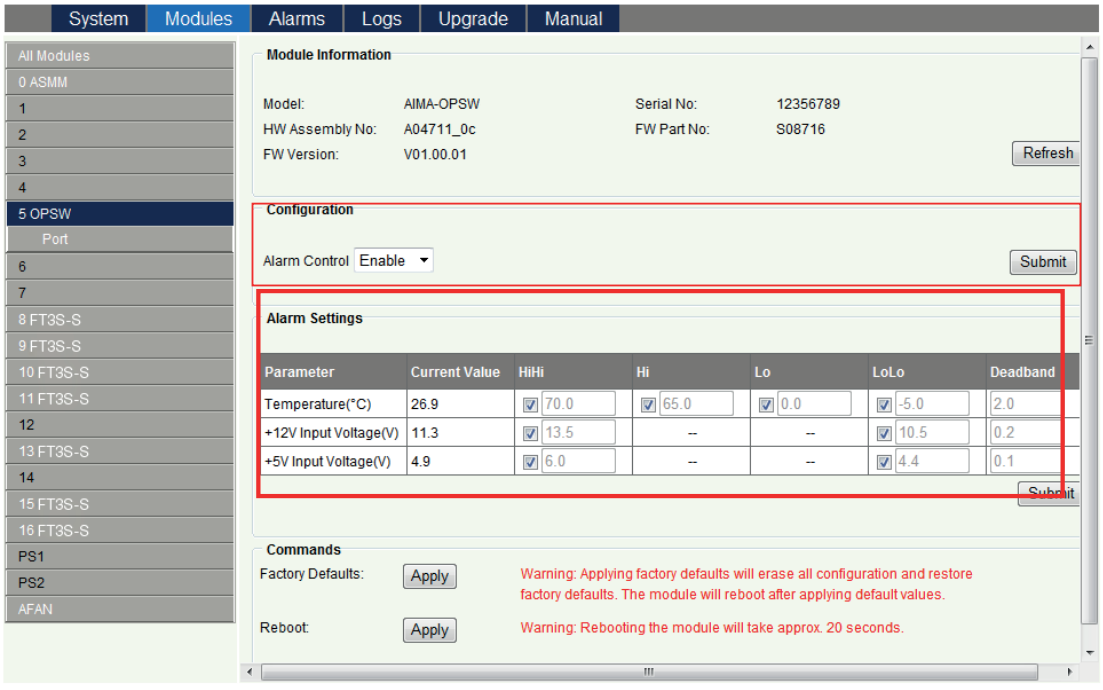


Figure 6-9

Table 6-4 Modules Page Alarms Threshold Parameters Instruction

Parameters	Critical High	Warning High	Normal	Warning Low	Critical Low	Dead Band	Factory Default
Temperature (°C)	70.0	65.0		0.0	-5.0	2.0	ON
+12V Input Voltage (V)	13.5		12.0		10.5	0.2	ON
+5V Input Voltage (V)	6.0		5.0		4.4	0.1	ON

6.6 Input / Output Status Monitoring

To setup Input / Output Status Monitoring, select the specific **Port** from the menu left on the left column, and the monitoring parameters are listed under Alarm Settings, check the boxes (☑) to toggle alarms. The page is shown in **Figure 6-10** below.

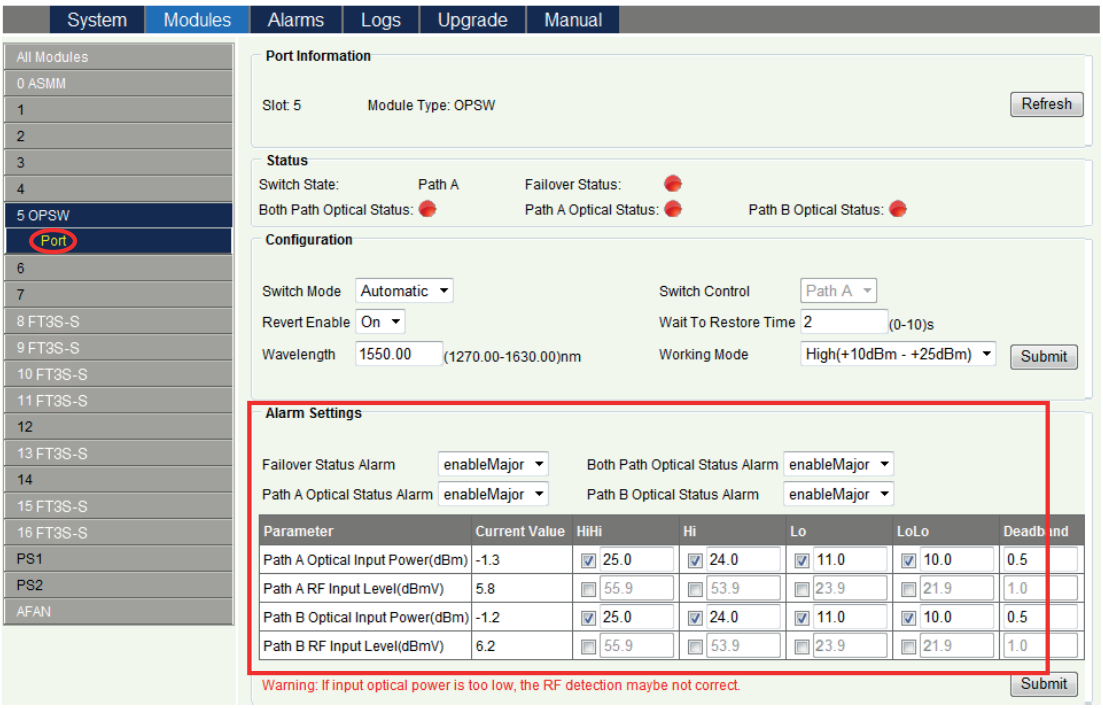


Figure 6-10

Table 6-5 Modules Page Alarms Threshold Parameters Instruction

Parameter	Critical High	Warning High	Normal	Warning Low	Critical Low	Dead Band	Modifiable	Factory Default
Path A Optical Input Power(dBm)	25.0	24.0	N/A	11.0	10.0	0.5	Yes	ON
Path A RF Input Level (dBμV)	55.9	53.9	N/A	23.9	21.9	1.0	Yes	OFF
Path B Optical Input Power(dBm)	25.0	24.0	N/A	11.0	10.0	0.5	Yes	ON
Path B RF Input Level(dBmV)	55.9	53.9	N/A	23.9	61.9	1.0	Yes	OFF

Table 6-6 Module Alarm Indicator Definitions

Parameters (Common)	Description	Definitions	Related Indicators	Lighting Conditions
Power OFF	Power OFF	Power OFF	All	All OFF
Initiating Application Module	Power ON	During Module Power ON	All	Green (1 times / sec)
No Alarm	Normal operation	Normal	All	Green
Upgrading AM Firmware	AM Upgrading	Module upgrade	MODE	Orange blinking
AM-Critical-Alarm (ALM)	Critical Alarm		STAT	Red
AM-Minor-ALM	Warning Alarm		STAT	Orange
OP-input-Critical-ALM	Optical Input Critical High/Low		STAT RF IN	Orange
OP-input-Minor-ALM	Optical Input Warning High/Low		STAT RF IN	Orange
RF-output-Critical-ALM	RF Output Critical High/Low		STAT RF OUT	Red
RF-output-Minor-ALM	RF Output Warning High/Low		STAT RF OUT	Orange

6.7 Logs Management

The operator can view all the alarms for the different modules in the chassis through the Logs Management page. Click the Logs link on the top row navigation menu to enter the Logs Management page. Refer to **Figure 6-11** below:

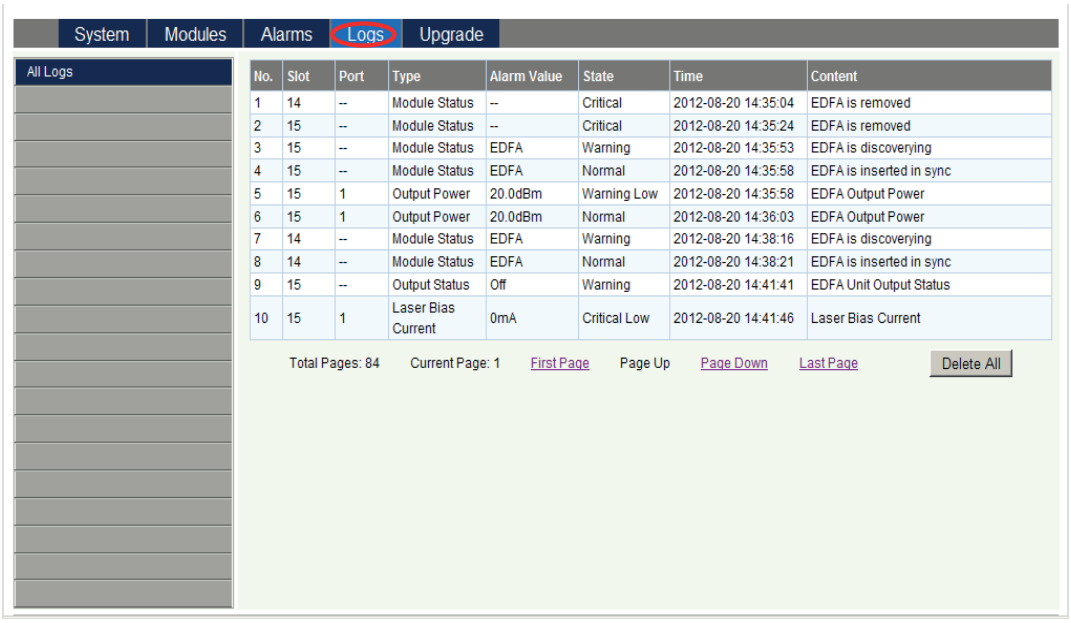


Figure 6-11

6.8 Device Upgrade

The Module supports firmware upgrade function.

To upgrade the firmware, upload the local upgrade file, and then click **Start upgrade** to begin the upgrade process. See **Figure 6-12**. At the same time, you will be automatically redirected to the Network Management page. The upgrade operation is then complete.

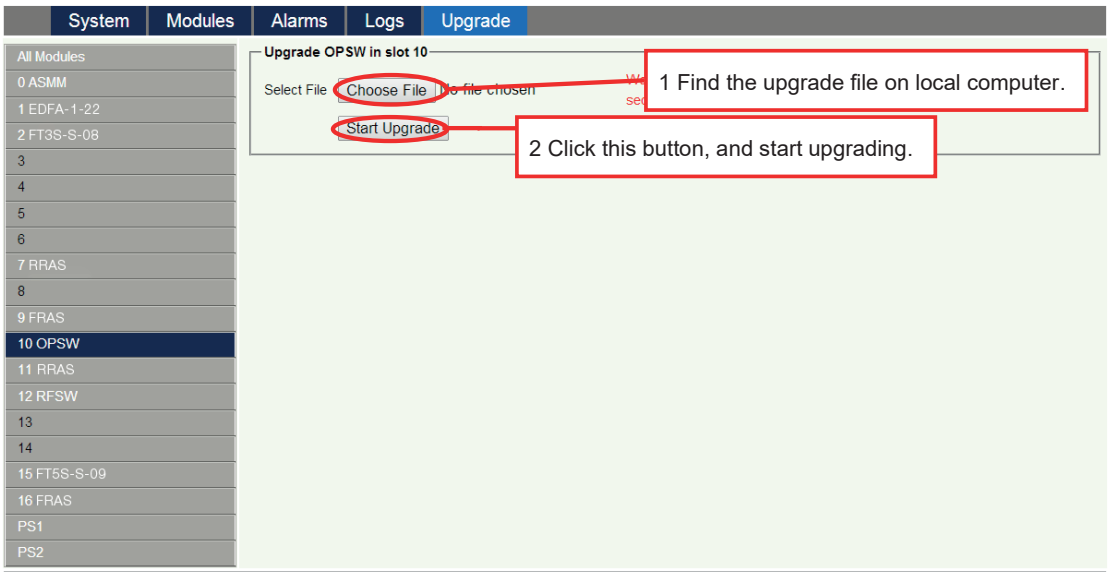


Figure 6-12

* The upgrade file needs to be located in the PC that is connecting to ASMM
* The Web GUI above only supports the manual operation from a local PC.
* The OPSW supports automated firmware updates and automatic backup & restore features via TFTP when managed by Technetix NMSE management software. Please refer to the NMSE Product User Manual for more information.

CAUTION!

Module will be upgraded after the firmware is uploaded. The upgrading and reboot process will take about 30s.

During the upgrading, please don't power off the device and don't plug any module in the same chassis, or it may lead to upgrade fail or data sync error.

7 Troubleshooting

Indicator for determining faults

If there is a problem, the operator can use the status LEDs to determine the location and conditions of the error. Please see **Table 7-1** below:

Table 7-1 Fault Judgment Table

Alarm Indicator status	Common Faults	Trouble Shooting
OPT IN A/OPT IN B status is red	Optical input A/B is too low or high.	Adjust input signal to an appropriate value.
STAT red	Input A/B signal is too high or too low.	Adjust input signal to an appropriate value.
	The RF output power is too high or too low.	Please contact Technetix's technical support
	Power Failure	Please contact Technetix's technical support
	Operating environment temperature is too high.	Lower the room temperature. If the temperature is normal, please contact Technetix's technical support.

8 Product Warranty

Pacific Broadband Networks warrants its equipment to be free of manufacturing defects for a period of one year from date of shipment, provided it is installed and operated in accordance with factory recommendations.
The liability of Pacific Broadband Networks under this warranty is solely limited to repairing; replacing or issuing credit provided that:

1. The warranty registration has been completed and received by Technetix.
2. Technetix's helpdesk is promptly notified in writing or by telephone, by sending an e-mail to **(INSERT EMAIL ADDRESS)** that a failure or defect has occurred.
3. A return authorization number is obtained from Technetix's helpdesk and clearly marked on the outside of the shipping container and all documents.
4. Customer is responsible for all shipping and handling charges. C.O.D. and freight collect will not be accepted without prior approval from Technetix's helpdesk.
5. The equipment (in Technetix's sole discretion) has not been abused, misused, or operated under conditions outside manufacture's specifications.

The warranty does not cover the following:

1. Products purchased from someone other than an authorized Pacific Broadband Networks dealer.
2. Damage caused by accident, negligence, misuse, abuse, improper operation, or failure to operate the equipment within the manufacturer's specifications.
3. Damage caused by fluctuation in electrical current, lightning, power surges, etc.
4. Damage resulting from overhaul, repair, attempted repair caused by someone other than Technetix's qualified service personnel.
5. Any product, in which the serial number has been defaced, modified or removed.
6. Any product that has been opened or modified without prior written permission from PBN.
7. Replacement of parts necessitated by normal wear and tear.
8. Any consequential or implied damages.

9 Declaration of Conformity

According to ISO/IEC Guide 22 and EN45014

Manufacturer's Name:	Technetix
Manufacturer's Address:	Technetix Ltd, Innovation House, Technetix Business Park, Albourne, West Sussex, BN6 9EB
Product Name:	OPSW – Optical A/B Protection Switch

Conforms to the following standards:

FCC:	FCC Part 15 Subpart B: 2012
CE:	EN 50083-2: 2012; EN 5504: 2010; EN 61000-3-2: 2006+A1: 2009+A2: 2009; EN 55022:2010; EN 61000-3-3: 2008
RCM:	AS/NZS CISPR22: 2009+A1: 2010 (Pending)

Federal Communications Commission

Appendix A: Default Alarm Limit Settings

Parameter	Critical High	Warning High	Normal	Warning Low	Critical Low	Dead Band	Factory Default
Temperature (°C)	70.0	65.0	28.0	0.0	-5.0	2.0	ON
+5V Input voltage (V)	5.7		5.0		4.6	0.1	ON
+12V Input voltage (V)	13.2		12.0		10.8	0.1	ON

Appendix B: dB Conversion Table

dBmV	dBµV	dBmV	dBµV
-10	50	1	61
-9	51	2	62
-8	52	3	63
-7	53	4	64
-6	54	5	65
-5	55	6	66
-4	56	7	67
-3	57	8	68
-2	58	9	69
-1	59	10	70
0	60		

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