Product Overview

V5804 can be used as a GPON Optical Line Termination (OLT) supporting 4-Port GPON interfaces as well as L3 switch of supporting 4-Port 1/10GBase-R (SFP+) 10 Gigabit Ethernet and 4-Port 10/100/1000Base-T(RJ45) Gigabit Ethernet service. It terminates the traffic coming from the subscriber lines and consolidates it on one or more Gigabit Ethernet interfaces towards the metropolitan area.

The GPON technology adds new features and functionality targeted at improving performance and interoperability, and adds support for new applications, services, and deployment scenarios. Among these changes are improvements in data rate and reach perfor-

mance, diagnostics, and stand-by mode, to name a few.

The V5804 introduces a point-to-multipoint concept with the GPON technology, which enables a cost-effective FTTx service. The reason why GPON is considered as a cost-effective solution is its usage of a passive splitter rather than an active switching system.

The V5804 has two Power Supply Unit (PSU) mounting slots on the front panel. Each PSU is comprised of single power input. For power redundancy, user can equip dual PSUs into 2-slot.

The V5804 provides 4 GPON ports on the front panel, each delivering 2.488Gbps downstream and 1.244Gbps upstream. Each GPON port supports a pluggable SFP laser module that allows selection of the best speed and power to meet network requirements. It is comprised of 4 optical 10 GE interfaces and 4 optical 1 GE interface as uplink towards the core network and these interfaces can be used either to cascade other switches. The MGMT and console interface is located on the most left of the front panel with embedded LED for LNK/ACT and TX/RX indication respectively. They are for use of equipment management via remote access or CLI.
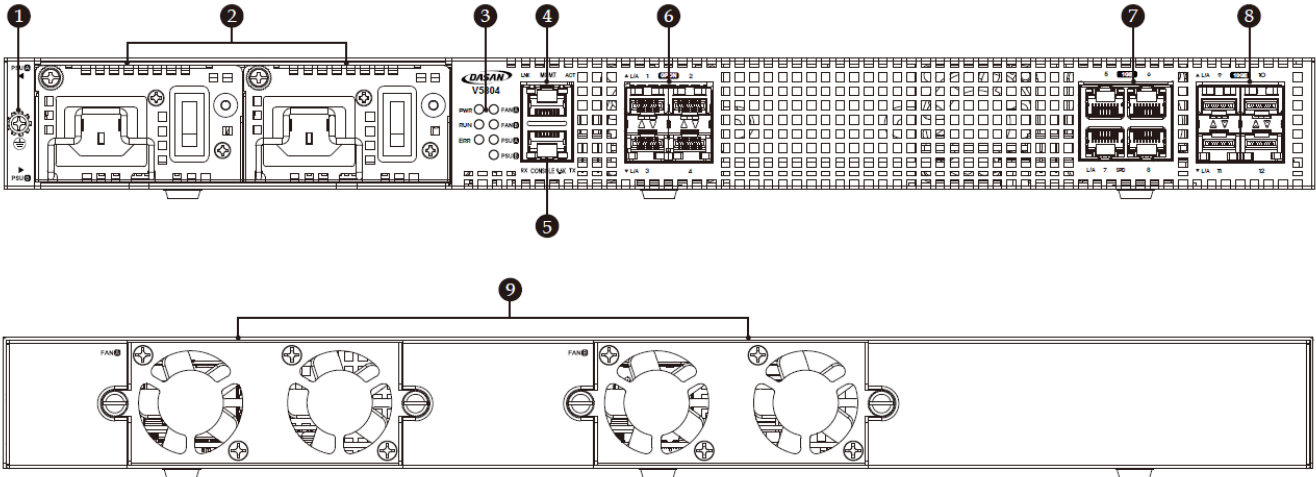

Figure 1   V5804 Interfaces

Name	Function	Connector type
① Grounding	Grounding part to prevent electric shock	Grounding screw
② PSU	2 PSU-Module (AC/DC)	-
③ System LED	Operating status LEDs of V5804	-
④ MGMT	Out-of-band TMN-OS Interface	RJ45
⑤ CONSOLE	CLI access to configure the functions for system operating	RJ45
⑥ GPON Interfaces	4 ports GPON	SFP
⑦ 1GbE Interface	4 ports 10/100/1000Base-T 1GbE interface	RJ45
⑧ 10GbE Interface	4 ports for optical 10GbE interface	SFP+
⑨ Fan	Plauuable FAN	-

Table 1   V5804 Interfaces

Operating Status LEDs

The condition of the V5804 can be determined through the use of the LEDs on the front panel. The LED indicators will provide the status of each interface.
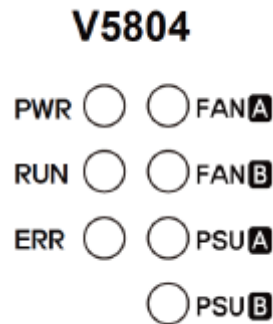

Figure 2   LEDs of the Power System & FAN

Power Status LED

The V5804 is equipped with a LED to indicate the status of power. The meaning of the LED is shown in below table.

Label	Color	Status	Description
PWR	Green	On	Power is supplied in the normal operating condition.
		Off	Power supply is failed.

Table 2   Power Status LED

Operating Status LEDs

The V5804 is equipped with two LEDs to indicate the operating status of the unit. The meaning of the LEDs is shown in below table.

Label	Color	Status	Description
RUN	Green	On	The system is starting up to boot.
		Blinking	The system is running without errors.
		Off	The switch is not supplied with power.
ERR	Red	On	The system is running with errors.
		Off	The system is running with no errors.

Table 3   Operating Status LEDs

On the rear panel of the switch, there are two slots for Power Supply Unit (PSU). The mounting slots can be equipped with DC or AC type PSUs. The different type of PSUs can be equipped into the switch. The below table shows DC type of power supply modules.

PSU & FAN Status LEDs

Two PSUs are displayed with two LEDs to indicate the status of the power feeding and error. The meaning of the LEDs is shown in below table.

Label	Color	Status	Description
PSU A	Green	On	Power is supplied with PWR A.
	Amber	On	Power is not supplied with PWR A, but PSU is installed in the slot A
		Off	PSU A is not installed.
PSU B	Green	On	Power is supplied with PWR B.
	Amber	On	Power is not supplied with PWR B, but PSU is installed in the slot B
		Off	PSU B is not installed.

Table 4   Status LEDs on PSU

Two Fan units are displayed two LEDs to indicate the status of normal operation and Error situation. The meaning of the LED is shown in below table.

Label	Color	Status	Description
FAN A	Green	On	FANs are in the normal operating condition.
	Amber	On	FANs are failed or stopped by CLI command.
		Off	The system is turned off. FAN A is not inserted.
FAN B	Green	On	FANs are in the normal operating condition.
	Amber	On	FANs are failed or stopped by CLI command.
		Off	The system is turned off. FAN B is not inserted.

Table 5   Status LEDs on Fan

Port Status LEDs

The V5804 also uses LED to indicate the status of each GPON interface and 1GE interface and 10GE interface (port 1 to 12). These LEDs are used for link status information such as link integrity, traffic activity, and transmit rate. The meaning of the LEDs is shown in the below.
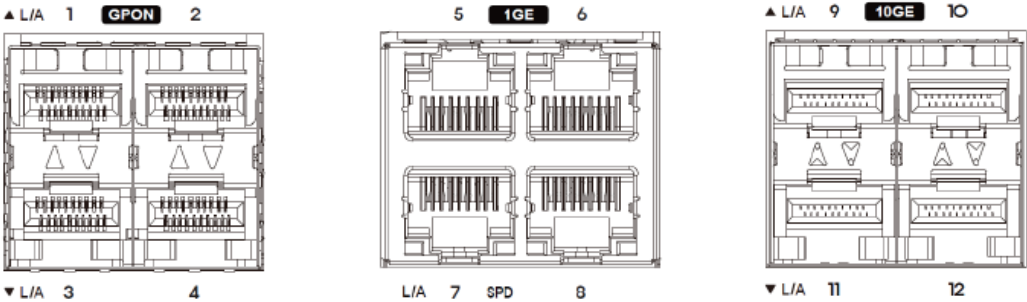

Figure 4   LEDs of the Ports

GPON Interface(SFP), Port1 ~ Port 4			
Label	**Color**	**Status**	**Description**
L/A	Green	On	GPON OLT link is up
		Blinking	A transmit or receive activity is present on the port.
	Off		GPON OLT link is down.

Table 6   Status LEDs for GPON Interface

Optical 1GbE Interface (RJ45), Port 5 ~ Port 8			
Label	**Color**	**Status**	**Description**
L/A	Green	On	The port link is up.
		Blinking	A transmit or receive activity is present.
	Off		The port link is down.
SPD	Green	On	The Ethernet port at 1Gbps transmit rate.
	Amber	On	The Ethernet port at 100Mbps transmit rate.
	Off		The port link is down.

Table 7   Status LEDs for 1 Gigabit Ethernet Interface

Optical 10GbE Interface (SFP+), Port 9 ~ Port 12			
Label	**Color**	**Status**	**Description**
L/A	Green	On	The port link is up and the Ethernet transmit rate is 10Gbps.
		Blinking	A transmit or receive activity is present on the Ethernet port at 10Gbps transmit rate.
	Amber	On	The port link is up and the Ethernet transmit rate is 1Gbps.
		Blinking	A transmit or receive activity is present on the Ethernet port at 1Gbps transmit rate.
	Off		The port link is down.

Table 8   Status LEDs for 10 Gigabit Ethernet Interface
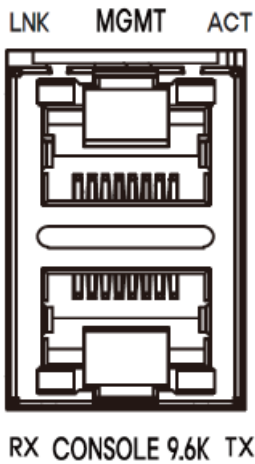
MGMT/Console Port Status LEDs

Figure 4   LEDs of the MGMT/Console Port

The MGMT interface connector includes two LEDs to indicate the status of the MGMT interface, see the below table. The meaning of the LEDs is shown in below table.

Label	Color	Status	Description
LNK	Green	On	Link up
		Blinking	A transmit or receive activity is present
	Off		Link Down
ACT	Green	On	The Ethernet transmit rate is 1Gbps.
	Amber	On	The Ethernet transmit rate is 100Mbps.
	Off		Link Down

Table 9   Status LEDs on MGMT Interface

The console interface connector includes two LEDs to indicate the status of the console interface, the meaning of LEDs is shown in below table.

Label	Color	Status	Description
RX	Green	Blinking	A receive activity is present on the console.
	Off		No receive activity is present on the console.
TX	Green	Blinking	A transmit activity is present on the console.
	Off		No transmit activity is present on the console.

Table 10   Status LEDs on Console

Plug-In Units

Power Supply Unit (PSU)

On the front panel of the switch, there are two slots for Power Supply Unit (PSU). The mounting slots can be equipped with DC or AC type PSUs. The different type of PSUs can be equipped into the switch. The below shows AC and DC type of power supply modules

Two PSUs, supply power to the switch, are regulated first through the each SMPS or DC/DC converter. For supplying redundancy, dual PSUs have to be installed at a system.

The power supply unit (PSU) feeds the proper power voltage to the base board of V5804. Two PSUs are possible to be mounted into front side of the chassis and it can be DC or AC type of PSU. Therefore, you need to decide to choose proper power supply unit according to installation environment.

The power connector (AC and DC type) for main power supply is located on the front panel of the PSU. For redundant power feeding, the second PSU has to be used.

The below shows the electrical characteristics of the V5804.

Characteristic	V5804
Nominal DC power supply	48 VDC
Nominal AC power supply	100 to 220 VAC

Table 11   V5804 Electrical Characteristics

The DC power connector (DC type) or AC power connector (AC type) for main power supply is located on the front panel of the PSU. For redundant power feeding, the second PSU has to be used.
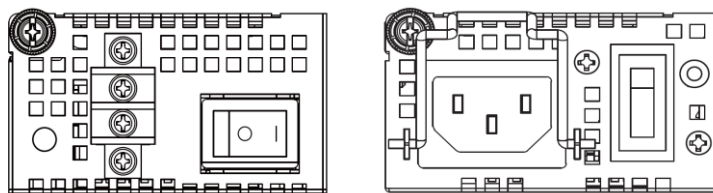

Figure 5   Power Supply Unit

FAN Unit

The V5804 provides 2 fan unit slots on the rear panel. This plug-in unit internally consists of 2 fans. User can insert fan unit to a fan slot by slowly adjusting them to fit into the slot guidance. The air flows from the front side inlet to the rear side outlet.
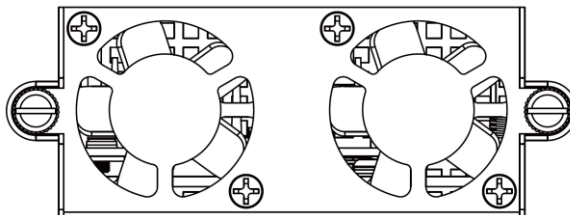

Figure 6   Front View of the FAN unit

Service Scenario

A PON consists of an Optical Line Termination (OLT) located at the Central Office and a set of Optical Network Units (ONUs) or Optical Network Terminals (ONTs) located at the customer's premises. Between them is the optical distribution network (ODN) comprising of fibers and passive optical splitters or couplers. A splitter is a device that divides an optical signal into two or more signals. OLT connects the PON to the IP network, controls and manages the PON clients. ONU (ONT) connects the user specific network to PON. The ONT can be occupied by a single subscriber and also can be a gateway of the local network.
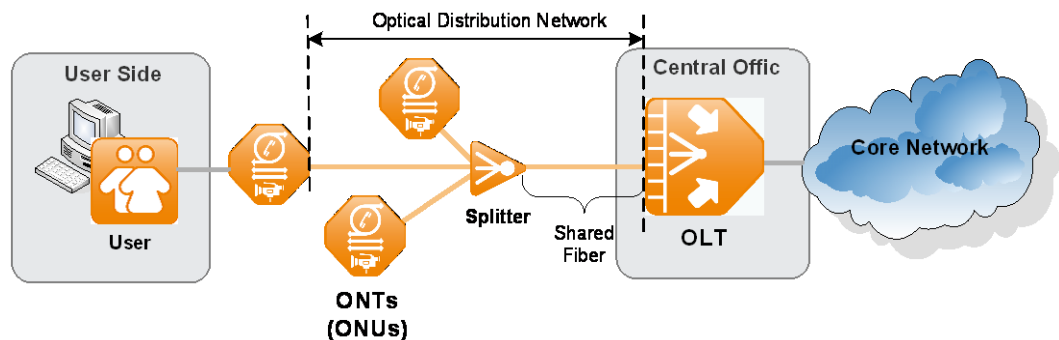

Figure 7   Service Scenario of V5804

The V5804 is a network element, which includes the necessary service adaptation functions to support the delivery of all types multiple services, such as Ethernet, IP telephony, and video services.

The V5804 GPON OLT system is one element of this end-to-end solution, however DASAN Network Solutions is able to provide the complete next generation broadband access network and video integration solution, where full interoperability is ensured. Up to 128 termination points for GPON can be attached to an OLT via passive optical splitter.

There are different possible deployment topologies for GPON networks, which differentiate from each other basically from the place the optical fiber is terminated. Depending on the subscriber type and desired topology to the network, the operator may adopt: FTTH (fiber to the Home), FTTB (fiber to the Building), FTTN (fiber to the neighborhood) or FTTC (fiber to the Curb). In case of very high bandwidth requirement per user, scenarios without splitters offering 2.5Gbps/1.25Gbps (downstream/upstream) data rate can also be deployed by connecting only the single user on a GPON port.

Product Specifications

System features

The V5804 supports the following system features:

- Switching Capacity: 128Gbps
- 4-port GPON subscriber interface:
  - 4-port of GPON interfaces (SFP, SC/PC type)
- 4-port 10 GE and 4-port 1 GE uplink interface:
  - 1/10GBase-R optical interfaces (SFP+)
  - 10/100/1000Base-T interfaces (RJ45)
- 1 console interface for management access
- 1 GE interface for out-of-band management
- 1-port USB 2.0
- Redundant and load balanced plug-in Power Supply Unit (PSU)

Capabilities

The V5804 provides the following functionalities:

GPON

- Supports 4K port-ID
- Supports 1K alloc-ID
- Supports ITU-T G.984.4 OMCI
- Supports ITU-T G.984.3. amd2

Layer 2

- VLAN 4K
- Double IEEE802.1Q for stacking
- Spanning tree (PVRSTP, MSTP, STP/PVSTP+)
- Jumbo frame of up to 9KB
- Link Aggregation (Static and LACP)

Layer 3

- Static IPv4/IPv6 Routing(Dual Stack)

Multicast

- IGMPv1/v2/v3 Snooping
- IGMPv1/v2 Proxy
- MLD snooping, MLD proxy

ERPS

- G.8032
- Y.1731
- HW based CCM

QoS

- Supports CoS with WRED, WRR and DSCP/802.1p priority
- Traffic scheduling (SP/WDRR/DRR)

Security

- 802.1x MAC/port based authentication
- Storm control for broadcast, multicast and unknown unicast packets
- DoS protection
- Out-of-band management
- IP source guard
- Secure Shell (SSH)
- RADIUS/Tacacs+
- Martian Filter
- DAI

Management

- Serial/Telnet (CLI)
- SNMPv1/v2/v3
- RADIUS/TACACS authentication
- SSH
- Syslog (volatile, non-volatile, remote)

Physical Specifications

V5804

Dimensions (W x D x H)	440 mm x 270 mm x 44 mm
Weight	4.45 kg (2FAN + 2PSU_DC)
	5.05 kg (2FAN + 2PSU_AC)
Operating Temperature	-20°C ~ 65°C
Storage Temperature	-40°C ~ 80°C
Operating Humidity Range	5% to 90% Non-condensing
Heat Dissipation	PSU_DC: 10W/h, PSU_AC : 8W/h

Power Supply

DC power voltage	48 VDC
AC power voltage	100-220 VAC
Power Consumption	PSU-DC: approximately 32W
	PSU-AC: approximately 34W

Operating Indicators

System LEDs	PWR / RUN / ERR / FAN A/FANB / PSU A/PSU B
GPON i/f LEDs	L/A
10GE i/f LEDs	L/A
1GE i/f LEDs	L/A / SPD
Console	RX / TX
MGMT	LNK / ACT

Operating Indicators

GPON i/f for service	4 x GPON port (SFP)
10Gigabit Ethernet i/f for uplink	4 x 1/10GBase-R (SFP+)
1Gigabit Ethernet i/f for uplink	4 x 10/100/1000Base-T (RJ45)
Ethernet i/f for local management	10Base-T/100Base-TX (RJ45)
Serial i/f, Console	RS232 (RJ45)

Connector Specifications

The V5804 provides standardized interfaces, thus facilitating rapid and trouble-free integration into the existing network infrastructures.

Service Interfaces

The V5804 contains 4 GPON interface ports for SFP modules and blow table is available GPON module list.

SFP Module	Description
SFP-GPON-OLT20	SFP GPON OLT -. Wavelength: 1490nm/1310nm / Distance: 20km / Mode: single mode -. Connector: SC/PC / Data rate: 2.488Gbit/s (Up), 1.25Gbit/s (Down) -. Core type : Single Core / Operating Temperature : 0 °C ~ 70 °C

Table 13   SFP Modules for GPON

Network Interfaces

The V5804 contains 4 optical interface ports for SFP/SFP+ modules and blow table is available SFP/SFP+ module list.

SFP Module	Description
SFP-GE-SX	SFP GE SX - Wavelength: 850 nm / Distance: 550 m / Mode: multi-mode - Connector: LC / Data rate: 1.25Gbit/s / Core type: Dual Core - Operating Temperature: 0 °C - 70 °C
SFP-GE-LX5	SFP GE LX5 -. Wavelength: 1310nm / Distance: 5km / Mode: single-mode -. Connector: LC / Data rate: 1.25Gbit/s / Core type: Dual Core -. Operating Temperature : 0 °C – 70 °C
SFP-GE-LX10	SFP GE LX10 - Wavelength: 1310 nm / Distance: 10 km / Mode: single-mode - Connector: LC / Data rate: 1.25 Gbit/s / Core type: Dual Core - Operating Temperature: 0 °C – 70 °C
SFP-GE-LX15	SFP GE LX15 - Wavelength: 1310 nm / Distance: 15 km / Mode: single-mode - Connector: LC / Data rate: 1.25 Gbit/s / Core type: Dual Core - Operating Temperature: 0 °C – 70 °C
SFP-GE-LX20	SFP GE LX20 - Wavelength: 1310 nm / Distance: 20 km / Mode: single-mode - Connector: LC / Data rate: 1.25 Gbit/s / Core type: Dual Core - Operating Temperature: 0 °C - 70 °C
SFP-GE-LX40	SFP GE LX40 - Wavelength: 1310 nm / Distance: 40 km / Mode: single-mode - Connector: LC / Data rate: 1.25 Gbit/s / Core type: Dual Core

	- Operating Temperature: 0 °C - 70 °C
SFPP-10GE-SR	SFP+ 10GE SR - Wavelength : 850nm / Distance : 300m / Mode : Multimode - Connector : LC / Data rate : 10.3125 Gbit/s / Core type : Dual Core - Operating Temperature : 0°C ~ 70 °C - 10GBASE-SR (10G)
SFPP-1GE10GE-SR	SFP+ 1GE/10GE SR - Wavelength : 850nm / Distance : 300m / Mode : Multimode - Connector : LC / Data rate : 10.3125 Gbit/s / Core type : Dual Core - Operating Temperature : 0°C ~ 70 °C - 1000BASE-SX (1G), 10GBASE-SR (10G)
SFPP-10GE-LR	SFP+ 10GE LR - Wavelength : 1310nm / Distance : 10Km / Mode :Singlemode - Connector : LC / Data rate : 10.3125 Gbit/s / Core type : Dual Core - Operating Temperature : 0°C ~ 70 °C - 10GBASE-LR (10G)
SFPP-10GE-ER	SFP+ 10GE ER - Wavelength : 1550nm / Distance : 40Km / Mode :Singlemode - Connector : LC / Data rate : 10.3125 Gbit/s / Core type : Dual Core - Operating Temperature : 0°C ~ 70 °C - 10GBASE-ER (10G)
SFPP-10GE-ZR	SFP+ 10GE ZR - Wavelength : 1310nm / Distance : 70Km / Mode :Singlemode - Connector : LC / Data rate : 10.3125 Gbit/s / Core type : Dual Core - Operating Temperature : 0°C ~ 70 °C - 10GBASE-ZR (10G)

Table 14   SFP Modules

DASAN Network Solutions, Inc.