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Product Specifications

Layer 3 16-Port 100/1000X SFP + 8-Port Gigabit TP/SFP + 4-Port 10G SFP+ Stackable Managed Switch

SGS-6341-16S8C4XR

Version 1.0

Change History:

Revision	Date	Author	Change List
Version 1.0	2018/02/20	Bryant	Initial release

Author	Bryant Wu	Editor:	
Reviewed by:		Approved by:	Kent Kang

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1. PRODUCT DESCRIPTION

Powerful Layer 3 Routing Solution for All Long-Reach Networks

PLANET SGS-6341-16S8C4XR is a Layer 3 Stackable Managed Gigabit Switch that provides high-density performance, **Layer 3 static routing, RIP (Routing Information Protocol)** and **OSPF (Open Shortest Path First)** with **10Gbps uplink** and **multiple SFP fiber** interfaces delivered in a rugged, strong case. The administrator can flexibly choose the suitable SFP/SFP+ transceiver according to the transmission distance or the transmission speed required to extend the 10G network efficiently. Besides, with **128Gbps switching fabric**, the SGS-6341-16S8C4XR can handle extremely large amounts of data in a secure topology linking to backbone or high capacity servers for ISP and enterprise VoIP, video streaming, and multicast applications.

## High Performance 10Gbps Ethernet Capacity

The four SFP+ slots built in the SGS-6341 series supports **Dual-speed, 10GBASE-SR/LR or 1000BASE-SX/LX.** With 10Gbps uplink interfaces the SGS-6341 series boasts a high-performance switch architecture that is capable of providing non-blocking switch fabric and wire-speed throughput as high as 128Gbps, which greatly simplifies the tasks of upgrading the LAN for catering to increasing bandwidth demands.

AC and DC Redundant Power to Ensure Continuous Operation

The SGS-6341-16S8C4XR is equipped with one 100~240V AC power supply unit and one additional 12V DC power supply unit for redundant power supply. A redundant power system is also provided to enhance the reliability with either AC or DC power supply unit. The redundant power system is specifically designed to handle the demands of high-tech facilities requiring the highest power integrity.

IP Stacking Management

The SGS-6341 series supports IP stacking function that helps network managers to easily configure up to 24 switches in the same series via one single IP address instead of connecting and setting each unit one by one. The IP Stacking technology groups PLANET SGS-6341 switch series together to enable centralized management through a single unit, regardless of physical location or switch type, as long as they are connected to the same local network.
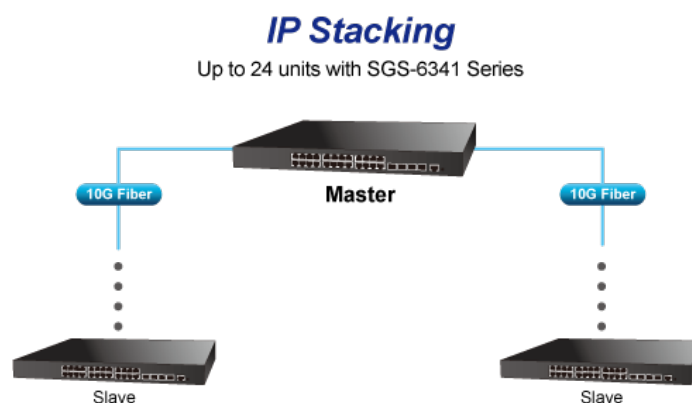
Layer 3 Routing Support

The SGS-6341 series enables the administrator to conveniently boost network efficiency by configuring Layer 3 static routing manually, and the RIP or OSPF settings automatically. The RIP can employ the hop count as a routing metric and prevent routing loops by implementing a limit on the number of hops allowed in a path from the source to a destination. The OSPF is an interior dynamic routing protocol for autonomous system based on link state. The protocol creates a database for link state by exchanging link states among Layer3 switches, and then uses the Shortest Path First algorithm to generate a route table based on that database.

Full IPv6 Support

The SGS-6341 series provides **IPv6 management** and enterprise-level secure features such as **SSH, ACL, WRR** and **RADIUS** authentication. It thus helps the enterprises to step in the IPv6 era with the lowest investment. In addition, you don't need to replace the network facilities when the IPv6 FTTx edge network is built.

Robust Layer 2 Features

The SGS-6341 series can be programmed for basic switch management functions such as port speed configuration, port aggregation, VLAN, Multiple Spanning Tree Protocol, WRR, bandwidth control and IGMP snooping. This switch provides 802.1Q tagged VLAN, Q-in-Q, voice VLAN and GVRP Protocol functions. By supporting port aggregation, the SGS-6341 series allows the operation of a high-speed trunk combined with multiple ports.   It enables up to 16 groups for trunking with a maximum of 8 ports for each group.

Excellent Layer 2 to Layer 4 Traffic Control

The SGS-6341 series is loaded with powerful traffic management and WRR features to enhance services offered by telecoms. The WRR functionalities include wire-speed Layer 4 traffic classifiers and bandwidth limitation which are particularly useful for multi-tenant unit, multi-business unit, Telco, or network service applications. It also empowers the enterprises to take full advantage of the limited network resources and guarantees the best in VoIP and video conferencing transmission.

Powerful Security

The SGS-6341 series supports ACL policies comprehensively. The traffic can be classified by source/destination IP addresses, source/destination MAC addresses, IP protocols, TCP/UDP, IP precedence, time ranges and ToS. Moreover, various policies can be conducted to forward the traffic. The SGS-6341 series also provides IEEE 802.1x port based access authentication, which can be deployed with RADIUS, to ensure the port level security and block illegal users.

Efficient and Secure Management

For efficient management, the SGS-6341 series Managed Gigabit Switch is equipped with console, Web and SNMP management interfaces. With its built-in Web-based management interface, the SGS-6341 series offers an easy-to-use, platform-independent management and configuration facility. The SGS-6341 series supports standard Simple Network Management Protocol (SNMP) and can be managed via any standard-based management software.

For reducing product learning time, the SGS-6341 series offers Cisco-like command via Telnet or console port and customer doesn't need to learn new command from these switches. Moreover, the SGS-6341 series offers secure remote management by supporting SSH connection which encrypts the packet content at each session.

Intelligent SFP Diagnosis Mechanism

The SGS-6341-16S8C4XR supports **SFP-DDM** (**Digital Diagnostic Monitor**) function that greatly helps network administrator to easily monitor real-time parameters of the SFP and SFP+ transceivers, such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage.
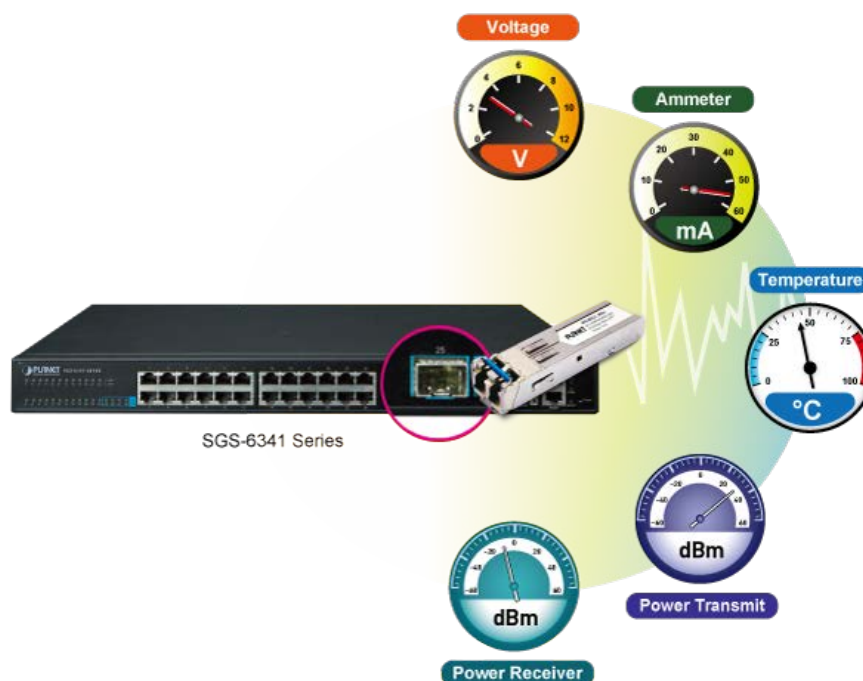
2. 2. PRODUCT FEATURES

➢   **Physical Ports**

- ■ **24 100/1000BASE-X mini-GBIC/SFP** slots

- ■ **8 10/100/1000BASE-T RJ45** copper ports, shared with port-1 to port-8

- ■ **4 10GBASE-SR/LR SFP+** slots, compatible with 1000BASE-SX/LX/BX SFP

- ■ RJ45 to DB9 console interface for switch basic management and setup

- ■ 1 USB2.0 interface for configuration and firmware storage

➢   **IP Stacking**

- ■ Connects with stack member via both Gigabit TP, SFP and SFP+ interfaces

- ■ Single IP address management, supporting up to 24 units stacked together

➢   **IP Routing Features**

- ■ IP routing protocol supports **RIPv1/v2**, **RIPng**, **OSPFv2/v3**, **BGP4/4+**

- ■ Routing interface provides per VLAN routing mode

- ■ **VRRPv1/v3** protocol for redundant routing deployment

- ■ Supports route redistribution

➢   **Multicast Routing Features**

- ■ Supports PIM-DM (Protocol Independent Multicast – Dense Mode) and PIM-SM (Protocol Independent Multicast – Sparse Mode) and PIM-SSM (Protocol Independent Multicast – Source Specific Multicast)

- ■ Supports DVMRP (Distance Vector Multicast Routing Protocol)

- ■ Supports IGMP v1/v2/v3 and MLD v1/v2

➢   **Layer 2 Features**

- ■ Complies with the IEEE 802.3, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3z Gigabit Ethernet standard

- ■ Supports auto-negotiation and half-duplex/full-duplex modes for all 10BASE-T, 100BASE-TX and 1000BASE-T ports

- ■ Auto-MDI/MDI-X detection on each RJ45 port

- ■ Prevents packet loss flow control
    - IEEE 802.3x pause frame flow control in full-duplex mode
    - Back-pressure flow control in half-duplex mode

- ■ High performance Store-and-Forward architecture, broadcast storm control, port loopback detect

- ■ 16K MAC address table, automatic source address learning and aging

- ■ Supports VLAN
    - IEEE 802.1Q tag-based VLAN
    - GVRP for dynamic VLAN management
    - Up to 256 VLANs groups, out of 4041 VLAN IDs
    - Provider Bridging (VLAN Q-in-Q, IEEE 802.1ad) supported
    - Private VLAN Edge (PVE) supported
    - GVRP protocol for Management VLAN
    - Protocol-based VLAN

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- MAC-based VLAN
- IP subnet VLAN
- Supports Link Aggregation
  - Maximum 128 trunk groups, up to 8 ports per trunk group
  - IEEE 802.3ad LACP (Link Aggregation Control Protocol)
  - Cisco ether-channel (static trunk)
- Supports Spanning Tree Protocol
  - STP, IEEE 802.1D (Classic Spanning Tree Protocol)
  - RSTP, IEEE 802.1w (Rapid Spanning Tree Protocol)
  - MSTP, IEEE 802.1s (Multiple Spanning Tree Protocol, spanning tree by VLAN)
  - Supports BPDU & root guard
- Port mirroring to monitor the incoming or outgoing traffic on a particular port (many to many)
- Provides port mirror (many-to-1)

➢ **Quality of Service**
- 8 priority queues on all switch ports
- Support for strict priority and WRR (Weighted Round Robin) CoS policies
- Traffic classification
  - IEEE 802.1p CoS/ToS
  - IPv4/IPv6 DSCP
  - Port-based WRR
- Strict priority and WRR CoS policies

➢ **Multicast**
- Supports IPv4 IGMP snooping v1, v2 and v3; IPv6 MLD v1 and v2 snooping
- Querier mode support
- Supports Multicast VLAN Register (MVR)

➢ **Security**
- IEEE 802.1x port-based network access authentication
- MAC-based network access authentication
- Built-in RADIUS client to cooperate with the RADIUS servers for IPv4 and IPv6
- TACACS+ login users access authentication
- IP-based Access Control List (ACL)
- MAC-based Access Control List
- Supports DHCP snooping
- Supports ARP inspection
- **IP Source Guard** prevents IP spoofing attacks
- **Dynamic ARP Inspection** discards ARP packets with invalid MAC address to IP address binding

➢ **Management**
- Management IP for IPv4 and IPv6
- Switch Management Interface

- Console/Telnet Command Line Interface
- Web switch management
- SNMP v1, v2c, and v3 switch management
- SSH/SSL secure access

■ BOOTP and DHCP for IP address assignment

■ Firmware upload/download via TFTP or HTTP Protocol for IPv4 and IPv6

■ SNTP (Simple Network Time Protocol) for IPv4 and IPv6

■ User privilege levels control

■ Syslog server for IPv4 and IPv6

■ Supports DDM

■ Four RMON groups 1, 2, 3, 9 (history, statistics, alarms and events)

■ Supports sFlow

■ Supports ULDP

■ Supports ULPP (Uplink Protection Protocol)

■ Supports ULSM (Uplink State Monitor protocol)

■ Supports LLDP/LLDP MED

■ Supports DHCP Option82, Option37/38

■ Supports ping, trace route function for IPv4 and IPv6

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3. PRODUCT SPECIFICATIONS

3.1 MAIN COMPONENTS

Switch ASIC:	Marvell 98DX3236	x 1
Switch PHY:	Marvell 88E1548	x 6
CPU:	ARM V7 800MHZ	-
DRAM:	512Mbytes	x 1
Flash:	32Mbytes	x 1

3.2 FUNCTION SPECIFICATIONS

Product	SGS-6341-16S8C4XR
Hardware Specifications	
SFP/mini-GBIC Slots	24 100/1000BASE-X SFP interfaces Compatible with 100BASE-FX SFP transceiver
Copper Ports	8 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports
SFP+ Slots	4 10GBASE-SR/LR SFP+ interface (port-25 to port-28) Compatible with 1000BASE-SX/LX/BX SFP transceiver
Console	1 x RJ45-to-RS232 serial port (115200, 8, N, 1)
Switch Architecture	Store-and-forward
Switch Fabric	128Gbps/non-blocking
Switch Throughput	95.23Mpps
Address Table	16K MAC address table with auto learning function
ARP Table	4K
Routing Table	1K
ACL Table	1K
Shared Data Buffer	1.5MB
Flow Control	Back pressure for half-duplex IEEE 802.3x pause frame for full-duplex
Jumbo Frame	10Kbytes

LED	System:
	  PWR/MGMT/SYS/RPS
	Ports:
	  10/100/1000T RJ45 Port: LNK/ACT
	  1/10G SFP+ slot: LNK/ACT

Dimensions (W x D x H)	440 x 240 x 44 mm, 1U height
Weight	3173g
Power Consumption	34 watts/116BTU

Power Requirements	AC 100~240V, 50/60Hz DC 12V
Fan	1
IPv4 Layer 3 functions	
IP Routing Protocol	■ Static route ■ RIPv1/v2 ■ OSPFv2 ■ BGPv4 ■ Policy-based routing (PBR) ■ LPM routing (MD5 authentication)
Multicast Routing Protocol	■ IGMP v1/v2/v3 ■ DVMRP ■ PIM-DM/SM ■ PIM-SSM
Layer 3 Protocol	■ VRRP v1/v3 ■ ARP ■ ARP Proxy ■ IGMP Proxy
IPv6 Layer 3 functions	
IP Routing Protocol	■ RIPng ■ OSPFv3 ■ BGPv4+, ■ IPv6 LPM Routing ■ IPv6 Policy-based Routing(PBR) ■ IPv6 VRRPv3 ■ IPv6 URPF ■ IPv6 RA
Multicast Routing Protocol	■ PIM-SM/DM for IPv6 ■ MLD for IPv6 (v1) ■ MLDv1/v2 ■ MLD Snooping, 6to4 Tunnels ■ IPv6 Any Cast RP ■ Multicast receive control ■ Illegal multicast source detect
Layer 3 Protocol	■ Configured Tunnels ■ ISATAP ■ GRE Tunnel
Other	ICMPv6,ND,DNSv6
Layer 2 functions	
Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full **and** half duplex mode selection Flow control disable/enable Bandwidth control on each port Port loopback detect
Port Status	Display each port's speed duplex mode, link status, flow control status and auto negotiation status

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VLAN	802.1Q tagged based VLAN, up to 256 VLAN groups 802.1ad Q-in-Q (VLAN stacking) GVRP for VLAN management Private VLAN Edge (PVE) supported Protocol-based VLAN MAC-based VLAN IP subnet VLAN
Bandwidth Control	TX/RX/Both
Link Aggregation	IEEE 802.3ad LACP/static trunk Supports 128 groups with 8 ports per trunk group

QoS	8 priority queues on all switch ports
	Supports strict priority and Weighted Round Robin (WRR) CoS policies
	Traffic classification:
	   - IEEE 802.1p CoS/ToS
	   - IPv4/IPv6 DSCP
	   - Port-based WRR

Multicast	IGMP v1/v2/v3 snooping Querier mode support MLD v1/v2 snooping Multicast VLAN Register (MVR)
Access Control List	Supports Standard and Expanded ACL IP-based ACL/MAC-based ACL Time-based ACL Up to 512 entries
Security	Supports MAC + port binding IPv4/IPv6 + MAC + port binding IPv4/IPv6 + port binding Supports MAC filter ARP scanning prevention
Authentication	IEEE 802.1x port-based network access control AAA authentication: TACACS+ and IPv4/IPv6 over RADIUS
Management functions	
IP Cluster (Stacking) Compatibility list	XGS3-24242v2 XGS3-24042v3 SGS-6340-16XR SGS-6340-20S4C4X SGS-6340-24T4S SGS-6340-48T4S SGS-6340-24P4S SGS-6341-24T4Xv2 SGS-6341-24P4Xv2 SGS-6341-48T4X
System Configuration	Console, Telnet, Web browser, SNMP v1, v2c
Secure Management Interfaces	SSH, SSL, SNMPv3
Management	Supports both IPv4 and IPv6 addressing

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	Supports the user IP security inspection for IPv4/IPv6 SNMP
	Supports MIB and TRAP
	Supports IPv4/IPv6 FTP/TFTP
	Supports IPv4/IPv6 NTP
	Supports RMON 1, 2, 3, 9 four groups
	Supports the RADIUS authentication for IPv4/IPv6 Telnet user name and password
	Supports IPv4/IPv6 SSH
	The right configuration for users to adopt RADIUS server's shell management
	Supports CLI, console, Telnet
	Supports SNMP v1, v2c and v3
	Supports Security IP safety net management function: avoid unlawful landing at nonrestrictive area
	Supports Syslog server for IPv4 and IPv6
	Supports TACACS+
SNMP MIBs	RFC 1213 MIB-II RFC 1215 Internet Engineering Task Force RFC 1271 RMON RFC 1354 IP-Forwarding MIB RFC 1493 Bridge MIB RFC 1643 Ether-like MIB RFC 1907 SNMP v2 RFC 2011 IP/ICMP MIB RFC 2012 TCP MIB RFC 2013 UDP MIB RFC 2096 IP forward MIB RFC 2233 if MIB RFC 2452 TCP6 MIB RFC 2454 UDP6 MIB RFC 2465 IPv6 MIB RFC 2466 ICMP6 MIB RFC 2573 SNMP v3 notify RFC 2574 SNMP v3 vacm RFC 2674 Bridge MIB Extensions (IEEE 802.1Q MIB) RFC 2674 Bridge MIB Extensions (IEEE 802.1P MIB)
Standard Conformance	
Regulatory Compliance	FCC Part 15 Class A, CE
Standards Compliance	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3z Gigabit 1000BASE-SX/LX IEEE 802.3ab Gigabit 1000BASE-T IEEE 802.3ae 10Gb/s Ethernet IEEE 802.3x flow control and back pressure IEEE 802.3ad port trunk with LACP IEEE 802.1D Spanning Tree Protocol IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1s Multiple Spanning Tree Protocol

|	IEEE 802.1p Class of Service
	IEEE 802.1Q VLAN tagging
	IEEE 802.1X port authentication network control
	IEEE 802.1ab LLDP
	RFC 768 UDP
	RFC 793 TFTP
	RFC 791 IP
	RFC 792 ICMP
	RFC 2068 HTTP
	RFC 1112 IGMP v1
	RFC 2236 IGMP v2
	RFC 3376 IGMP v3
	RFC 2710 MLD v1
	FRC 3810 MLD v2
	RFC 2328 OSPF v2
	RFC 1058 RIP v1
	RFC 2453 RIP v2
Environment	
Operating	Temperature: 0 ~ 50 degrees C Relative Humidity: 5 ~ 90% (non-condensing)
Storage	Temperature: -10 ~ 70 degrees C Relative Humidity: 5 ~ 90% (non-condensing)

3.3 PHYSICAL SPECIFICATIONS:

Dimensions:

440 x 240 x 44 mm (W x D x H)

Weight:

3173g

Front View:
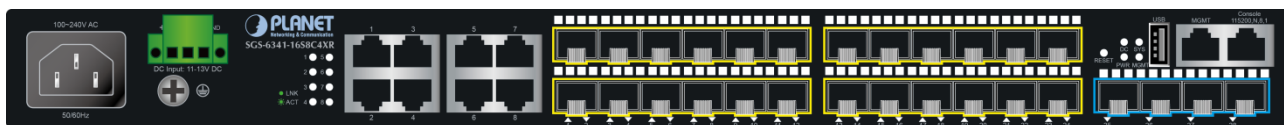
LED Definition:

■ **System**

LED	Color	Function
PWR	Green	**Lights** to indicate that the Switch has power.
	Off	Power is off.
DC	Green	**Lights** to indicate that the Switch has power.
	Off	Power is off.
SYS	Green	**Lights** to indicate the system diagnosis is completed.
		Blinks to indicate system diagnosis is running.
MGMT	Green	**Lights** to indicate the link through that port is successfully established
		Blinks to indicate that the port is activity
	Off	No connection

■ **100/1000X SFP Interfaces**

LED	Color	Function
LNK/ACT	Green	**Lights** to indicate the link through that port is successfully established
	Off	No flow goes through the port.

■ **10/100/1000BASE-T Interfaces (Port-1 to Port-8)**

LED	Color	Function	
LNK/ACT	Green	**Lights**:	To indicate the link through that port is successfully established.
		Blinks:	To indicate that the switch is actively sending or receiving data over that port.

■ **1/10G SFP+ Interfaces (Port-25 to Port-28)**

LED	Color	Function	
LNK/ACT	Green	**Lights**:	To indicate the link through that port is successfully established.
		Blinks:	To indicate that the switch is actively sending or receiving data over that port.

3.4 ENVIRONMENTAL SPECIFICATIONS

Operating:

Temperature: 0 ~ 50 degrees C

Relative Humidity: 5% ~ 95% (non-condensing)

Storage:

Temperature: -10 ~ 70 degrees C

Relative Humidity: 5% ~ 95% (non-condensing)

3.5 ELECTRICAL SPECIFICATIONS

Power Input Voltage:	100 ~ 240VAC, 50/60Hz, auto-sensing	12V DC
Power Consumption (System On):	110V: **11.9** watts, 0.221A	9.96 watts, 0.83A
	120V: **11.9** watts, 0.208A	
	220V: **12** watts, 0.141A	
	240V: **12.1** watts, 0.135A	
Power Consumption (Full Load):	110V: **51.1** watts, 0.854A	47.64 watts, 3.97A
	120V: **50.8** watts, 0.791A	
	220V: **49.9** watts, 0.496A	
	240V: **50.3** watts, 0.47A	

3.6 REGULATORY COMPLIANCE

FCC Class A, CE

3.7 RELIABILITY

MTBF > 50,000Hrs @ 25 degrees C

3.8 BASIC PACKAGING

☑ The Managed Switch   x 1

☑ Quick Installation Guide   x 1

☑ RJ45-to-DB9 RS232 cable   x 1

☑ Rack Mounting Kit   x 1

☑ SFP Dust Cap   x 28

☑ Ground Cable   x 1

3.9 PACKING INFORMATION

Box Dimensions (W x D x H):	530 x 322 x 98 mm
Gross Weight:	4.1kg
Carton Dimensions (W x D x H):	540 x 410 x 345 mm
Total Weight:	16.4kg
Quantity:	4pcs in one carton