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Product Specifications

Industrial 16-Port 10/100/1000T 802.3at PoE+ 2-Port 100/1000X SFP Wall-mounted Managed Switch

WGS-4215-16P2S

Version 1.0

Change History:

Revision	Date	Author	Change List
1.0	2018/11/2	Calvin Chao	Initial release

| Author	Calvin Chao	Editor:	Calvin Chao
Reviewed by:		Approved by:	Kent Kang

1. PRODUCT DESCRIPTION

Easily-deployed and Expanded Network

Designed to be installed in a wall enclosure or simply mounted on a wall in any convenient location, PLANET WGS-4215-16P2S, an innovative, **Industrial 16-port 10/100/1000T 802.3at PoE + 2-port 100/1000X SFP Wall-mounted Managed Switch,** offers IPv6/IPv4 dual stack management, **intelligent Layer 2 management functions**, and **user-friendly interface**. The WGS-4215-16P2S is able to operate reliably, stably and quietly in any environment without affecting its performance. With a total power budget of up to **240 watts** for different kinds of PoE applications and featuring ultra networking speed and operating temperature ranging from **-10** to **60 degrees C** in a flat but rugged IP40 metal housing, the WGS-4215-16P2S is an ideal solution to meet the demand for the following network applications:

- Building/Home automation network
- Internet of things (IoT)
- IP surveillance
- Wireless LAN

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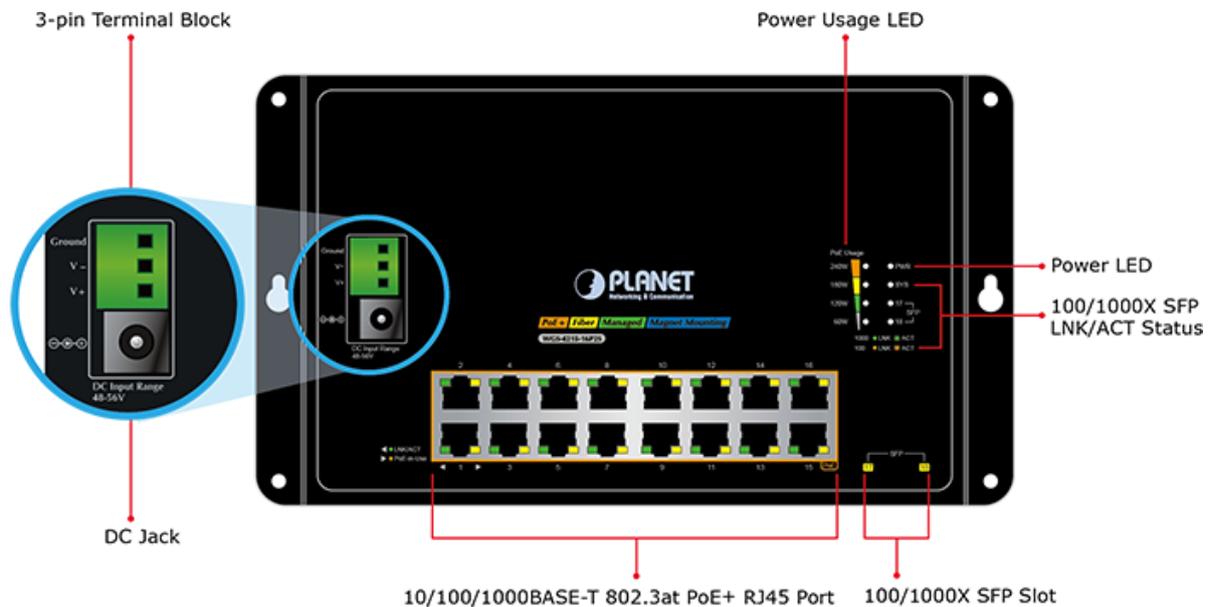
Built-in Unique PoE Functions for Powered Devices Management

As it is the managed PoE switch for surveillance, wireless and VoIP networks, the WGS-4215-16P2S features the following special PoE management functions:

- PD alive check
- Scheduled power recycling
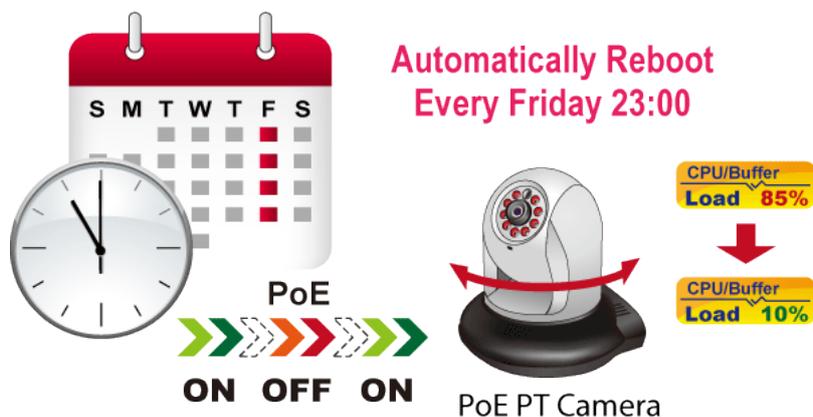- PoE schedule
- PoE usage monitoring

Intelligent Powered Device Alive Check

The WGS-4215-16P2S can be configured to monitor connected PD (powered device) status in real time via ping action. Once the PD stops working and responding, the WGS-4215-16P2S will resume the PoE port power and bring the PD back to work. It will greatly enhance the network reliability through the PoE port resetting the PD's power source and reducing administrator management burden.
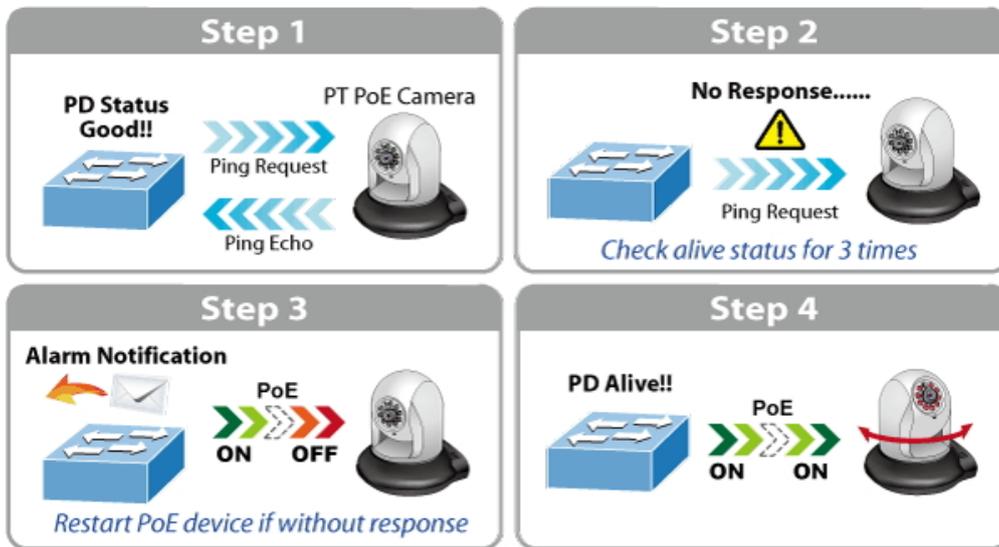

Scheduled Power Recycling

The WGS-4215-16P2S allows each of the connected PoE IP cameras or PoE wireless access points to reboot at a specific time each week. Therefore, it will reduce the chance of IP camera or AP crash resulting from buffer overflow.

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PoE Schedule for Energy Saving

Under the trend of energy saving worldwide and contributing to environmental protection, the WGS-4215-16P2S can effectively control the power supply besides its capability of giving high watts power. The "**PoE schedule**" function helps you to enable or disable PoE power feeding for each PoE port during specified time intervals and it is a powerful function to help SMBs or enterprises save power and budget. It also increases security by powering off PDs that should not be in use during non-business hours.
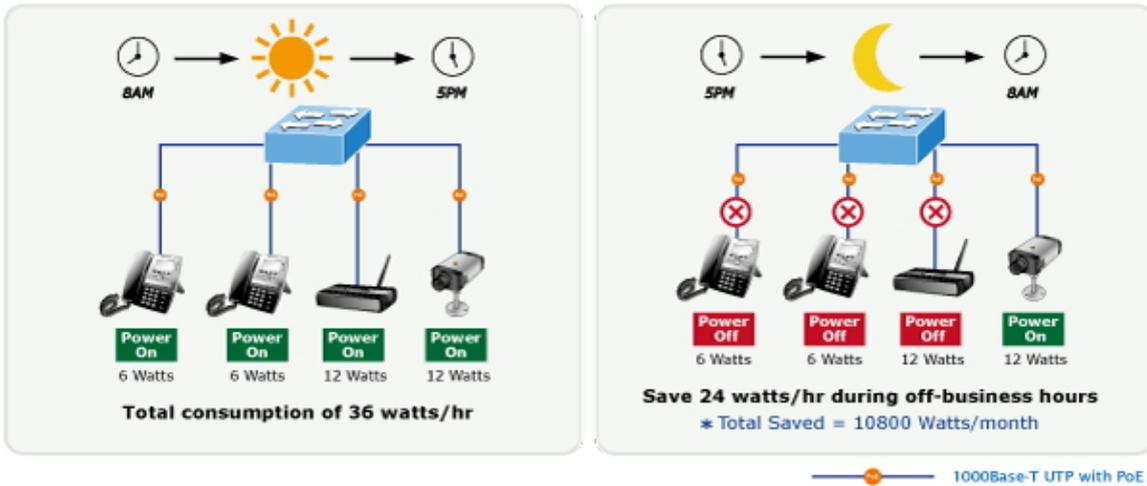
Innovative Wall-mount Installation

The WGS-4215-16P2S is specially designed to be installed in a narrow environment, such as wall enclosure. The compact, flat and wall-mounted design fits easily in any space-limited location. It adopts the user-friendly "**Front Access**" design, making the installing, cable wiring, LED monitoring and maintenance of the WGS-4215-16P2S placed in an enclosure very convenient for technicians. The WGS-4215-16P2S can be installed by **fixed wall mounting**, **magnetic wall mounting** or **DIN rail**, thereby making its usability more flexible.

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Environmentally Hardened Design

With IP40, flat but rugged metal housing protection, the WGS-4215-16P2S provides a high level of immunity against electromagnetic interference and heavy electrical surges which are usually found on plant floors or in curb-side traffic control cabinets without air conditioner. Being able to operate under the temperature range from -10 to 60 degrees C, the WGS-4215-16P2S can be placed in almost any difficult environment.


IPv6/IPv4 Dual Stack Management

Supporting both IPv6 and IPv4 protocols, the WGS-4215-16P2S helps the SMBs to step in the IPv6 era with the lowest investment as its network facilities need not be replaced or overhauled if the IPv6 FTTx edge network is set up.

Robust Layer 2 Features

The WGS-4215-16P2S can be programmed for advanced switch management functions such as dynamic port link aggregation, 802.1Q VLAN, **Q-in-Q VLAN**, **Multiple Spanning Tree Protocol (MSTP)**, Loop and **BPDU Guard**, **IGMP Snooping**, and **MLD Snooping**. Via the link aggregation, the WGS-4215-16P2S allows the operation of a high-speed trunk to combine with multiple ports such as a 4Gbps fat pipe, and supports fail-over as well. Also, the **Link Layer Discovery Protocol (LLDP)** is the Layer 2 protocol included to help discover basic information about neighboring devices on the local broadcast domain.
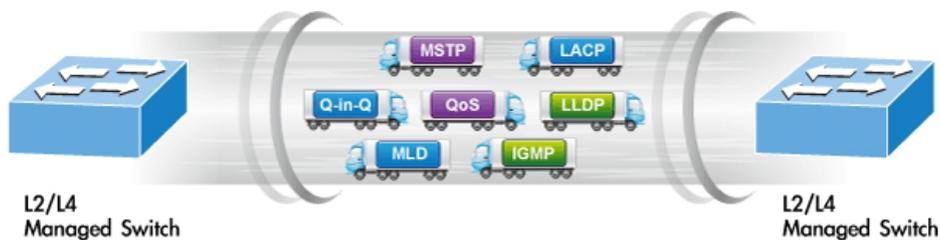
Efficient Traffic Control

The WGS-4215-16P2S is loaded with robust QoS features and powerful traffic management to enhance services to business-class data, voice, and video solutions. The functionality includes broadcast/multicast/unicast **storm control**, per port **bandwidth control**, 802.1p/CoS/IP DSCP QoS priority and remarking. It guarantees the best performance in VoIP and video stream transmission, and empowers the enterprises to take full advantage of the limited network resources.

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User-friendly and Secure Management

For efficient management, the WGS-4215-16P2S is equipped with **web**, **Telnet** and **SNMP** management interfaces. With the built-in web-based management interface, the WGS-4215-16P2S offers an easy-to-use, platform-independent management and configuration facility. By supporting the standard SNMP, the switch can be managed via any standard management software. For text-based management, the switch can be accessed via Telnet. Moreover, the WGS-4215-16P2S offers secure remote management by supporting **SSH, SSL** and **SNMP v3** connections which encrypt the packet content at each session.

Advanced Network Security

PLANET WGS-4215-16P2S offers a comprehensive **IPv4/IPv6** Layer 2 to Layer 4 **Access Control List (ACL)** for enforcing security to the edge. Its protection mechanism also comprises **802.1X port-based** user and device authentication, which can be deployed with RADIUS to ensure the port level security and block illegal users. With the **protected port** function, communication between edge ports can be prevented to guarantee user privacy. Furthermore, the WGS-4215-16P2S also provides **DHCP snooping**, **IP source guard** and **dynamic ARP inspection** functions to prevent IP snooping from attack and discarded ARP packets with invalid MAC address. The network administrators can now construct highly-secure corporate networks with considerably less time and effort than before.

Flexibility and Long-distance Extension Solution

The two mini-GBIC slots built in the WGS-4215-16P2S support SFP auto-detection and dual speed as it features **100BASE-FX** and **1000BASE-SX/LX SFP** (Small Form-factor Pluggable) fiber transceivers to uplink to backbone switch and monitoring center in long distance. The distance can be extended from 550 meters to 2 kilometers (multi-mode fiber) and up to 120 kilometers (single-mode fiber or WDM fiber). They are well suited for applications within the enterprise data centers and distributions.

Intelligent SFP Diagnosis Mechanism

The WGS-4215-16P2S supports **SFP-DDM** (**Digital Diagnostic Monitor**) function that can easily monitor real-time parameters of the SFP for network administrator, such as optical output power, optical input power, temperature, laser bias current and transceiver supply voltage.

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2. PRODUCT FEATURES

▶ **Physical Port**

■ **16-Port 10/100/1000BASE-T** Gigabit RJ45 copper with **IEEE 802.3at** PoE+ Injector function

■ **2 100/1000BASE-X mini-GBIC/SFP** slots

▶ **Power over Ethernet**

■ Complies with IEEE 802.3at Power over Ethernet Plus, end-span PSE

■ Backward compatible with IEEE 802.3af Power over Ethernet

■ Up to 16 ports of IEEE 802.3af/802.3at devices powered

■ Supports PoE power up to 36 watts for each PoE port

■ Auto detects powered device (PD)

■ Circuit protection prevents power interference between ports

■ Remote power feeding up to 100 meters

■ PoE management

  − Total PoE power budget control

  − Per port PoE function enable/disable

  − PoE port power feeding priority

  − Per PoE port power limitation

  − PD classification detection

  − PD alive check

  − PoE schedule

▶ **Industrial Case and Installation**

■ Compact size with fixed wall-mounted, magnetic wall-mounted or DIN-rail design

■ IP40 metal case protection

■ Supports -10 to 60 degrees C operating temperature

■ Supports ESD 6KV DC Ethernet protection

■ Dual power input design

  - 48V~56V DC wide power input with polarity reverse protect function

  - 3-pin terminal block or DC jack connector

▶ **Switching**

■ Hardware-based 10/100Mbps, half/full duplex and 1000Mbps full duplex mode, flow control and auto-negotiation and auto MDI/MDI-X

■ Features Store-and-Forward mode with wire-speed filtering and forwarding rates

■ IEEE 802.3x flow control for full duplex operation and back pressure for half duplex operation

■ 8K MAC address table size

■ 10K jumbo frame

■ Automatic address learning and address aging

■ Supports CSMA/CD protocol

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- ▶ **Layer 2 Features**
  - ■ Supports **VLAN**
    - IEEE 802.1Q tagged VLAN
    - Provider bridging (VLAN Q-in-Q, IEEE 802.1ad) support
    - Protocol VLAN
    - Voice VLAN
    - Private VLAN (Protected port)
    - Management VLAN
    - GVRP
  - ■ Supports **Spanning Tree Protocol**
    - STP (Spanning Tree Protocol)
    - RSTP (Rapid Spanning Tree Protocol)
    - MSTP (Multiple Spanning Tree Protocol)
    - STP BPDU Guard, BPDU Filtering and BPDU Forwarding
  - ■ Supports **Link Aggregation**
    - IEEE 802.3ad Link Aggregation Control Protocol (LACP)
    - Cisco ether-channel (static trunk)
  - ■ Provides port mirror (many-to-1)
  - ■ Loop protection to avoid broadcast loops

- ▶ **Quality of Service**
  - ■ Ingress/Egress Rate Limit per port bandwidth control
  - ■ Traffic classification
    - IEEE 802.1p CoS
    - TOS/DSCP/IP precedence of IPv4/IPv6 packets
  - ■ Strict priority and Weighted Round Robin (WRR) CoS policies

- ▶ **Multicast**
  - ■ Supports IPv4 IGMP snooping v2, v3
  - ■ Supports IPv6 MLD snooping v1, v2
  - ■ IGMP querier mode support
  - ■ IGMP snooping port filtering
  - ■ MLD snooping port filtering

- ▶ **Security**
  - ■ Storm Control support
    - Broadcast/Unknown unicast/Unknown multicast
  - ■ Authentication
    - IEEE 802.1X port-based network access authentication
    - Built-in RADIUS client to cooperate with the RADIUS servers
    - DHCP Option 82
    - RADIUS/TACACS+ authentication
  - ■ Access Control List
    - IPv4/IPv6 IP-based ACL

–IPv4/IPv6 IP-based ACE

–MAC-based ACL

–MAC-based ACE

■ MAC Security

–Static MAC

–MAC filtering

■ Port security for source MAC address entries filtering

■ DHCP snooping to filter distrusted DHCP messages

■ Dynamic ARP inspection discards ARP packets with invalid MAC address to IP address binding

■ IP source guard prevents IP spoofing attacks

■ DoS attack prevention

■ SSH/SSL

► **Management**

■ IPv4 and IPv6 dual stack management

■ Switch Management Interface

- IPv4/IPv6 Web switch management

- Telnet Command Line Interface

- SNMP v1, v2c, v3

- SSH and SSL secure access

■ User privilege levels control

■ Built-in Trivial File Transfer Protocol (TFTP) client

■ Static and DHCP for IP address assignment

■ System Maintenance

- Firmware upload/download via HTTP/TFTP

- Configuration upload/download through HTTP/TFTP

- Hardware reset button for system reboot or reset to factory default

■ SNTP Network Time Protocol

■ Cable diagnostics

■ Link Layer Discovery Protocol (LLDP) and LLDP-MED

■ SNMP trap for Link-up and Link-down notification

■ Event message logging to remote syslog server

■ Four RMON groups (history, statistics, alarms and events)

■ PLANET Smart Discovery Utility

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3. PRODUCT SPECIFICATIONS

3.1 MAIN COMPONENTS

Switch ASIC	RTL8382MI-CG	x 1
Switch PHY	RTL8218B-CG	x 1
Flash Size	16M bytes	x 1
DRAM Size	128M bytes	x 1
PoE	PD69200C-188/VFQFPN32 PoE Controller Unit	x 1
	PD69208M-V2R4/QFN-56/8 Ports PSE PoE Manager	x 2

3.2 FUNCTION SPECIFICATIONS

Product	WGS-4215-16P2S	
Hardware Specifications		
Copper Ports	16 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports	
SFP/mini-GBIC Slots	2 1000BASE-SX/LX/BX SFP interfaces (Port-17 to Port-18) Compatible with 100BASE-FX SFP	
PoE Injector Port	8 ports with 802.3at/af PoE injector function with Port-1 to Port-16	
Switch Architecture	Store-and-Forward	
Switch Fabric	36Gbps/non-blocking	
Switch Throughput@64 bytes	26.78Mpps @64 bytes	
MAC Address Table	8K entries	
Shared Data Buffer	4.1 megabits	
Flow Control	IEEE 802.3x pause frame for full duplex Back pressure for half duplex	
Jumbo Frame	10Kbytes	
Reset Button	< 5 sec: System reboot > 5 sec: Factory default	
LED	**Power LED**:	Power (Green)
	PoE Port (Port-1 to Port-16):	PoE-in-Use (Orange) LNK/ACT (Green)
	100/1000X SFP Ports (Port 17 to Port 18):	1000 LNK/ACT (Green) 100 LNK/ACT (Orange)
Connector	■ Removable 3-pin terminal block for power input - Pin 1/2 for Power (Pin 1: V+ / Pin 2: V-) - Pin 3 for earth ground ■ DC power jack with 2.1mm central pole	
Power Requirements	48~56V DC, 5.8A (max.) Note: The two power input interfaces don't support power redundant function.	
Power Consumption/ Dissipation	Max. 253 watts/868 BTU	

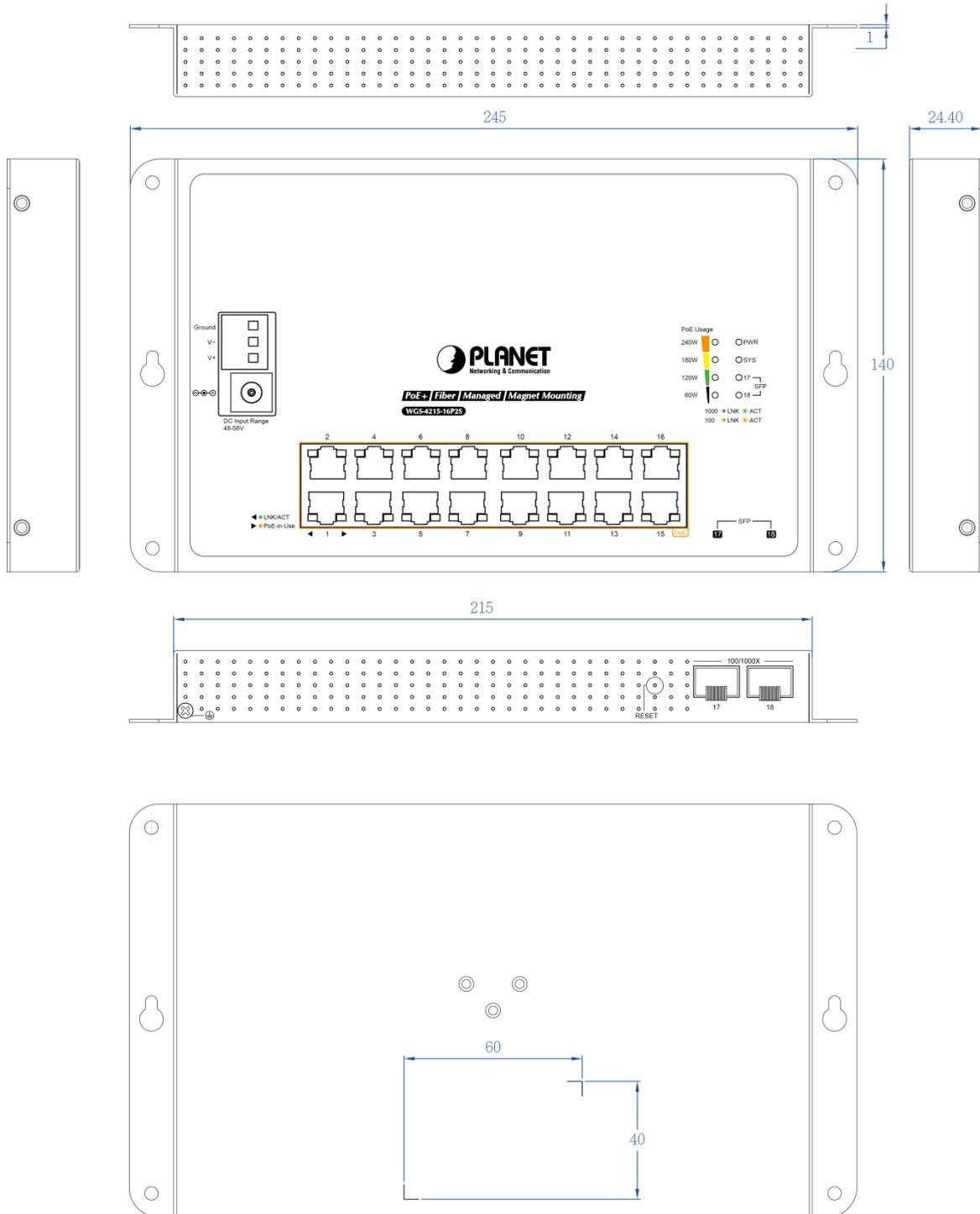| Dimensions (W x D x H)	245 x 140 x 24.4 mm
Weight	640g
ESD Protection	Contact Discharge 6KV DC Air Discharge 8KV DC
Enclosure	IP40 metal case
Installation	Fixed wall mounting, magnetic wall mounting or DIN rail
Power over Ethernet	
PoE Standard	IEEE 802.3af/802.3at Power over Ethernet PSE
PoE Power Supply Type	End-span
PoE Power Output	IEEE 802.3af Standard - Per port 48V~51V DC (depending on the power supply), max. 15.4 watts IEEE 802.3at Standard - Per port 51V~56V DC (depending on the power supply), max. 36 watts
Power Pin Assignment	1/2(+), 3/6(-)
PoE Power Budget	240 watts (depending on power input)
Max. Number of Class 2 PDs	16
Max. Number of Class 3 PDs	16
Max. Number of Class 4 PDs	9
Layer 2 Functions	
Port Mirroring	TX/RX/Both Many-to-1 monitor
VLAN	802.1Q tagged VLAN Up to 256 VLAN groups, out of 4094 VLAN IDs 802.1ad Q-in-Q tunneling (VLAN stacking) Voice VLAN Protocol VLAN Private VLAN (Protected port) GVRP Management VLAN
Link Aggregation	IEEE 802.3ad LACP and static trunk Supports 1 groups with 2 SFP ports per trunk
Spanning Tree Protocol	IEEE 802.1D Spanning Tree Protocol (STP) IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) IEEE 802.1s Multiple Spanning Tree Protocol (MSTP) STP BPDU guard, BPDU filtering and BPDU forwarding
IGMP Snooping	IPv4 IGMP (v2/v3) snooping IGMP querier Up to 256 multicast groups
MLD Snooping	IPv6 MLD (v1/v2) snooping, up to 256 multicast groups
Access Control List	IPv4/IPv6 IP-based ACL/MAC-based ACL IPv4/IPv6 IP-based ACE/MAC-based ACE

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QoS	8 mapping IDs to 8 level priority queues - Port Number - 802.1p priority - DSCP/IP precedence of IPv4/IPv6 packets Traffic classification based, strict priority and WRR Ingress/Egress Rate Limit per port bandwidth control
Security	IEEE 802.1X port-based authentication Built-in RADIUS client to cooperate with RADIUS server RADIUS/TACACS+ authentication IP-MAC port binding MAC filtering Static MAC address DHCP snooping and DHCP Option82 STP BPDU guard, BPDU filtering and BPDU forwarding DoS attack prevention ARP inspection IP source guard Storm control support Broadcast/Unknown unicast/Unknown multicast

Management Functions

Basic Management Interfaces	Web browser Telnet SNMP v1, v2c
Secure Management Interfaces	SSH, SSL, SNMP v3
System Management	Firmware upgrade by HTTP/TFTP protocol through Ethernet network Configuration upload/download through HTTP/TFTP Remote/Local Syslog System log LLDP protocol SNTP PLANET Smart Discovery Utility
SNMP MIBs	RFC 1213 MIB-II RFC 1215 Generic Traps RFC 1493 Bridge MIB RFC 2674 Bridge MIB Extensions RFC 2737 Entity MIB (version 2) RFC 2819 RMON (1, 2, 3, 9) RFC 2863 Interface Group MIB RFC 3635 Ethernet-like MIB

Standards Conformance

Regulatory Compliance	FCC Part 15 Class A, CE
Stability Testing	IEC 60068-2-32 (free fall)

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	IEC 60068-2-27 (shock)
	IEC 60068-2-6 (vibration)
Standards Compliance	IEEE 802.3 10BASE-T
	IEEE 802.3u 100BASE-TX/100BASE-FX
	IEEE 802.3z Gigabit SX/LX
	IEEE 802.3ab Gigabit 1000BASE-T
	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
	IEEE 802.3af Power over Ethernet
	IEEE 802.3at Power over Ethernet Plus
	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
	RFC 3810 MLD v2

Environment

Operating	Temperature: -10 ~ 60 degrees C
	Relative Humidity: 5 ~ 95% (non-condensing)
Storage	Temperature: -40 ~ 85 degrees C
	Relative Humidity: 5 ~ 95% (non-condensing)

Accessories

Standard Accessories	■ Quick Installation Guide x 1
	■ 3-pin Terminal Block Connector x 1
	■ Wall-mounted Kit x 1
	■ DIN-rail Kit x 1
	■ Magnet Kit x 1
	■ RJ45 Dust Cap x 16
	■ SFP Dust Cap x 2

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3.3 PHYSICAL SPECIFICATIONS:

Dimensions: 245 x 140 x 24.4 mm (W x D x H)

Weight: 1004g

unit : mm

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Bottom View
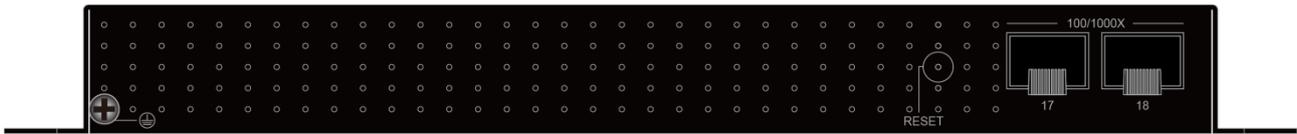
LED Definition:

■ **System**

LED	Color	Function
PWR	Green	**Lights** to indicate that the Switch has power.
SYS	Green	**Lights** to indicate the system is working.

■ **Per 10/100/1000BASE-T Port**

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.
PoE-in-Use	Orange	**Lights**:	To indicate the port is providing DC in-line power.
		Off:	To indicate the connected device is not a PoE Powered Device (PD)

■ **SFP 17 and SFP 18**

LED	Color	Function	
1000 LNK/ACT	Green	**Lights**:	To indicate the link through that port is successfully established at **1000Mbps**.
		Blinks:	To indicate that the switch is actively sending or receiving data over that port.
100 LNK/ACT	Orange	**Lights**:	To indicate the link through that port is successfully established at **100Mbps**.
		Blinks:	To indicate that the switch is actively sending or receiving data over that port.

■ **PoE Power Usage (Unit: Watt)**

LED	Color	Function	
60W	Orange	**Blinks**	To indicate the system consumes between 30 watts and 60 watts of PoE power
		Lights	To indicate the system consumes between 60 watts and 90 watts of PoE power
120W	Orange	**Blinks**	To indicate the system consumes between 90 watts and 120 watts of PoE power
		Lights	To indicate the system consumes between 120 watts and 150 watts of PoE power
180W	Orange	**Blinks**	To indicate the system consumes between 150 watts and 180 watts of PoE power
		Lights	To indicate the system consumes between 180 watts and 210 watts of PoE power
240W	Orange	**Blinks**	To indicate the system consumes between 210 watts and 240 watts of PoE power
		Lights	To indicate the system consumes over 240 watts of PoE power

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3.4 ENVIRONMENTAL SPECIFICATIONS

Operating:

Temperature: -10 ~60 degrees C

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

Storage:

Temperature: -40 ~85 degrees C

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

3.5 ELECTRICAL SPECIFICATIONS

Power Requirements:

48~56V DC, redundant power with polarity reverse protection

Power Consumption:

LOADING / DC INPUT	System on without any devices attached	Ethernet + PoE Full Loading
48V	5.4 watts	252.6 watts
56V	5.8 watts	253 watts

3.6 REGULATORY COMPLIANCE

FCC Part 15 Class A, CE

Stability Testing:

- IEC60068-2-32 (Free Fall)
- IEC60068-2-27 (Shock)
- IEC60068-2-6 (Vibration)

3.7 RELIABILITY

MTBF > 100,000hrs @ 25 degrees C

3.8 BASIC PACKAGING

☑ The Industrial Managed Switch   x 1

☑ Quick Installation Guide   x 1

☑ DIN-rail Kit   x 1

☑ Wall Mounting Kit   x 1

☑ Magnet Kit   x 1

☑ RJ45 Dust Cap   x 16

☑ SFP Dust Cap   x 2

3.9 PACKING INFORMATION

Box Dimensions (W x D x H):	180 x 334 x 72mm
Gross Weight:	1.35kg
Carton Dimensions (W x D x H):	595 x 375 x 325mm
Total Weight:	16.2kg
Quantity:	12pcs per carton