

Model	16GE+2GE+2SFP
Product	All Gigabit 16+2 Managed Switch
Fixed Port	16*10/100/1000Base-TX RJ45 port (Data) 2*10/100/1000Base-TX RJ45 Uplink port (Data) 2*1000M SFP
Reset Key	1
Network Protocol	IEEE 802.3x IEEE 802.3、IEEE 802.3u、IEEE 802.3ab、IEEE 802.3z IEEE 802.3ad IEEE 802.3q、IEEE 802.3q/p IEEE 802.1w、IEEE 802.1d、IEEE 802.1S IEEE 802.3z 1000BASE-X STP(Spanning Tree Protocol) RSTP/MSTP( Rapid Spanning Tree Protocol) EPPS ring network protocol EAPS ring network protocol
Port Specification	10/100/1000BaseT (X) Auto
Transmission Mode	Store and Forward(full wirespeed)
Bandwidth	56/128Gbps
Packet Forwarding	40.32Mpps
MAC Address	8K
Buffer	4.1M
Transmission Distance	10BASE-T : Cat3,4,5 UTP(≤250 meter) 100BASE-TX : Cat5 or later UTP(≤100 meter) 1000BASE-TX : Cat6 or later UTP(≤1000 meter) 1000BASE-SX:62.5μm/50μm MMF(2m~550m) 1000BASE-LX:62.5μm/50μm MM(2m~550m) or 10μm SMF(2m~5000m)
FLASH	128M
RAM	128M
Watt	≤30W
LED Indicator	POWER: Power LED 19~20:(SFP LED) Port:(Green=Link 100M LED+Orange 1000M LED)
Power	Built-in Power AC : 100 ~ 240V 50-60Hz
Operating Temperature/Humidity	-20 ~ +55°C; 5% ~ 90% RH Non coagulation
Storage Temperature/Humidity	-40 ~ +75°C; 5% ~ 95% RH Non coagulation
Product size/ package size (L*W*H)	295mm*195mm*45mm 410mm*275mm*95mm
N.W/G.W (kg)	1.4kg/2.1kg
Installation	Rack-mount(optional machine hanger spare parts)
Lightning protection / protection level	3KV 8/20us; IP30
Certificate	3C; CE mark, commercial; CE/LVD EN60950; FCC Part 15 Class B; RoHS;
Warranty	Whole device for 1 year(Accessories not included)

The followings are main functions not included in all the functions.Please contact with us for more other information!(We support software development for customization requirement)

Network Protocol	IEEE 802.3x IEEE 802.3、IEEE 802.3u、IEEE 802.3ab、IEEE 802.3z IEEE 802.3ad IEEE 802.3q、IEEE 802.3q/p IEEE 802.1w、IEEE 802.1d、IEEE 802.1S、IEEE 802.1X
MAC	Support 16K MAC address,auto aging and learning
VLAN Configuration	Support port-based VLAN Up to 4096 VLANs Support Voice VLAN, can configure Qos for voice data 802.1Q
Spanning Tree	STP(Spanning tree protocol) RSTP(Rapid spanning tree protocol) MSTP(Rapid spanning tree protocol) EPPS(Ring network protocol) EAPS(Ring network protocol) 802.1x
Port Aggregation	Support 8 groups of aggregation, each group support up to 8 ports
Port Mirroring	Support many-to-one port mirroring
Loop Guard	Support loop protection, real-time detection, quick alarm, concise location, Intelligent blocking, automatic recovery
Port Isolation	Support downlink ports isolate from each other and communicate with uplink port as well
Flow Control	Half duplex based on Back pressure; Full duplex based on PAUSE frame
Speed Limitation	Bandwidth management based on port input and output
Multicast Control	IGMPv1/2/3 and MLDv1/2 Snooping GMRP protocol registration Multicast address management, multicast VLAN, multicast routing port, static multicast address
DHCP	DHCP Snooping
Storm Suppression	Support unknown unicast, multicast , unknown multicast, broadcast type storm suppression; Storm suppression based on bandwidth adjustment and storm filtering
Security	Support User port+IP address+MAC address ACL based on IP, MAC Support security properties of number of MAC address based on port
QOS	802.1p port queue priority algorithm Cos/Tos.QOS remark WRR(Weighted Round Robin), weighted priority rotation algorithm WRR、SP、WFQ priority scheduling modes
Cable Sequence	Auto-MDIX; auto detection on straight-through and cross-over cable
Negotiation Mode	Port support auto negotiation function(self-negotiation transmission rate and duplex mode)
System maintenance	Upgrade package upload System log viewing WEB recovery factory configuration
Network Management	WEB interface management CLI management based on Telnet、TFTIP、Console SNMP V1/V2/V3 management RMONV1/V2 management RMON management

## 01 Product introduction

### Product overview

16GE+2GE+2SFP L2 multi-functional network management switch independently developed by hasivo adopts Realtek's new generation high-performance platform and new self-developed switch system, and supports flexible network management functions such as 802.1Q VLAN, IGMP, port monitoring, port aggregation, bandwidth control, ring application, etc. This series of switches is specially designed for the construction of high-performance complex network requirements, providing a comprehensive security protection system, perfect qoS strategy and rich VLAN functions, simple management and maintenance, and can be applied to the core layer of small and medium-sized enterprises, communities and schools.

### Port performance

- ◆ Supply 16\*10/ 100/1000M RJ45 adaptive ports, all of which can realize line speed forwarding.
- ◆ Supply 2\*10/100/1000M RJ45 and 2\*1000M SFP independently uplink ports for high-speed uplink transmission.
- ◆ Each port supports MDI/ MDIX auto flip and duplex / rate self negotiation.
- ◆ Support IEEE 802.3x full duplex flow control and backpressure half duplex flow control.

### Functional features

- ◆ Add a variety of new applications based on IPv6, easily adapt to modern complex network management applications
- ◆ Support IEEE 802.1Q VLAN, users can divide VLAN flexibly according to their needs.
- ◆ Support voice VLAN, configure QoS parameters for voice data stream, improve the transmission priority of voice data stream and ensure the call quality.
- ◆ It supports QoS, supports port based, 802.1p and DSCP based priority modes to optimize the bandwidth configuration.
- ◆ It supports ACL, achieves packet filtering by configuring matching rules, processing operations and time permissions, and provides flexible security access control policies
- ◆ Support IGMP V1 / V2 multicast protocol, support IGMP snooping, meet the requirements of multi terminal HD video monitoring and video conference access.
- ◆ Support multicast VLAN, multicast filtering, efficient data transmission, save network bandwidth, reduce network load.
- ◆ Support port monitoring, copy the data package of monitored port to the monitoring port to realize network monitoring.
- ◆ Support the management and maintenance of equipment through web interface.
- ◆ It supports port convergence, effectively increases link bandwidth, realizes link backup and improves link reliability.

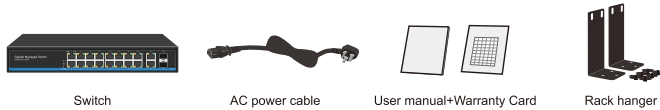
### Security & Protection

- ◆ STP / RSTP / MSTP spanning tree protocol is supported to eliminate layer-2 loops and realize link backup.
- ◆ Support tree security function, prevent devices in tree network from being attacked by various forms of malicious.
- ◆ It supports static aggregation and dynamic aggregation, effectively increases link bandwidth, realizes load balancing, link backup, and improves link reliability.

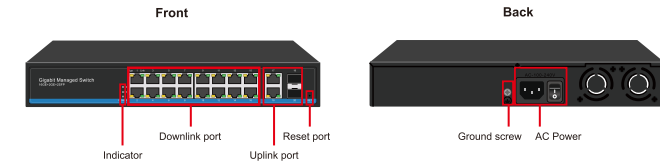
### Running and Maintenance

- ◆ Support web management, CLI command line (console, telnet), SNMP (v1/v2/v3) and other diversified management and maintenance methods.
- ◆ It supports HTTPS, SSL V3, tlsv1, sshv1/v2 and other encryption methods, and makes management more secure.
- ◆ It supports RMON, system log and port traffic statistics to facilitate network optimization and transformation.
- ◆ Users can know the working status of the switch through the power indicator (PWR), port status indicator and system status indicator (sys).

## 02 Spare parts list



## 03 Product display



### Indicator definition:

Indicator	Status	Description
Power indicator: POWER	Green light is always on	Power on normal
	Always off	No power
Network indicator	Green	Light is flashing The corresponding port works at 10/100M speed
	Orange	Light is flashing The corresponding port works at 1000M speed
SFP indicator:9~10	Light is on	The corresponding port has data transmission

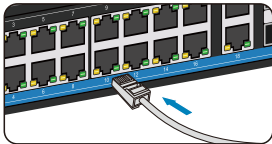
## 04 Installation&Points of attention

### Checking before installation

- 1.Check whether the accessories are complete. If there is any omission, please contact us.
- 2.Check whether the power supply voltage is consistent with the working voltage of the switch,so as to avoid the equipment burning out due to high voltage.
- 3.Ensure that the installation position of the switch has certain ventilation and heat dissipation conditions.
- 4.Please keep the power off during installation to avoid potential safety hazards.
- 5.Please install the switch on a stable plane to avoid falling and damage.

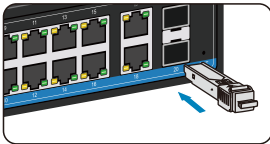
### Port installation and connection

#### Insert the data cable



As shown in the figure, insert the crystal head of the data cable into the network port. When you hear a clear click, it indicates that the crystal head is successfully connected with the network port of the switch. Just plug in all the network cables of the network equipment in this way.

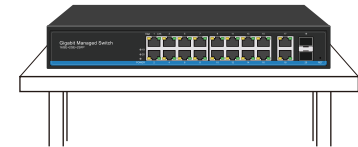
#### Install the SFP module



As shown in the figure, align the optical fiber module with the optical port of the SFP and insert it smoothly. When you hear a clear click, it indicates that the optical fiber module is installed successfully. Just install the two optical fiber modules in this way.

### Install to desktop

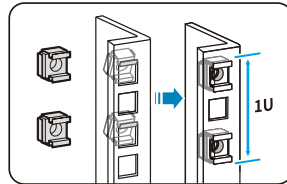
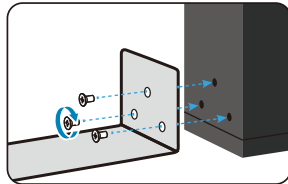
#### Place the switch on the desktop



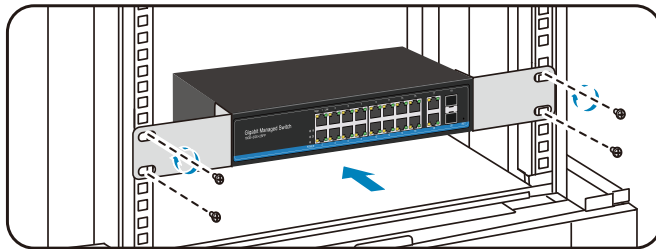
The switch should be placed on a well ventilated horizontal desktop, which is conducive to better heat dissipation of the equipment

### Install to cabinet/Rack

1. install the rack lug attached to the equipment to both sides of the switch with screws
2. Install floating nut on cabinet / rack

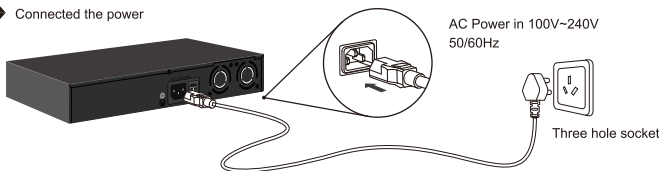


3. Put the switch installed with the lug into the cabinet and screw on the screw to complete the installation.



### Power on

#### Connected the power

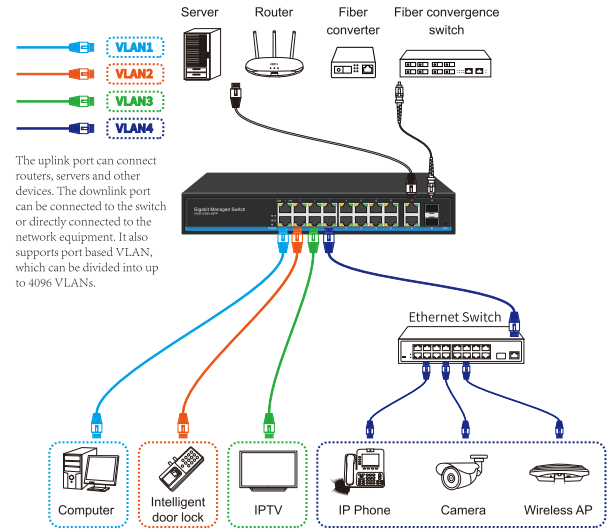


### Points of attention

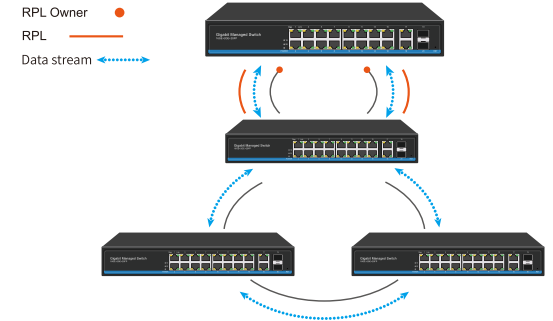
- 1.Do not stack heavy objects on the switch to avoid danger.
- 2.In order to avoid the risk of electric shock, please do not open the machine box when the switch is working, even if it is not powered on, please contact us in case of any problem.
- 3.Before cleaning the switch, pull out the power plug of the switch. Do not wipe it with wet fabric or clean it with liquid.
- 4.If the power adapter is damaged, do not replace it with other power adapters. This switch should be equipped with original power adapter.

## 05 Application

### VLAN application



### Application of ring network



## 06 Common troubleshooting

- ⚠ The PWR indicator is not on after the power is connected ➡ Check whether the power adapter and plug are connected correctly, whether the power cord is damaged, and whether the power adapter is damaged.
  - ⚠ Switch cannot communicate after power up ➡ Check whether the switch indicator is on. If the indicator is off, the network cable is not connected. If the indicator is on, the communication fault is indicated.
  - ⚠ Switch network speed suddenly become very slow ➡ Take off the plug and restart the switch.
- [If the above problems or other switch problems can not be solved, please contact us for technical support]