Datasheet | **IES7511-12GE4GF-DC**

Gigabit Smart Industrial Switch with Four 1Gb SFP Uplink

Outstanding Network Solution for Hardened Environment

Select your new network engine!

As a leading provider of network equipment for Industrial Communication, Benchu group understands the importance of providing stability and safety that can adapt to your business' needs, whether in the Safe City, Traffic,Mining,industrial automatic,Power or energy.

The IES7511-12GE4GF-DC with IP40 protection class and meet EMC industrial level 4 requirements. The product supports wide power input voltage range of 12-54VDC redundant power with reverse polarity protection and wide operating temperature range of -40 to the +85°C.

The switches can be easily installed on a DIN rail as well as in distribution boxes. In addition to its compact size for space-saving installation, each product has passed a 100% burn-in test to ensure its quality high-reliability transmission.

supports SSHv2, TLS and SSL protocols to provide strong protection against advanced threats. It includes a range of cybersecurity features such as DHCP Snooping, IP Source Guard, ARP Inspection Protection, 802.1x port-based and MAC-based network access control, RADIUS and TACACS+ user accounts management, SNMPv3 authentication, and so on to complement it as an all-security solution.

Support 4 Ports 1.25G SFP Uplink, provides greater bandwidth and powerful processing capacity. It offers a maximum 5 Gbps uplink bandwidth through the four 1.25Gbps SFP ports. In addition, the administrator can flexibly choose the suitable (155M/1.25G) SFP transceiver according to the transmission distance or the transmission speed required to extend the network efficiently.

Highlights

BENCHU GROUP's IES7511-12GE4GF-DC Industrial Managed Switch, featuring 10-10/100/1000BASE-T ports and 4-1.25GBASE-X fiber ports in an IP40 rugged metal case, can be installed in any difficult environment. It provides user-friendly yet advanced IPv6/IPv4 management interfaces, abundant L2/L4 switching functions, and advanced ITU-G.8032 ERPS Ring technology to improve the rapid self-recovery capability and intelligent network functions for controlling the outdoor IP surveillance and wireless network applications. It is able to operate reliably, stably and quietly in the temperature range from -40 to 85 degrees C.

Key features include:

- Advanced QoS (Quality of Service) for traffic prioritization including port-based, 802.1p and L2/L3/L4 DSCP-based
- Layer 3 static routing (IPv4 and IPv6) for inter VLAN local routing
- L2/L3/L4 access control lists (ACLs) for granular network access control including 802.1x port authentication
- STP, RSTP, MSTP, and ERPS ring network protocols are designed for building high reliability and maintaining network stability.
- IGMP Snooping and Querier for multicast optimization
- Dynamic ARP for increased security targeting a class of Man in the Middle attack
- Rate limiting and priority queuing for better bandwidth allocation
- Port mirroring for network monitoring
- Energy Efficient Ethernet (IEEE 802.3az) for maximum power savings
- SNMP v1, v2c,V3 and RMON remote monitoring

Build a future-proof network with BENCHU:

- Solid performance with non-blocking architecture, 8K MAC addresses, 100 shared (ingress) ACLs and 256 Multicast groups
- Comprehensive IPv6 supporting management, QoS, ACL and routing, ensuring investment protection and a smooth migration to IPv6-based network
- 4 Dedicated SFPs, not only providing fiber uplinks, but also uplink redundancy and failover, improving reliability and availability for the network

Redundant Ring, Fast Recovery for Critical Network Applications

- The IES7511-12GE4GF-DC supports redundant ring technology and features strong, rapid self-recovery capability to prevent interruptions and external intrusions. It incorporates advanced ITU-T G.8032 ERPS (Ethernet Ring Protection Switching) technology, Spanning Tree Protocol (802.1s MSTP), and redundant power input system into customer's industrial automation network to enhance system reliability and uptime in harsh factory environments. In a certain simple Ring network, the recovery time of data link can be as fast as 10ms.

BENCHU Quality and Reliability

- Low power consumption, fanless.
- Contact Discharge 8KV DC； Air Discharge 15KV DC
- -40 to 85 degrees operating temperature
- IP40 Industrial design with dual power input
- Din Rail mounting installation
- CE, FCC, RoHS.
- The user-friendly panel can show the device status through the LED indicator of PWR, Link.

Easy operation and maintenance management

- Web management, CLI command line (Console, Telnet), SNMP (V1/V2).
- HTTPS, and SSHV1/V2.
- RMON, system log, LLDP, and port traffic statistics.
- CPU monitoring, memory monitoring, Ping test, and cable diagnose.

Hardware at a Glance

FRONT				**REAR**	**SIDE**
Model Name	Form-Factor	10/100/1000Base-T RJ45 ports	1.25GBase-X Fiber SFP Ports	Power Supply	Fans
IES7511-12GE4GF-DC	Din Rail mounting	12	4	Dual power input DC12~54V	Fanless

Software at a Glance

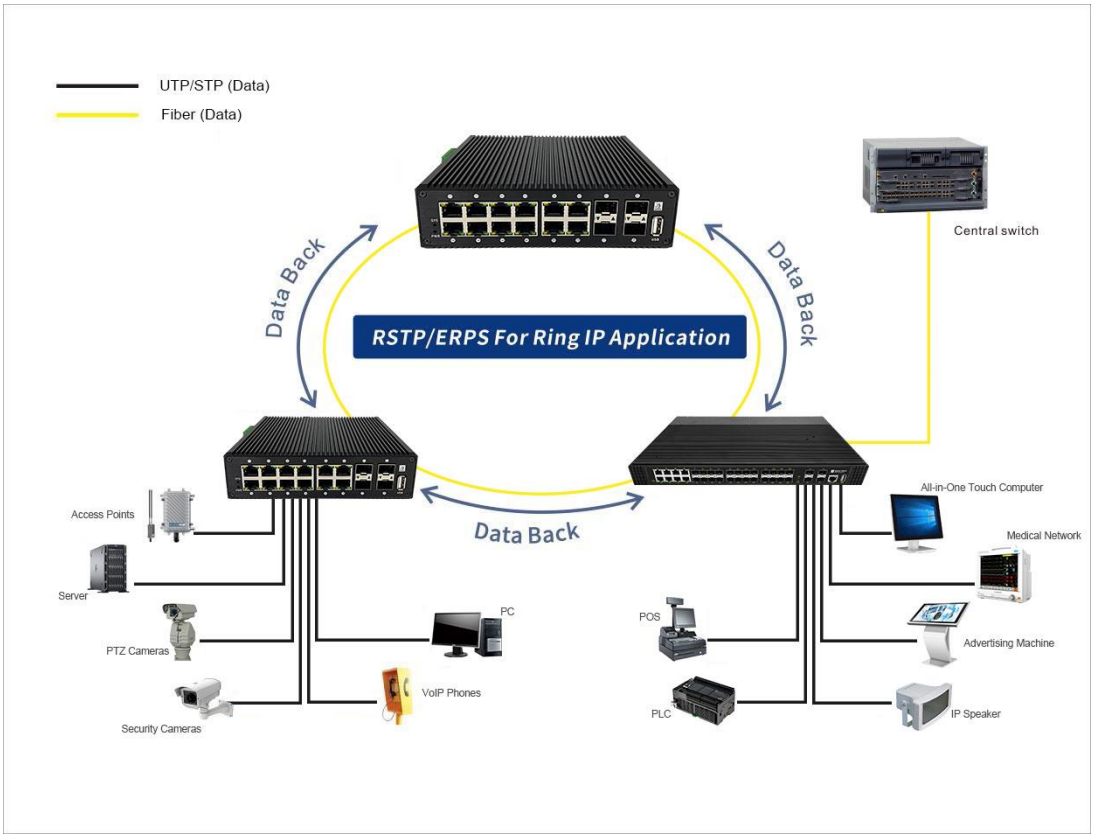
LAYER 2+ / LAYER 3 LITE FEATURES							
Management	IPv4/IPv6 ACL and QoS	IPv4/IPv6 Multicast Filtering	G.8032 ERPS STP/RSTP/MSTP	IEEE (802.3az) Energy Efficient Ethernet	VLANs	Convergence	IPv4 & IPv6 Static Routing
Web Browser-based GUI (HTTP/HTTPS), PC-Based Smart Control Center Utility (SCC) , RMON, SNMP	L2, L3, L4, ingress	IGMP and MLD Snooping	Yes	Yes	Static Dynamic, Voice, MAC, Protocol-based	LLDP-MED, RADIUS, 802.1X	Yes

Performance at a Glance

Model Name	Packet buffer	CPU	ACLs	MAC Address Table ARP Table VLANs	Fabric	Latency (Max Connection Speed)	Routes (IPv4 & IPv6)	Multicast IGMP Group
IES7511-12GE4GF-DC	7.2MB	Realtek	100 shared	8K MAC 256 ARP 4K VLANs QinQ	128Gbps 23.9Mpps line-rate	1G Copper: <3.35µs 1G Fiber: <3.1µs	IPv4: 100 IPv6: 100	256

Target Application

Network Convergence

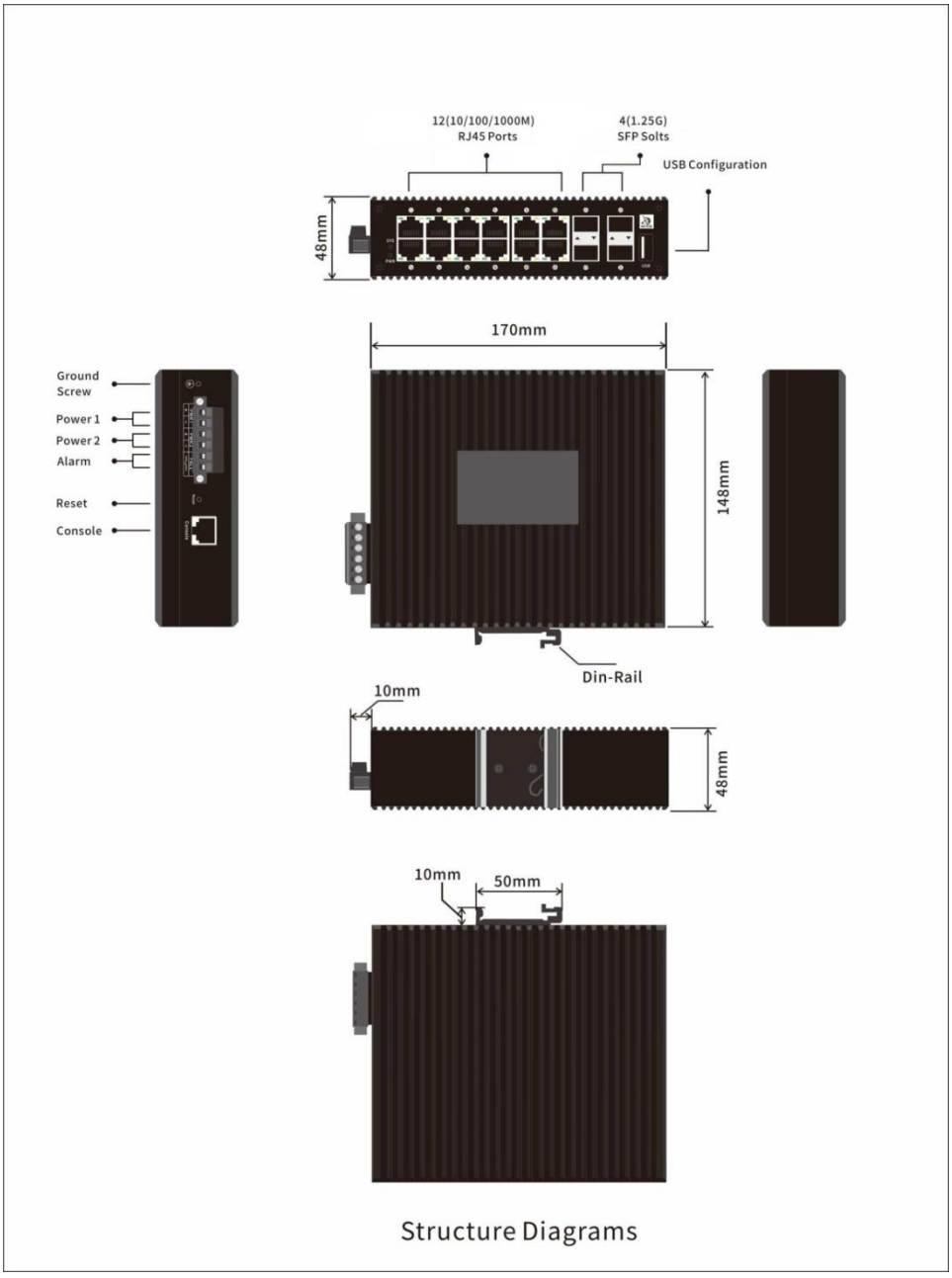


Across industries such as Industrial Parks, Power, Utilities, and Energy, there is a notable surge in the adoption of IoT devices like VoIP phones, IP security cameras, video-over-IP endpoints, proximity sensors, LED lighting, and secure access door locks. The increasing density of these devices necessitates robust and stable industrial network switches to ensure consistent network performance. In environments where devices are deployed in close proximity, maintaining seamless connectivity becomes crucial to avoid network interruptions. Moreover, outdoor and harsh environments demand industrial-grade network switches with exceptional durability and adaptability to withstand extreme conditions. These switches are designed to deliver reliable performance, ensuring uninterrupted operation in challenging scenarios such as temperature fluctuations, exposure to dust, and moisture. With the growing complexity of industrial networks, choosing high-quality industrial-grade switches has become essential to support the expanding IoT ecosystem and meet the demands of modern industry applications.

The new 16-port smart industrial switch support dense deployments of these modern high-stability IoT devices. They offer powerful Layer 2 features for IPv4 and IPv6 with enhanced performance and a focus on usability within Industrial environments:

- Provide 12-10/100/1000M ports
- 4 dedicated 1.25Gb SFP fiber ports for aggregation to the network core
- ERPS(G.8032) STP/FSTP/MSTP for Ring network and Link protection
- Layer 3 static routing (IPv4 and IPv6) for inter VLAN local routing
- IGMP Snooping, IGMP Querier and IGMP Fast Leave for multicast optimization
- Include VLANs, ACLs, DiffServ, LACP, MVR and DHCP
- Easy-to-use Web browser-based management GUI — No need for an IT expert
- Excellent features such as fast response, resisting vibration, enduring dust, adapting for the hard environment, etc.
- Limited Lifetime* Warranty, Tech support

Structure Diagrams



Structure Diagrams

Technical Specifications	**IES7511-12GE4GF-DC**
10M/100M/1G RJ-45 copper ports	12
1G SFP (fiber) ports	4
Console Port (For config)	Yes
Reset(for system factory default and reboot)	Yes
Performance Specification	
Packet buffer memory (Dynamically shared across only used ports)	7.2 MB
Forwarding modes	Store-and-forward
Bandwidth	128 Gbps
Priority queues	8
MAC address database size (48-bit MAC ad-dresses)	8K
Multicast groups	256
Number of IPv4 static routes	100
Number of IPv6 static routes	100
Number of VLANs	4094
Number of VLANs(Open QinQ)	16,760,836(4094*4094)
Number of ARP cache entries	256 ARP
Number of DHCP snooping bindings	256
Access Control Lists (ACLs)	100 shared for MAC, IP and IPv6 ACLs (ingress)
Packet forwarding rate (64 byte packet size) (Mpps)	23.9Mpps
Jumbo frame support (bytes)	Up to 9K packet size
Mean Time Between Failures (MTBF) @ 25°C	177,216 hours
100M Copper Latency (64-byte; 1518-byte; 9216-byte frames)	8.314μs; 8.412μs; 8.451μs
1G Copper Latency (64-byte; 1518-byte; 9216-byte frames)	3.514μs; 3.545μs; 3.628μs
1G Fiber Latency (64-byte; 1518-byte; 9216-byte frames)	2.960μs; 3.111μs; 3.182μs

L2 Services - VLANs	**IES7511-12GE4GF-DC**
IEEE 802.1Q VLAN tagging	Yes
QinQ VLAN tagging	Yes
IP-based VLANs	Yes
MAC-based VLANs	Yes
Protocol-based VLAN	Yes
Voice VLAN	Yes
VLAN mapping	Yes
L2 Services - Availability	
Broadcast, multicast, unknown unicast storm control	Yes
IEEE 802.3ad - LAGs (LACP)	Yes
IEEE 802.3x (full duplex and flow control)	Yes
IEEE 802.1D Spanning Tree Protocol	Yes
IEEE 802.1w Rapid Spanning Tree Protocol	Yes
IEEE 802.1s Multiple Spanning Tree Protocol	Yes
ITU-TG.8032 ERPS	Yes, Recovery time < 50ms
L2 Services - Multicast Filtering	
IGMP snooping (v1, v2 and v3)	Yes
MLD snooping support (v1 and v2)	Yes
IGMP snooping querier (v2)	Yes
MLD snooping querier (v1)	Yes
Multicast VLAN Registration (MVR)	Yes
L3 Services - DHCP	
DHCP snooping	Yes
DHCP Server	Yes
L3 Services - Routing	
IPv4 static routing	Yes
IPv6 static routing	Yes
VLAN routing	Yes

Link Aggregation	**IES7511-12GE4GF-DC**
IEEE 802.3ad - LAGs (LACP)	Yes
Manual LAG	Yes
# of LAGs / # of members in each LAG	8 LAGs with max 8 members in each LAG
Network Monitoring and Discovery Services	
802.1ab LLDP	Yes
SNMP	v1, v2c, v3
RMON group 1,2,3,9	Yes
Network Security	
IEEE 802.1x	Yes
RADIUS accounting	Yes
Access Control Lists (ACLs)	Yes
IP-based ACLs (IPv4 and IPv6)	L2 / L3 / L4
MAC-based ACLs	Yes
TCP/UDP-based ACLs	Yes
Control MAC # static entries	48
Port-based security by locked MAC addresses	Yes
Dynamic ARP inspection	Yes
Broadcast, unicast, multicast DoS protection	Yes
DoS attacks prevention	Yes
Network storm protection, DoS	Yes
Broadcast, unicast, multicast DoS protection	Yes
DoS attacks prevention	Yes
Quality of Service (QoS)	
Port-based rate limiting	Yes ingress and egress
Port-based QoS	Yes
Support for IPv6 fields	Yes
DiffServ QoS	Yes ingress
IEEE 802.1p COS	Yes
Destination MAC and IP	Yes
IPv4 and v6 DSCP	Yes
TCP/UDP-based	Yes
Weighted Round Robin (WRR)	Yes
Strict priority queue technology	Yes

IEEE Network Protocols	**IES7511-12GE4GF-DC**
• IEEE 802.3 Ethernet	• IEEE 802.1Q VLAN Tagging
• IEEE 802.3u 100BASE-T	• IEEE 802.1AB LLDP with ANSI/TIA-1057 (LLDP-MED)
• IEEE 802.3ab 1000BASE-T	• IEEE 802.1p Class of Service
• IEEE 802.3az Energy Efficient Ethernet (EEE)	• IEEE 802.1D Spanning Tree (STP)
• IEEE 802.3ad Trunking (LACP)	• IEEE 802.1s Multiple Spanning Tree (MSTP)
• IEEE 802.3z Gigabit Ethernet 1000BASE-SX/LX	• IEEE 802.1w Rapid Spanning Tree (RSTP)
• IEEE 802.3x Full-Duplex Flow Control	• ITU-TG.8032 Ethernet Ring Protection Switching (ERPS)
Management, Monitoring & Troubleshooting	
Password management	Yes
Admin access control via RADIUS and TACACS+	Yes
IPv6 management	Yes
SNMP v1/v2c/v3	Yes
RMON group 1,2,3,9	Yes
Port mirroring	Yes ingress and egress
Many-to-one port mirroring	Yes
Cable test utility	Yes
TLS/HTTPS Web-based access (version)	Yes (v1.2)
File transfers (uploads, downloads)	TFTP / HTTP
HTTP upload/download (firmware)	Yes
Syslog (RFC 3164)	Yes
LEDs	
Per port	Speed, Link, Activity;
Per device	Power, system
Physical Specifications	
Dimensions	170 x 148 x 48 mm (6.69 x 5.83 x 1.89 in)
Weight	1.2 kg (2.65 lb)
Max power (worst case, all ports used, line-rate traffic) (Watts)	15W
Idle power consumption (all ports link-down standby) (Watts)	8W
Energy Efficient Ethernet (EEE) IEEE 802.3az	Yes (deactivated by default)
Fan	Fanless

Environmental Specifications	**IES7511-12GE4GF-DC**
Operating	
Operating Temperature	-40° to 85°C (-40° to 185°F)
Humidity	95% maximum relative humidity (RH), non-condensing
Altitude	10,000 ft (3,000 m) maximum
Storage	
Storage Temperature	-40° to 85°C (-40° to 185°F)
Humidity (relative)	95% maximum relative humidity, non-condensing
Altitude	10,000 ft (3,000 m) maximum
Executive Standard & Protection	
Lightning Protection	
IEC61000-4-3 (RS)	10V/m (80~1000MHz)
FCC Part 15/CISPR22 (EN55022)	Class B
IEC61000-6-2	Common Industrial Standard
IEC61000-4-9 (Pulsed magnet field)	1000A/m
IEC61000-4-10 (Damped oscillation)	30A/m, 1MHz
IEC61000-4-12/18 (Shockwave)	CM 2.5kV, DM 1kV
IEC61000-4-4(EFT)	Power cable:±4kV, Data cable: ±2kV
IEC61000-4-16(Common-mode transmission)	30V, 300V, 1s
IEC61000-4-2 (ESD)	±8kV contact discharge, ±15kV air discharge
IEC61000-4-6 (Radio frequency transmission)	10V(150kHz~80MHz)
IEC61000-4-8 (Power frequency magnetic field)	100A/m, 1000A/m, 1s-3s
IEC61000-4-5 (Surge): Power cable	CM±4kV/ DM±2kV, Data cable: ±4kV
Mechanical Properties	
IEC60068-2-6	Anti Vibration
IEC60068-2-32	Free Fall
IEC60068-2-27	Anti Shock

Electromagnetic Emissions and Immunity	
Certifications	CE mark, commercial FCC Part 15 Class A, VCCI Class A Class A EN 55022 (CISPR 22) Class A Class A C-Tick EN 55024 CCC 47 CFR FCC Part 15, SubpartB, Class A ICES-003: 2016 Issue 6, Class A ANSI C63.4:2014 IEC 60950-1:2005 (ed.2)+A1:2009+A2:2013 AN/NZS CISPR 22:2009+A1:2010 CLASS A
Safety	
Certifications	CB mark, commercial CSA certified (CSA 22.2 #950) EN 60950-1: 2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 IEC 60950-1:2005 (ed.2)+A1:2009+A2:2013 AN/NZS 60950.1:2015 CCC (China Compulsory Certificate)
Warranty and Support	
Hardware Limited Warranty	Limited Lifetime*
Technical Support via Phone and Email*	Limited Lifetime*
Limited Lifetime* 24x7 Online Chat Technical Support	Limited Lifetime*
Package Contents	
All models	Industrial Managed Switch Brackets and screws for DIN-Rail mounting, which are already installed in the industrial switch Rubber protection caps, which are already installed in the SFP sockets User's manual

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