



Outstanding 802.3at PoE+ 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 IES7221-16PGE4GC-AC with meet EMC industrial level 4 requirements. The product supports wide power input voltage range of 100-260V AC redundant power with reverse polarity protection and wide operating temperature range of -30 to the +75°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. The IES7221-16PGE4GC-AC is equipped with 16-10/100/1000BASE-T Gigabit Ethernet ports and 4-1000BASE-X RJ45/SFP combo with redundant power input. Its 16 Gigabit Ethernet ports are integrated with an 802.3at PoE+ injector function. It offers a Rack mountable, safe and reliable power solution for outdoor industrial environments deploying Power over Ethernet networks

Support 4 Ports 1G RJ45/SFP Combo Uplink, provides efficient transmission and powerful processing capacity. The administrator can flexibly choose the suitable SFP transceiver according to the transmission distance or the Fiber type required to extend the network efficiently.

Highlights

Benchu group IES7221-16PGE4GC-AC Industrial PoE+ Switch, featuring 16-10/100/1000BASE-T 802.3at PoE+ ports with each port powering up to 30 watts, and 4-1G RJ45/SFP ports. Its in a rugged metal case, can be installed in any difficult environment. Support 8kV lightning protection, ensures high network availability by preventing downtime caused by power surges. support redundant power input ,ensures continuous operation even if one power source fails,the risk of network outages due to power supply failure is significantly reduced.DIN-Rail mounting allows for compact and organized installation of industrial PoE switches, maximizing the use of available space. wide temperature range, low-power consumption and fanless design, It is able to operate reliably, stably and quietly in the temperature range from -30 to 75 degrees C.

Key features include:

- Complies with IEEE 802.3af/at Power over Ethernet
- Up to 16 ports of IEEE 802.3af/802.3at devices powered
- PD alive check function
- Each port supports 52V DC power to PoE powered device
- Auto detects powered device (PD)
- Circuit protection prevents power interference between ports
- Remote power feeding up to 100m
- Hardware-based 10/100/1000Mbps auto-negotiation and auto MDI/MDI-X
- Flow control for full duplex operation and back pressure for half duplex operation
- Integrates address look-up engine, supporting 8K absolute MAC addresses
- Automatic address learning and address aging
- Supports Energy-Efficient Ethernet (EEE) function (IEEE 802.3az)

Build a future-proof network with BENCHU:

- Solid performance with non-blocking architecture, 8K MAC addresses, 64Gbps Backplane bandwidth, 29.76Mpps Switch Throughput, 9216 bytes Jumbo Frame
- Up to 16 ports of IEEE 802.3af/802.3at devices powered
- PoE+ support on all ports, PoE power up to 30 watts for each PoE port
- 4 SFPs, Extends network distance up to 2KM/20KM/40KM/60KM/80KM/120KM with optical fiber.

Fast Access

- The remote units provide the full line-speed forwarding capability. All ports support non-blocking data packet forwarding, providing users with high-speed access experience and meeting the requirements of high-bandwidth services such as HD video conferencing, online video, and large file download.

BENCHU Quality and Reliability

- Low power consumption, fanless.
- High strength aluminum alloy shell
- Contact Discharge 8KV DC; Air Discharge 15KV DC
- -30 to 75 degrees operating temperature
- Dual power input
- Rack mounting installation
- CE, FCC, RoHS, CB.

Easy operation and maintenance

- Hardware-based 10/100/1000Mbps auto-negotiation and auto MDI/MDI-X.
- Flow control for full duplex operation and back pressure for half duplex operation
- Supports Energy-Efficient Ethernet (EEE) function (IEEE 802.3az)
- Din Rail mount installation and dual power input
- Plug and play, No configuration required
- The user-friendly panel can show the device status through the LED indicator of PWR, Link.



Hardware at a Glance

FRONT				REAR		SIDE
Model Name	10/100/1000Base-T RJ45 ports	1GBASE-X Fiber SFP+ Ports(Combo)	PoE+ 802.3at Ports	Power Budget	Power Supply	Fans
IES7221-16PGE4GC-AC	20	4	16 PoE+	300W	Internal PSU, fixed	Fanless

Performance at a Glance

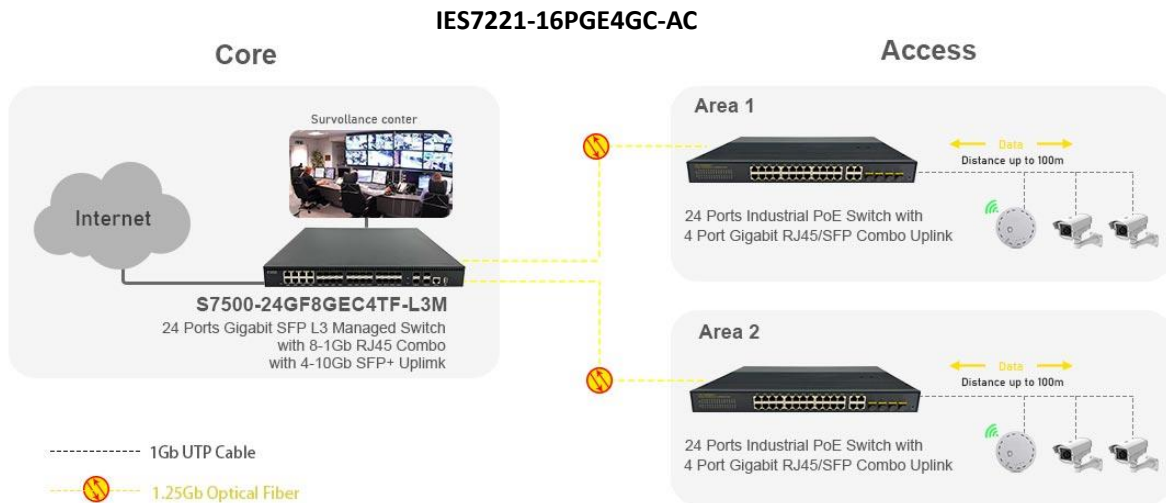
Model Name	Chip	Packet buffer	Fabric	Switch Throughput	MAC Address Table	Jumbo Frame	Latency (Max Connection Speed)
IES7221-16PGE4GC-AC	Realtek	4.2MB	64Gbps	29.76Mpps line-rate	8K MAC	9216 bytes	1G Copper: <3.35μs 1G Fiber: <3.1μs

Features and Benefits

Hardware Features	
1000BASE-T Copper Ethernet PoE+ connections	Support Surveillance, Wi-Fi AP, VoIP, Access control and Speaker, deployments, scal-able for future growth. Never face the risk of running out of PoE ports.
1.25GBASE-X SFP Combo ports	Four 1Gb SFP ports for aggregation to the network core. Support for Fiber and Copper modules.
Redundant Power Input	By having a secondary power supply, the switch can seamlessly switch to the backup power, maintaining network connectivity without interruption.
8kV Lightning Protection	Enhanced protection minimizes the risk of costly repairs and replacements, maintaining network stability and reliability in environments prone to lightning activity.
Wide Operating Temperature Range of -40 to 85°C	Remains reliable in both extremely cold and hot environments. Reliable performance in extreme conditions reduces downtime and maintenance needs, ensuring continuous operation.

Target Application

Network Convergence

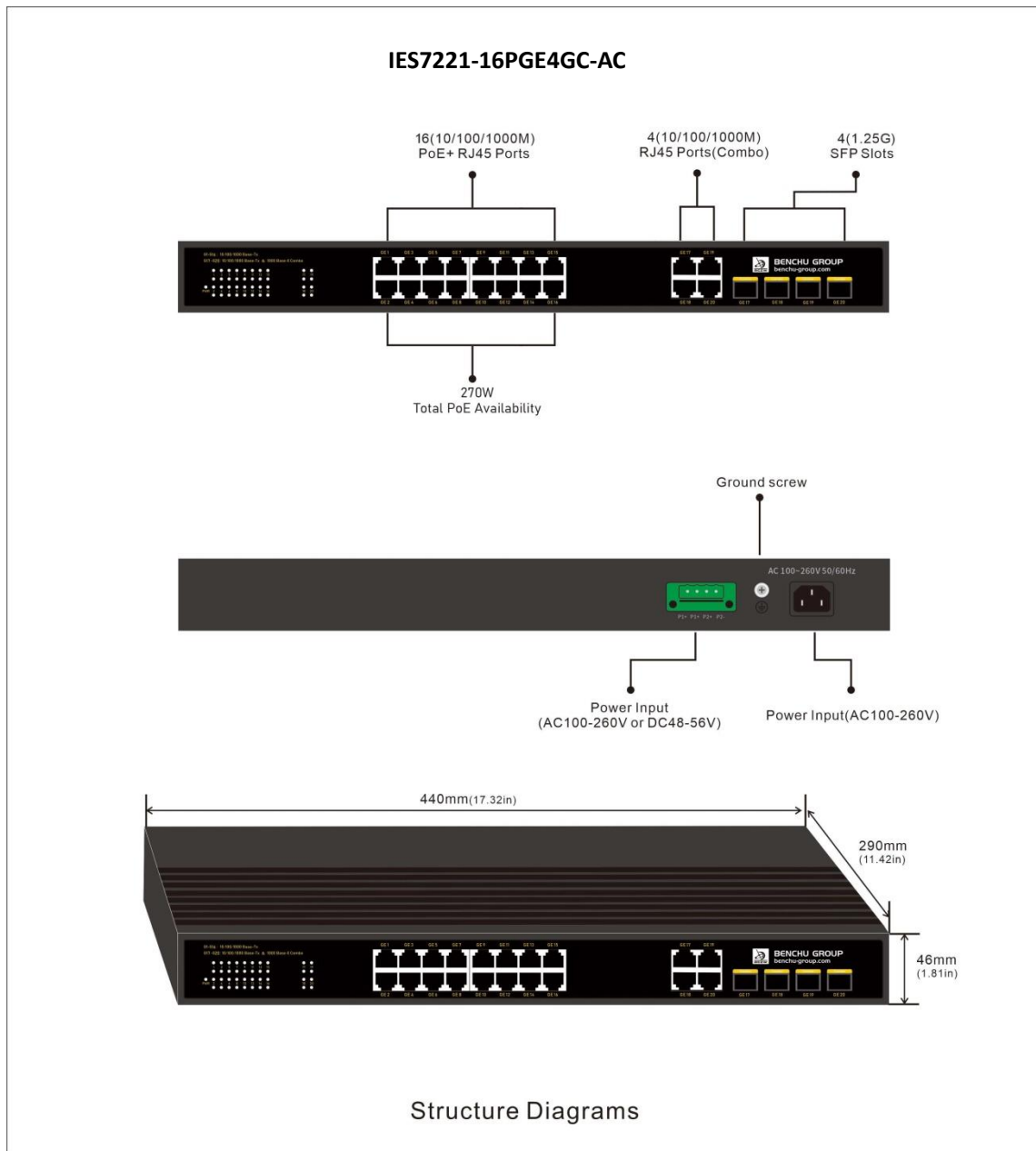


Across various industries—particularly in industrial parks, automation, power, public safety, and energy sectors—the adoption of IoT devices such as VoIP phones, IP security cameras, video-over-IP endpoints, proximity sensors, LED lighting, and secure access door locks is rapidly increasing. The close concentration of these devices demands industrial network switches with PoE capabilities, allowing network managers to connect IoT devices using a single cable for both data and power. Advanced devices like Wave 2 802.11ac wireless access points and HD surveillance cameras with features like night vision and motion tracking require PoE+ (802.3at) power. Additionally, harsh environments necessitate industrial-grade network switches with enhanced durability, further increasing the power requirements for Industrial PoE switches.

The BENCHU GROUP 16-port Industrial PoE Switches support dense deployments of these modern high-power PoE+ devices. They offer enhanced performance and a focus on usability within Industrial environments:

- Provide 16-10/100/1000M 802.3af/at PoE+ ports
- 4-1Gb RJ45/SFP combo for aggregation to the network core
- Dual power input --- the risk of network outages due to power supply failure is significantly reduced.
- Wide Operating Temperature Range of -30 to 75 °C
- Contact Discharge 8KV DC; Air Discharge 15KV DC
- High strength aluminum alloy shell
- Excellent features such as fast response, resisting vibration, enduring dust, adapting for the hard environment, etc.
- Plug and play, No configuration required --- simplifies the installation process
- Limited Lifetime* Warranty, Tech support

Structure Diagrams





Technical Specifications	IES7221-16PGE4GC-AC
10M/100M/1G RJ-45 copper ports	20
PoE / PoE+ ports	16 PoE+
1G SFP ports(Combo)	4
Power over Ethernet	
PoE Standard	IEEE 802.3at Power over Ethernet Plus/PSE Backward compatible with IEEE 802.3af Power over Ethernet
PoE Power Supply Type	End-span: 1/2 (+), 3/6 (-)
PoE Power Output	Per port 52V DC, 300mA. max. 15.4 watts (IEEE 802.3af) Per port 52V DC, 600mA. max. 30 watts (IEEE 802.3at)
Performance Specification	
Chip	Realtek
Packet buffer memory (Dynamically shared across only used ports)	4.2 MB
Forwarding modes	Store-and-forward
Bandwidth	64 Gbps
Packet forwarding rate (64 byte packet size) (Mpps)	29.76Mpps
MAC address database size (48-bit MAC addresses)	8K
Jumbo frame support (bytes)	Up to 9K packet size
Mean Time Between Failures (MTBF) @ 25°C	171,323 hours
100M Copper Latency (64-byte; 1518-byte; 9216-byte frames)	8.314μs; 8.412μs; 8.551μs
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)	2.980μs; 3.101μs; 3.179μs



IEEE Network Protocols		IES7221-16PGE4GC-AC
<ul style="list-style-type: none">• IEEE 802.3i 10BASE-T• IEEE 802.3u 100BASE-T• IEEE 802.3ab 1000BASE-T• IEEE 802.3z Gigabit Ethernet 1000BASE-SX/LX	<ul style="list-style-type: none">• IEEE 802.3af PoE• IEEE 802.3at PoE+• IEEE 802.3az Energy Efficient Ethernet (EEE)• IEEE 802.3x Full-Duplex Flow Control	
Monitoring		
LEDs		Yes
Per port		Speed, Link, Activity; or PoE in different mode
Per device		Power
Physical Specifications		
Dimensions		440 x 290 x 46 mm (17.32 x 11.42 x 1.81 in)
Weight (includes packaging accessories)		6.1 kg (13.45 lb)
Power Input (Dual power input)		AC 100~260V 50/60Hz
Power Consumption (when all ports used, line-rate traffic and max PoE)		300W
Max power (worst case, all ports used, full PoE, line-rate traffic) (Watts)		12W
Idle power consumption (all ports link-down standby) (Watts)		9W
Energy Efficient Ethernet (EEE) IEEE 802.3az		Yes (deactivated by default)
Fan		Fanless
Environmental Specifications		IES7221-16PGE4GC-AC
Operating		
Operating Temperature		-30° to 75°C (-22° to 167°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
CE	EN55032,EN55035
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
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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)
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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 PoE Switch Brackets and screws for rack mounting Rubber protection caps, which are already installed in the SFP sockets Installation guide User's manual
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