Datasheet | **IES7221-16PGE4GC-4BT**

Gigabit UPoE+ Unmanaged Switch with RJ45/SFP Uplink

An important breakthrough, Configure-free Gigabit UPoE+ (bt 90W) Switch for System Integrators.

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-4BT 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.

By offering reliable switching technology and advanced PoE++ features, the IES7221-16PGE4GC-4BT optimizes the installation and power management of network devices such as wireless access points, VoIP phones, and PTZ cameras.The IES7221-16PGE4GC-4BT is equipped with 16-10/100/1000BASE-T Gigabit Ethernet ports and 4-1000BASE-T/X RJ45/SFP Combo interfaces with inner power system. Its 12 gigabit ethernet ports are integrated with an 802.3at PoE+ injector function, 4 gigabit ethernet ports are integrated with an 802.3bt PoE++ injector function.

The PoE in-line power following the IEEE 802.3bt/at/af standard makes the IES7221-16PGE4GC-4BT able to deliver Gigabit speed data and up to 90 watts of power port to 16 PoE compliant powered devices (PDs) with a combined power output budget of up to 500 watts. The IES7221-16PGE4GC-4BT provides more flexibility in power requirement for all kinds of PDs with affordable installation costs. It offers a rack-mountable, safe and reliable power solution for SMBs deploying Power over Ethernet networks.

Highlights

Benchu Group's Gigabit Unmanaged UPoE+ Industrial Switch deliver excellent value by combining reliable switching and advanced networking features. Ideal for powering devices like wireless access points, LED lighting, and PTZ cameras, this switch simplify installation by integrating power and data into one unit, eliminating the need for separate power outlets. Additionally, the IES7521-24PGE4GC-4BT model features 4 high-power PoE++ ports (up to 90 watts each), 20 PoE+ ports (up to 30 watts each), and 4 combo ports, all housed in a rugged case that operates reliably from -30 to 75°C in tough environments.

Key features include:

- Complies with IEEE 802.3af/at/bt Power over Ethernet end-span PSE
- Up to 90W of IEEE 802.3af/802.3at/802.3bt devices powered
- Supports PoE power up to 90 watts for 1-4 PoE port, 30 watts for 5-24 PoE port, all power up to 500W budget.
- 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
- Flow control for full duplex operation and back pressure for half duplex operation
- Integrates address look-up engine, supporting 16K 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,16K MAC addresses, 128Gbps Backplane bandwidth, 47.62Mpps Switch Throughput，9216 bytes Jumbo Frame
- Up to 4 ports of IEEE 802.3af/802.3at/802.3bt and 20 ports of IEEE 802.3af/802.3at devices powered
- PoE++ support on 1-4 ports，PoE power up to 90 watts for each PoE port
- PoE+ support on 5-16 ports，PoE power up to 30 watts for each PoE port
- 4 RJ45/SFP Combo uplink, Extends network distance with highly Gigabit performance via fiber optic cable.

802.3bt PoE++ 90-watt for high power consuming network PD

- Adopts the IEEE 802.bt PoE++ standard technology, it is capable to source up to 90 watts of power by using all the four pairs of standard Cat5e/6 Ethernet cabling to deliver power and full-speed data to each remote PoE compliant powered device (PD). Its power capability is three times more than that of the conventional 802.3at PoE+ and it is an ideal solution for those high power consuming network PDs.

BENCHU Quality and Reliability

- Low power consumption, fanless, high-strength metal casing.
- High redundancy design, providing a long termand stable PoE power output.
- Contact Discharge 8KV DC；Air Discharge 15KV DC
- -30 to 75 degrees operating temperature
- Industrial design with dual power input
- Rack mounting installation
- CE, FCC, RoHS, CB.
- The user-friendly panel can show the device status through the LED indicator of PWR, Link.

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)
- Rack mount installation
- Plug and play, No configuration required

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Hardware at a Glance

FRONT					**REAR**		**SIDE**
Model Name	10/100/1000Base-T RJ45 ports	1Gb RJ45/SFP Combo Ports	PoE++ 802.3bt Ports	PoE+ 802.3bt Ports	Power Budget	Power Supply	Fans
IES7221-16PGE4GC-4BT	24	4(Combo)	4 PoE++	12 PoE+	500W	1 internal PSU, fixed	Fanless

Performance at a Glance

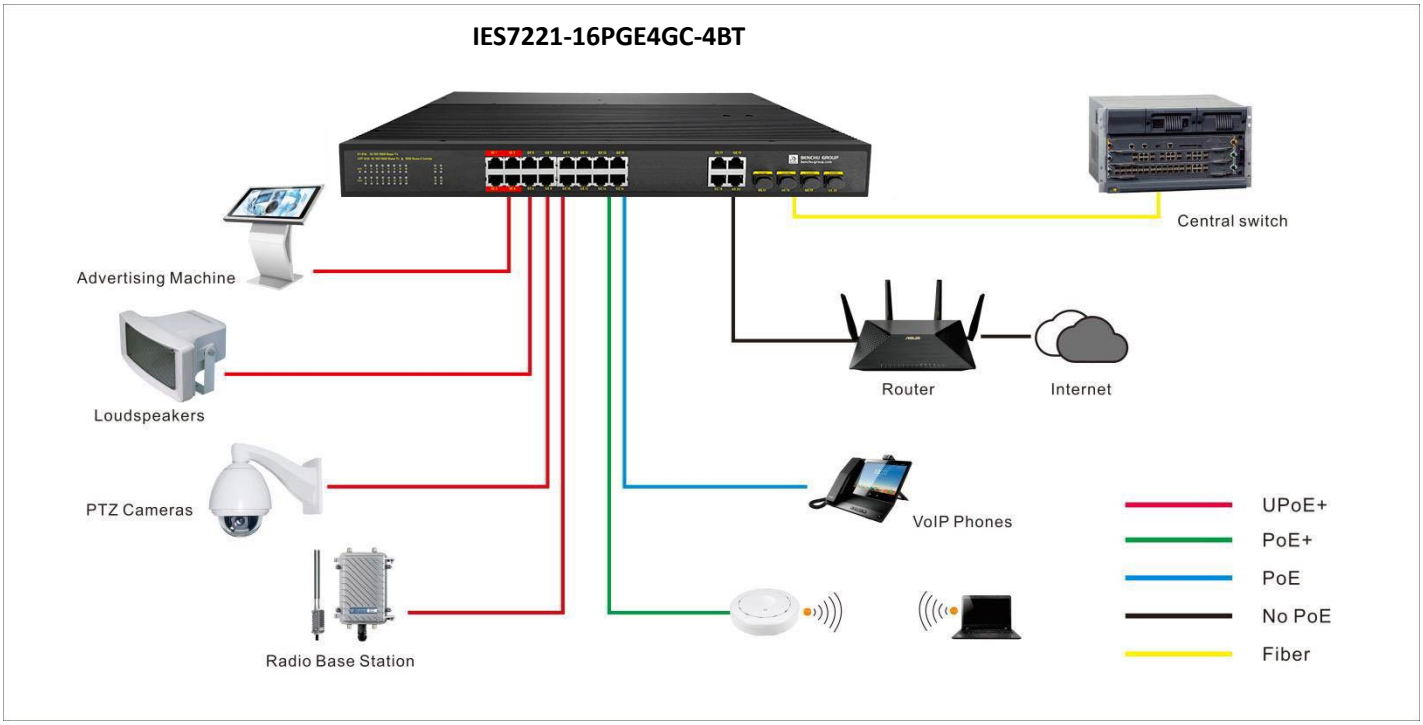
Model Name	Packet buffer	Chip	Fabric	Switch Throughput@64bytes	MAC Address Table	Jumbo Frame	Latency (Max Connection Speed)
IES7221-16PGE4GC-4BT	8.2MB	Realtek	128Gbps line-rate	47.62Mpps	16K	9216 bytes	1G Copper: <3.35μs 1G Fiber: <3.1μs

Features and Benefits

Hardware Features	
1000BASE-T Copper Ethernet PoE++ connections	Support LED lighting, PTZ Camera and Wi-Fi 6 AP deployments, scal-able for future growth. Never face the risk of running out of PoE ports.
1000BASE-T Copper Ethernet PoE+ connections	Support high-density VoIP, Surveillance and Wi-Fi AP deployments, scal-able for future growth.
1GBASE-TX RJ45/SFP Combo ports	Four 1Gb RJ45/SFP ports for aggregation to the network core. Support for Fiber and Copper modules.
Great choice of PoE port counts and PoE power budgets that can adapt to the business's needs	470W PoE budget available across 4 Gigabit UPoE+ ports and 20 Gigabit PoE+ ports–Connect multiple power demanding devices to your network with a single wire for power and connectivity.
Energy Efficient Ethernet (IEEE 802.3az)	Maximum power reduction for onging operational cost savings.

Target Application

Network Convergence



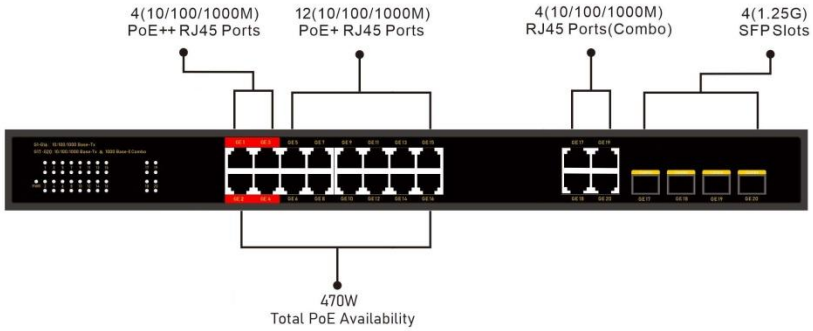
Across various industries—particularly in industrial parks, automation, power, public safety, and energy sectors—the adoption of IoT devices such as VoIP phones, IP security cameras, video-over-IP endpoints, proximity sensors, LED lighting, and secure access door locks is rapidly increasing. The close 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++ (802.3bt) power. Additionally, harsh environments necessitate industrial-grade network switches with enhanced durability, further increasing the power requirements for Industrial PoE switches.

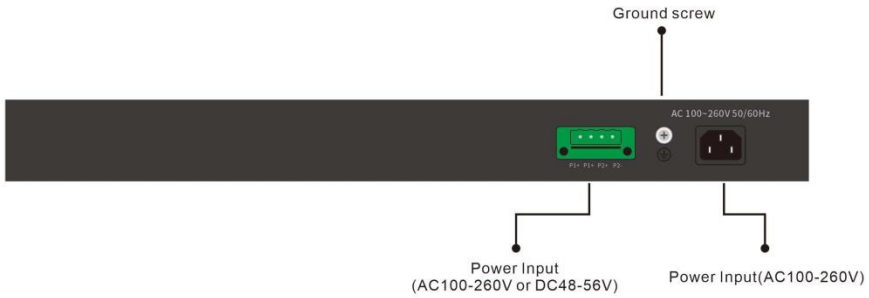
The new 16-port BENCHU GROUP UPoE+ Switches support dense deployments of these modern high-power PoE++ devices. with enhanced performance and a focus on usability within commercial environments:

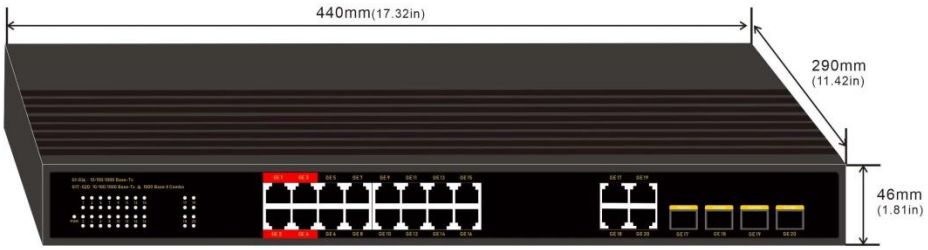
- 470W PoE budget across 4 Gigabit PoE++ ports and 12 Gigabit PoE+ Ports
- 4 x 1Gb RJ45 and 4 x 1Gb SFP Combo ports for aggregation to the network core to facilitate users' flexible networking
- Comply with IEEE 802.3 af/at/bt PoE power supply standard, automatically identify PoE equipment for power supply.
- Built-in 802.3bt type-4 PoE 90W injector function
- PoE ports support priority mechanism. When the remaining power is insufficient, priority is given to ensuring the power supply of high-priority ports to avoid equipment overload.
- Support non-blocking wire-speed forwarding.
- Plug and play, no configuration, simple and convenient.
- Limited Lifetime* Warranty, Tech support

Structure Diagrams

IES7221-16PGE4GC-4BT







Structure Diagrams

Technical Specifications	**IES7221-16PGE4GC-4BT**
10M/100M/1G RJ-45 copper ports	16
1G RJ45/SFP (fiber) ports	4 Combo
PoE / PoE+/PoE++ ports	4 PoE++ (up to 90W per port)
PoE / PoE+ ports	12 PoE+(up to 30W per port)
Power over Ethernet	
PoE Standard	IEEE 802.3bt Power over Ethernet Plus+/PSE IEEE 802.3at Power over Ethernet Plus/PSE Backward compatible with IEEE 802.3af Power over Ethernet
PoE Power Supply Type	1/2 /4/5(+), 3/6/7/8 (-) 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) Per port 52V DC, 1800mA. max. 90 watts (IEEE 802.3bt)
PoE Power Budget	470 Watts
Number of PDs, 15 watts	16
Number of PDs, 30 watts	15
Number of PDs, 45 watts	4 (1-4 Port)
Number of PDs, 60 watts	4 (1-4 Port)
Number of PDs, 75 watts	4 (1-4 Port)
Performance Specification	
Chip	Realtek
Packet buffer memory (Dynamically shared across only used ports)	8.2 Mb
Forwarding modes	Store-and-forward
Bandwidth	128 Gbps
Packet forwarding rate (64 byte packet size) (Mpps)	47.62Mpps
MAC address database size (48-bit MAC ad-dresses)	16K
Jumbo frame support (bytes)	Up to 9K packet size
Forwarding Mode	Store and Forward(Full Wire Speed)
Mean Time Between Failures (MTBF) @ 25°C	113,685 hours
100M Copper Latency (64-byte; 1518-byte; 9216-byte frames)	8.314μs; 8.612μs; 8.451μs
1G Copper Latency (64-byte; 1518-byte; 9216-byte frames)	3.614μs; 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-4BT**
• IEEE 802.3i 10BASE-T • IEEE 802.3u 100BASE-T • IEEE 802.3ab 1000BASE-T • IEEE 802.3z Gigabit Ethernet 1000BASE-SX/LX • IEEE 802.3az Energy Efficient Ethernet (EEE)	• IEEE 802.3af PoE • IEEE 802.3at PoE+ • IEEE 802.3bt PoE+ • IEEE 802.3x Full-Duplex Flow Control
Monitoring	
LEDs	Yes
Per port	Speed, Link, Activity; PoE in different mode
Per device	Power
Physical Specifications	
Dimensions	440x 290 x 44.5mm (17.32 x 11.42 x 1.75 in)
Weight	4.8 kg (10.58 lb)
Power Requirements	AC 100~260V 50/60Hz (Dual power input)
Power Consumption (when all ports used, line-rate traffic and max PoE)	500W
Max power (worst case, all ports used, full PoE, line-rate traffic) (Watts)	18W
Iddle power consumption (all ports link-down standby) (Watts)	12W
Energy Efficient Ethernet (EEE) IEEE 802.3az	Yes (deactivated by default)
Fan	Fanless
Environmental Specifications	
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 75°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) UL listed (UL 1950)/cUL IEC 950/EN 60950 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 PoE Switch AC Power cord with C13 connector (localized to region of sale) 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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