5GHz WES5 Series
Wi-Fi 6 802.11a/n/ac/ax Wireless Ethernet Modules

Product Description

This dual-radio access point incorporates the latest Wi-Fi 6 (802.11ax) wireless Ethernet technology. As the fifth addition to KBC's wireless systems, it builds on the user-friendly design of its predecessors in the widely recognized WES3 and WES4 series. WES5 utilizes 2.4 & 5 GHz license-free frequencies.

The WES5 offers unparalleled throughput, delivering up to 2.4 Gbps (radio rate) when connected to another WES5 unit in an optimal wireless environment. Its rugged, outdoor-ready design makes it the perfect solution for transmitting data to remote IP devices or extending long-range internet and network connections. Common configurations for the WES5 include point-to-point and point-to-multipoint setups, as well as secure local user-managed Wi-Fi access, providing easy connectivity at remote sites without direct access to the switch powering the WES5 unit.

The WES5 units are wall or pole-mountable with the included hardware.

Product Features

- Multiple mode configurations (Host/Client/Ad-Hoc)
- Gigabit PoE - IEEE 802.3at/bt or Passive 48Vdc
- IEEE802.11a/n/ac/ax compliant
- Transmission Power Control, up to 27dBm
- Integrated directional antenna (option for external connection available)
- Static or DFS in 5.180~5.825 GHz bands
- 20; 20/40; 80; 160 MHz spectrum width options
- Up to 2402 Mbps of Throughput
- Secure transmission: WPA3 AES encryption
- Distance adjustment for long range transmission
- IP66 protection class
- Embedded web browser graphical user interface (GUI) for at-a-glance diagnostics and ease-of-use configuration
- Static & dynamic IPv4 LAN addressing, DHCP router mode

Suitable for

- Point-to-Point & Point-to-Multi Point Systems
- High throughput back hauls
- Megapixel IP camera networks & remote gate access
- Multi-family housing complexes; parking lots; perimeter detection equipment; video surveillance in elevators
- Warehouses, industrial plants, water treatment facilities
- Off grid power poles with solar-powered electronics
- Intercoms with integrated video
- Building to building network extension
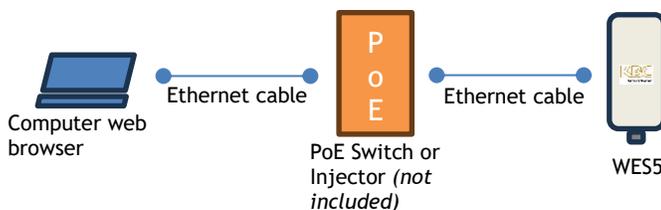- Exterior access points

Included with Each Unit

- Quick start instructions.
- Rugged pole/wall mount assembly kit.
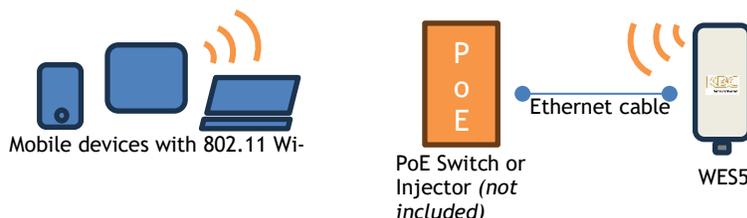- Embedded web browser-based Graphical User Interface

Contact KBC Networks for Pre-configured Point-to-Point kits and convenient bundled kits with remote power solutions providing all the needed equipment from one supplier.

Access to Configuration via Web Browser Interface Options
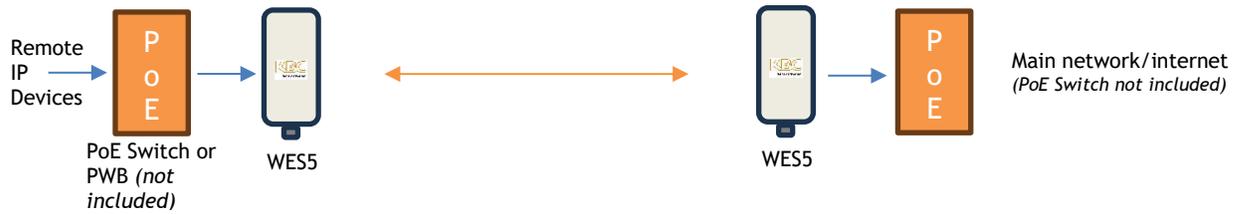
Traditional Cable Connection

Computer web browser — Ethernet cable — PoE Switch or Injector *(not included)* — Ethernet cable — WES5

Wi-Fi Access via 802.11 Connected Mobile Device

Mobile devices with 802.11 Wi- — PoE Switch or Injector *(not included)* — Ethernet cable — WES5
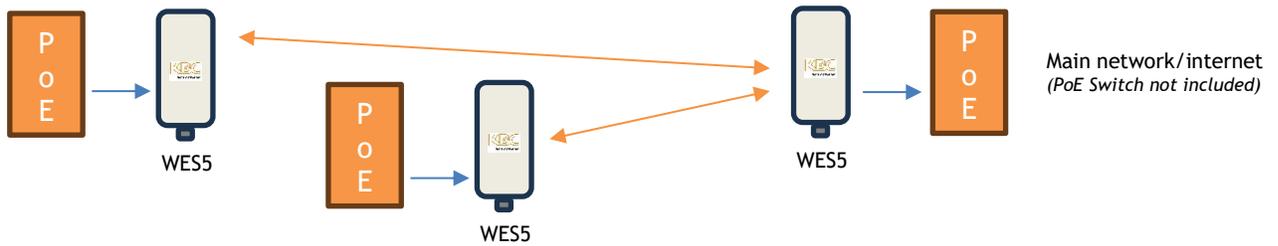
NOTE: While default configuration settings allow for Wi-Fi access, it is recommended to either disable or change Wi-Fi encryption parameters for security purposes once initial set up is complete. Save and record all changes made.
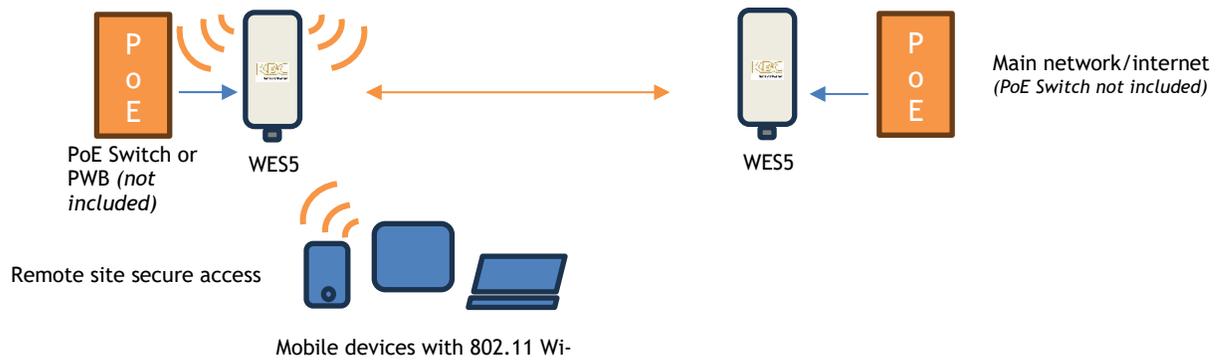
Typical System Configurations

Point-to-Point

Remote IP Devices → PoE Switch or PWB *(not included)* → WES5 ⟷ WES5 ← POE ← Main network/internet *(PoE Switch not included)*

Point-to-Multipoint

POE → WES5

POE → WES5

WES5 → POE → Main network/internet *(PoE Switch not included)*

Point-to-Point with Wi-Fi Access Point at Remote Site

POE → WES5 ⟷ WES5 ← POE ← Main network/internet *(PoE Switch not included)*

PoE Switch or PWB *(not included)*

Remote site secure access

Mobile devices with 802.11 Wi-

Specifications

Standards
IEEE Standards — IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX
IEEE 802.3ab 1000BASE-T, IEEE 802.3x Full Duplex
IEEE 802.11a 5GHz, IEEE 802.11h ETSI DFS & TPC
IEEE 802.11n MIMO
IEEE 802.11ac MIMO
IEEE 802.11ax MU-MIMO OFDMA

Radio 1 (Wi-Fi-0)
Power Output — 27 dBm max[1] Transmit Power Control (ETSI TPC)
Frequency Operation
User Static Selectable — 2400–2480 MHz
Frequencies (FCC) U-NII3

Radio 2 (Wi-Fi-1)
Power Output — 27 dBm max[1]
Transmit Power Control (ETSI TPC)
Channel Bandwidth Spectrum — 20/40/80/160[2] MHz selectable
Frequency Operation
User Static Selectable — 5180–5240 MHz
Frequencies (FCC) U-NII3 — 5745–5825 MHz
Dynamic Frequency — 5500–5700 MHz
Selection (ETSI DFS)

Antenna Options
5 dBi omni-directional — Dual polarization
External N-connector — Beamwidth:
(WES5-AX-AF only) — Azimuth: Horizontal 360°, vert 65°
Elevation: Horizontal 33°, vert 33°

9 dBi — Dual polarization
Integrated directional panel — Beamwidth:
(WES5-AX-Bx model) — Azimuth: Horizontal 65°, vert 65°
Elevation: Horizontal 33°, vert 33°

17 dBi — Dual polarization
Integrated — Beamwidth:
directional — Azimuth: Horizontal 30°, vert 33°
panel — Elevation: Horizontal 17°, vert 17°

System
TX/RX
Rate [3] — 2402Mbps
Latency — <10ms
Encryption — AES3 128-bit

Power Method
48–54VDC PoE — IEEE 802.3af/at/bt (PD) PoE via PSE device
48VDC passive PoE — Gigabit PoE injector [4]

Power Consumption
802.3af PoE — Max 14.4W, typical 7W [5]
48VDC passive PoE — Max 14.4W, typical 7W [5]

Mechanical (unit)
Casing
Dimensions (L x W x D) — 268.45mm x 130.00mm x 82.20mm
/10.57" x 5.12" x 3.24"

Weight (17dBi unit) — 1.545kg / 3.41lbs
Installation — Wall-mount or pole-mount

Environmental
Protection — IP66
Operating Temperature — -40°~ +74°C / -40°~ +165°F
Storage Temperature — -40°~ +90°C / -40°~ +194°F
Operating Humidity — 5 to 95% non-condensing
Mean Time Between Failure (MTBF) — > 100,000 Hours

Connectors
10/100/1000Mbps Electrical — 1 x RJ45
N female — 2; *WES5-AX-AF model only*

Approvals
FCC Part 15 Subpart C — Class B
CE — Class B
EN 55024
(IEC61000-4-2,3,4,5,6,8,11) — Electromagnetic Immunity
EN 55022 (CISPR 22) — Electromagnetic Interference
(Conduction & Radiation)
EN 60 950: 1992+A1: 1993+A2: — Low Voltage Directive
1995+A4: 1996+A1: 1997
EN 300 328-2
EN 300 826
EN 301 489-17
EN 301 893
R&TT Directive (1999/5/EC)

Part Numbers

Wireless kits. Contact KBC for system design

Model #	Wi-Fi-0	Wi-Fi-1	Antenna	Region	Note
WES5-AX-AF	802.11b/g/n	802.11a/ac/ax	External 5 dBi Omni	US	Includes (2) 5 dBi omni dipole antennas
WES5-AX-BF	802.11b/g/n	802.11a/ac/ax	Integrated 9 dBi	US	
WES5-AX-CF	802.11b/g/n	802.11a/ac/ax	Integrated 17 dBi	US	
WES5-KT	802.11b/g/n	802.11a/ac/ax	Integrated 17 dBi	US	Consists of (2) WES5-AX-CF
WES5-AX-AB	802.11b/g/n	802.11a/ac/ax	External 5 dBi Omni	EMEA	Includes (2) 5 dBi omni dipole antennas
WES5-AX-AE	802.11b/g/n	802.11a/ac/ax	External 5 dBi Omni	Australia	Includes (2) 5 dBi omni dipole antennas
WES5-AX-BB	802.11b/g/n	802.11a/ac/ax	Integrated 9 dBi	EMEA	
WES5-AX-BE	802.11b/g/n	802.11a/ac/ax	Integrated 9 dBi	Australia	
WES5-AX-CB	802.11b/g/n	802.11a/ac/ax	Integrated 17 dBi	EMEA	
WES5-AX-CE	802.11b/g/n	802.11a/ac/ax	Integrated 17 dBi	Australia	

Below are optional power box solutions available to provide PoE/PoE+/HPoE to a remote WES5 & accompanying IP device(s). See PWB spec sheet for more information.

Model #	PoE+ Ports	PoE++ Ports	Non-PoE Ports	Region	
PWB-S2-G1	2	0	1	US	
PWB-S4-G1	4	0	1	US	
PWB-S8	8	0	0	US	
PWB-H4-P2	0	4	2 (SFP)	US	
PWB-H4S4-P2	4	4	2 (SFP)	US	

1. *Territory specific.*
2. *160MHz channel spectrum width uses DFS frequencies and must be allowed to change channels automatically.*
3. *Assumes ideal RF environment while utilizing 160 MHz spectrum width when connected at max signal rates & within receive sensitivity specification.*
4. *Injector is not included with WES5 series kits. See PWB series spec sheet for recommended optional solutions or order part number WES5-PK if a power injection module is desired.*
5. *With Wi-Fi-0 disabled (user configured via web browser GUI).*