Town of Huachuca City
500 North Gonzales Boulevard
Huachuca City, Arizona 85616
(520) 456-1354

ADDENDUM #2

TO THE

INVITATION TO BID

FOR THE

EMERGENCY VEHICLE PREEMPTION SIGNAL PROJECT

Addendum #1 Date: November 08, 2019

This addendum, and all the information contained herein and attached hereto, shall become as fully a part of the INVITATION TO BID and other BID/CONTRACT DOCUMENTS for the **Town of Huachuca City Emergency Vehicle Preemption Signal Project,** as if therein included, and shall take full and complete preference over anything therein contained to the contrary.

Acknowledgement: Each Bidder shall acknowledge receipt of this Addendum in their bid package on the Proposal Form.

Each bidder, firm, contractor, subcontractor, or supplier shall be responsible for reading each and every item in this addendum to ascertain to what extent and in what manner it affects the work that they are interested in.

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1. PRE-BID MEETNG AGENDA AND SIGN-IN SHEET

   A pre-bid meeting was held on Wednesday, October 31, 2019, at 10:00 am. The agenda and sign in sheet are attached for review and information purposes.

2. EXISTING ELECTRIC POWER SERVICE

   Per Sulphur Springs Valley Electric Cooperative (Mark Roll, 520.686.5405), the existing power service and meter panel is rated at 100 amps. This service panel should be sufficient for operation of this signal and street light system. However, the Contractor shall immediately notify the Town, the Engineer, and SSVEC should there be any concern with the capacity of the existing 100 amp meter/service panel.

3. REMOVAL OF EXISTING STREET LIGHT POLE, MAST ARM, LUMINAIRE, AND FOUNDATION

The plans (TS01, Sheet 3 of 5) call for the existing street light at the northeast corner of the intersection to be removed by the Contractor. The existing street light pole is owned by and is to be removed by Sulphur Springs Valley Electric Cooperative. The requirement for the street light to be removed by the Contractor is hereby null and void.

SSVEC will remove the luminaire, mast arm, pole, and foundation completely. This work will likely be completed after the EVP signal project has been completed. The Contractor shall protect in place the existing street light and circuit throughout the duration of the project, and shall notify Mark Roll with SSVEC when the project work has been completed.

4. REMINDER TO EXERCISE CAUTION WORKING IN THE VICINITY OF ELECTRIC POWER LINES

All Contractor personnel, equipment, and materials shall maintain a minimum 10-foot radial clearance from existing overhead power lines at all times per the SSVEC Standard Detail No. 1124. In addition, any crane or boom operating in the vicinity of an overhead power line must maintain a minimum of 20-feet clearance from the existing overhead power lines at all times.

5. ADD ALLOWANCE FOR SSVEC REMOVAL OF EXISTING STREET LIGHT POLE, MAST ARM, LUMINAIRE, AND FOUNDATION

The Bid Schedule is hereby revised to include a new line item for the removal of the existing street light pole, mast arm, luminaire, and foundation by SSVEC. This new line item will be an 'ALLOWANCE' for use by the Owner (only) to compensate SSVEC for this work in the pre-determined fixed amount of $3,000.

6. ADD NEW BID ITEM TO FURNISH AND INSTALL POLICE CAMERAS WITH BRIDGE KITS

The EVP signal installation at the School Drive/SR90 intersection in Huachuca City is hereby revised to include a security camera mounted on each signal pole with a bridge kit compatible with the existing Huachuca City Police Department surveillance system. This new bid item includes, but is not limited to, the following items of work:

- **Furnish and install two (2) IP Cameras, Motorized Turret, 5MP Starlight 2.8-12mm motorized turret dual Dragonfire IR – one (1) on each signal pole located below but near the mast arm connection with the cameras pointed at on-coming traffic with a view of the intersection**
- **Furnish and install two (2) junction boxes to house camera and access point components and one power outlet; one (1) for each camera unit**
- **Furnish and install three (3) Bridge Kits, ENG-ENS500-AC, EnTurbo 5 GHz Outdoor AP/Bridge per the manufacturer's instructions and per the vendors recommendations – the 3rd bridge kit shall be installed in the Police Department offices at a location designated by the Police Chief (Jim Thies, Police Chief, 520-678-9604)**
- **All listed equipment to be installed to include any and all wiring, connectors, and fittings to complete the installations, whether listed or not, to make a fully operational and functional surveillance camera system for the Huachuca City Police Department**
- **Services – 110VDC power outlet to be installed into camera junction box to power the camera system – this work shall be included in the bid price for this new bid item**

- **Vendor proposal and product cut-sheets for the camera, bridge kit, etc. are included as attachments to this Addendum #2 (Vendor proposal includes installation costs – contact vendor for equipment costs as needed).**
- **Camera installation and functionality shall be completed to the satisfaction of the Huachuca City Police Department**

The Bid Schedule is hereby revised to include a new line item for 'FURNISH & INSTALL POLICE CAMERAS WITH BRIDGE KITS'.

7. REVISED AND REISSUED BID SCHEDULE

The BID SCHEDULE is reissued as part of this addendum for the purpose of adding the two new bid item entries as discussed herein.

THE BIDDER MUST USE THIS REVISED AND REISSUED BID SCHEDULE AND INCLUDE IT IN THE BID FORM TO REPLACE THE ORIGINAL ISSUE BID SCHEDULE.

8. NOTICE TO PROCEED MAY BE DELAYED ON CONTRACTOR REQUEST

Bidders are advised that it is recognized that the lead time on signal poles and mast arms may not be fully accounted for in the 90 calendar day construction period allowed. To accommodate this, the awarded Contractor can coordinate with the Town and their Engineer to agree on a delayed Notice to Proceed to establish a start date for the project that accommodates the equipment lead time and the Contractor's schedule.

9. RESPONSES TO QUESTIONS RECEIVED

No questions have been received through the cut-off date of November 07, 2019.

ATTACHMENTS

- REVISED & REISSUED BID SCHEDULE PER ADDENDUM #2
- PRE-BID MEETING AGENDA
- PRE-BID MEETING SIGN-IN SHEET
- THE CAMERA GUY'S SECURITY ESTMATE SHEET DATED 11/05/2019
- ORTEX, COR-IP5TRV, 5MP VARIFOCAL NETWORK CAMERA WITH MOTORIZED ZOOM PRODUCT CUT-SHEET
- ENGENIUS, ENJET OUTDOOR, ADVANCED 11AC WAVE 2 PTP/MP AP'S & BRIDGE PRODUCT CUT-SHEETS (9 PAGES)

**** End of Addendum #2 ****

REVISED & REISSUED BID SCHEDULE PER ADDENDUM #2

EMERGENCY VEHICLE PREEMPTION SIGNAL PROJECT

Bidders Name: _____

NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	ITEM BID TOTAL
1	EV PREEMPTION REMOTE CONTROL DEVICES	12	EA	$	$
2	ADVANCE WARNING EV SIGNAL WITH SIGNS, FLASHERS, POLE & FOUNDATION	4	EA	$	$
3	PAVEMENT STRIPING, THERMOPLASTIC ALKYD, WHITE	96	SF	$	$
4	TYPE 'R' POLE AND FOUNDATION WITH 45' SIGNAL MAST ARM & 20' LUMINAIRE MAST ARM	2	EA	$	$
5	TYPE 'T' SIGNAL HEAD PER ADOT TS 8-5	5	EA	$	$
6	TYPE 'II' MOUNTING PER ADOT TS 9-1	5	EA	$	$
7	EV SIGNAL CONTROLLER WITH COMMUNICATION SYSTEM IN A POLE HANGING CABINET	1	LS	$	$
8	INSTALL TRAFFIC SIGN, 'W11-12P'	2	EA	$	$
9	INSTALL TRAFFIC SIGN, 'W11-8'	2	EA	$	$
10	INSTALL TRAFFIC SIGN, 'R8-10'	2	EA	$	$
11	INSTALL TRAFFIC SIGN, 'R10-14'	2	EA	$	$
12	SIGN POST, TYPE 'T', 2-1/2" SQUARE GALVANIZED STEEL POST PER ADOT S-3	4	EA	$	$

NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	ITEM BID TOTAL
13	SIGN POST SLIP BASE FOUNDATION PER ADOT S-3	4	EA	$	$
14	STREET NAME SIGN ASSEMBLY, D3-1	2	EA	$	$
15	INSTALL SCHEDULE 40 PVC CONDUIT, 3" DIA, DIRECTIONAL DRILLING	160	LF	$	$
16	INSTALL SCHEDULE 40 PVC CONDUIT, 2-1/2" DIA, IN TRENCH WITH PULL CORD	130	LF	$	$
17	INSTALL CONDUCTORS, COMPLETE	1	LS	$	$
18	INSTALL PULL BOX, NO. 7, LIGHT DUTY, PER ADOT TS 1-1	3	EA	$	$
19	INSTALL LUMINAIRES WITH PHOTO CELL CONTROL	2	EA	$	$
A	SSVEC REMOVAL OF EXISTING STREET LIGHT POLE, MAST ARM, LUMINAIRE, AND FOUNDATION (BY OTHERS)	ALLOWANCE	AMT	$ 3,000.00	$ 3,000.00
B	FURNISH AND INSTALL POLICE CAMERAS WITH BRIDGE KITS	1	LS	$	$
20	TRAFFIC CONTROL	1	LS	$	$
21	MOBILIZATION	1	LS	$	$
TOTAL BID AMOUNT EMERGENCY VEHICLE PREEMPTION SIGNAL PROJECT					**$**

NOTE: THE TWO NEW BID ITEMS ARE LABELED "A" AND "B" AND FOLLOWING BID ITEM #19 IN THE REVISED & REISSUED BID SCHEDULE PER ADDENDUM #2

THIS REVISED & REISSUED BID SCHEDULE MUST BE INCLUDED IN THE SUBMITTED BID FORM.

To: PROSPECTIVE BIDDERS / CONTRACTORS
Matthew Williams, Town Manager, Town of Huachuca City
Dennis Donovan, Civil Engineer, Sierra Vista MPO

From: Dale Miller, Project Manager, RICK Engineering Company

Meeting Date: October 31, 2019 (Thursday) 10:00 am

Subject: **PRE-BID MEETING for Huachuca City Emergency Vehicle Preemption Project**

The meeting purpose is to review the project plans, bid/contract documents, and other requirements for the project in advance of receiving bids for this project bids. Discussion topics include the following.

1. **Town Input/Information – Matthew Williams**

2. **BIDS ARE DUE on or before FRIDAY NOVEMBER 15, 2019 at 4:00 pm** local time at the Town Clerk's Office, Huachuca City Town Hall, 500 N Gonzales Blvd, Huachuca City, AZ 85616

3. **ACKNOWLEDGE ADDENDUM #1 CHANGING THE PRE-BID MEETING DATE ON YOUR BID FORM**

4. Be sure to sign-in today on the provided form to ensure you receive any subsequent addenda

5. **Construction period is 90 calendar days**

    a. If there are issues with lead time for poles/other – the Town would consider delaying the NTP as needed until the equipment/materials have arrived

6. Project Overview

    a. INSTALL EMERGENCY VEHICLE PREEMPTION SIGNALS
        - Location: On SR90 approx. 500 FT N & S of the Camino de Manana Intersection in Whetstone
        - Roadside pole mounted each side of each approach
        - Solar powered
        - Provide remote control preemption activation

    b. INSTALL EMERGENCY VEHICLE PREEMPTION SIGNALS
        - Location: On SR90 N & S sides of School Drive at Town Hall
        - Overhead Signal Pole and Mast Arm mounted
        - Street Lights on Signal Poles
        - Electric hard wired power
        - Provide remote control preemption activation

7. Plans

    a. Questions and/or comments?

8. Electric Power Supply

    a. Coordinate power service with:

        Sulphur Springs Valley Electric Company
        Mark Roll
        520-686-5405 (cell)
        mroll@ssvec.com

9. ADOT Encroachment Permit

    a. Town has submitted an advance encroachment permit application

    b. The Contractor must resubmit the encroachment permit application as the "Authorized Agent/Applicant" with the name of the traffic control company

    c. ADOT permit application requires submittal of Contractor Insurance Certificate

    d. ADOT permit application requires submittal and approval of traffic control plan

10. Work Limits

    a. Working in ADOT ROW , confine work limits to as small a footprint as possible

    b. Do not encroach on private property

    c. Restore disturbed area to pre-existing conditions or better (NPI – non-pay item)

11. Construction Oversight / Inspection

    a. RICK is under contract to provide construction phase administrative services including responding to request for:

        - information/clarification
        - review and process change requests
        - review contractor pay requests
        - shop drawing reviews
        - Other construction contract administrative items

    b. The Town and/or Dennis Donovan, SVMPO Engineer, will provide limited periodic construction oversight / inspection as available

    c. ADOT will also periodically spot check the construction work and activities – see the plan notes for ADOT requirements and contacts

    d. Contractor to notify ADOT and Town when inspections are needed with required advance notice

    e. Rick Engineering will support the Town as needed during construction upon Town request

12. Questions?

13. Addenda

    a. A final Addendum will be issued FRIDAY, NOVEMBER 08, to address any questions received during this meeting or outside this meeting on or before the cutoff date of THU NOV 07

14. Site Visit

    a. Bidders need to be familiar with the work sites

    b. On request, Dale Miller (and Town and/or SVMPO) can accompany if needed

        ○

**** End of Pre-Bid Meeting Agenda ****

Meeting Date: October 31, 2019 (Wednesday) 10:00 am

Subject: **PRE-BID MEETING for Emergency Vehicle Preemption Project**

PRE-BID MEETING SIGN-IN SHEET

Name	*Company*	*Phone Number*	*Email Address*
Jim Thies	Huachuca city Police Department	520-678-9604	JThies@huachucacityaz.gov
DR Jim Johnsen	Town of Huachuca City	520-249-5564	JJohnsen@huachucacityAZ.gov
Dennis Donovan	SVMPO	520-515-8525	dennis.donovan@sierravistaaz.gov
Mark Roll	SSVEC	520.686.5405	mroll@ssvec.com
Matthew Williams	Town of Huachuca City	520-478-1849	mwilliams@huachucacityaz.gov
Dale Miller	RICK Engineering Company	480 5220330	dmiller@rickengineering.com

The Camera Guys Security

520-803-9941
CameraGuysaz@gmail.com

ADDRESS
Huachuca City PD
502 N. Gonzalez Blvd
Huachuca City, AZ 85616

Estimate 1169

DATE 11/05/2019

EXPIRATION DATE 11/05/2019

ACTIVITY	QTY	RATE	AMOUNT
Junction Box Junction box to house camera and access point components and one power outlet	2	185.00	370.00T
IP CAMERAS:MOTORIZED TURRET 5MP STARLIGHT 2.8-12MM MOTORIZED TURRET DUAL DRAGONFIRE® IR	2	340.00	680.00T
BRIDGE KIT:ENG-ENS500-AC EnTurbo™ 5 GHz Outdoor AP/Bridge	3	392.00	1,176.00T
Installation ALL LISTED EQUPIMENT TO BE INSTALLED TO INCLUDE ANY AND ALL WIRE, CONNECTORS AND FITTINGS TO COMPLETE THE JOB THAT ARE NOT ON THE LIST.	1	935.00	935.00
Services 110VDC power outlet will have to be installed by an electrician into junction box supplied by CGS. If electrician is to be set up by CGS additional charges will be added to this invoice.	1	0.00	0.00

SUBTOTAL	3,161.00
TAX (7.6%)	169.18
TOTAL	$3,330.18

Accepted By

Accepted Date

COR-IP5TRV

5MP VARIFOCAL NETWORK CAMERA w/ MOTORIZED ZOOM

FEATURES

- 1/2.9” Sony® Exmor Progressive CMOS
- 2.8 ~ 12 mm (Motorized) IR Lens
- Premium Components
- Dragonfire® LEDs
- IR Range up to 145 feet
- Metal Housing IP66 Waterproof
- 2592(H)×1944(V) Resolution

SPECIFICATIONS

Resolution	5MP 2592(H)×1944(V)
Image Sensor	1/2.9" Sony® Exmor Progressive CMOS (6.82M pixels)
Min.Illumination	Color 0.01lux @ F1.2(AGC ON) ; B/W 0 lux @ IR ON
Shutter Time	1/5 ~ 1/20000s
Shutter Controls	Active Shutter Controls
Lens	2.8 ~ 12 mm (Motorized) H.FOV: 87 ~ 28°
F-Stop	F 1.6 ~ 2.9 ±5%
Day & Night	Auto switching infrared-cut filter (OSD on/off)
WDR	Digital
Video Compression	H.265 / H.264
Video Bit Rate	8Kbps ~ 8Mbps
Video Streaming	3 individually adjustable streams
Frame Rate	Mainstream up to 15fps 5MP(2592×1944),4MP(2592x1520) 3MP(2048x1520),1080P(1920x1080), 960P(1280x960), 720P(1280x720) Substeam 720P(1280x720),VGA(640x480), QVGA(320x240) Mobilestream VGA(640x480), QVGA(320x240)
Image Settings	Image rotate, Saturation, Contrast, Hue, Brightness, Sharpness
BLC	Supported
ROI	Supported
Privacy Mask	Supported

AI Analytics	Cross line Detection, Intrusion Detection, Stationary Object Alert, Pedestrian Detection, Face Detection, Cross Counting
Protocols	TCP/IP,IPv4v6,HTTP,DHCP,DNS, DDNS,RTP/RTSP,PPPoE, SMTP,NTP,UPnP,SNMP,HTTPS,FTP
Compatibility	ONVIF®, API, Cortex Plug&Play
Network Interface	RJ45 10M / 100M Ethernet interface
Illumination	40pcs (DragonFire® SMD) LEDs Stealth Infrared Cover
IR Range	Up to 145 feet (45m)
SD Storage	Yes , Micro SD
Alarm Trigger	Yes , Screw Terminal
Audio	Yes
Video Output	Yes
Reset Button	Hardware reset button and software
PoE	Yes , IEEE 802.3af / IEEE 802.3at
Casing	Metal Housing IP66 Waterproof
Power Supply	DC 12V / PoE
Consumption	≤ 7W
Storage Temperature	-30~+60°C (-22~+140°F)
Operating Temperature	-30~+55°C (-22~+131°F)
Dimensions	Ø135.4 X 127.7mm (Ø5.33 X 5 inches)
Weight	Approximately 1.59 lbs (720g)

COR-IP5TRV

EnGenius

Datasheet

ENS500EXT-AC
ENS500-AC
EnStation5-AC
EnStationAC

EnJet™ Outdoor
Advanced 11ac Wave 2 PtP/MP AP's & Bridges

EnGenius Outdoor Access Point and Bridges turbocharge high bandwidth wireless speed, coverage, and reliability in point-to-point and point-to-multipoint connections. It makes powerful, next generation Wave 2, business-class Wi-Fi affordably accessible for small to mid-size businesses and large residences.

EnGenius EnJet™ 5 GHz Outdoor 802.11ac Wave 2 Wireless Access Point/Bridge cuts through RF-congested environments by dividing a signal into different time slots and assigning them to every stations for Point-to-Point/MultiPoint applications.

Optimizes Maximum Airtime Efficiency

EnJet™ technology provides steady maximum throughput and high link reliability by dividing a signal into different time slots and assigning them to every stations even when bandwidth demands increase and devices are added. EnJet™ reduces collisions and interference when devices can't "see" one another on a channel when transmitting to the same device at the same time. The EnJet™ AP & Bridge built-in Quality of Service prioritizes video and voice transmissions for a strong, uninterrupted streaming with low latency.

Turbocharged Wireless Performance

Reaching speeds to 867 Mbps on the 5 GHz frequency band, the EnStationAC's powerful Qualcomm® processor turbocharges wireless performance and efficiency

Features & Benefits

- EnJet technology that cuts through RF-congested environments within point-to-point/multipoint applications.
- 11ac Wave 2 wireless speeds up to 867 Mbps on 5 GHz
- High 26 dBm transmit power extends Wi-Fi to yard or building-to-building.
- MU-MIMO improves performance & increases user device capacities.
- Beamforming optimizes antenna signal, reception & reliability for clients.
- IP55-Rated weatherproof & dustproof housing
- GigE PoE port & adapter included for placement where power is limited. Use the EnStationAC's secondary PoE pass through Gigabit port to power an additional PoE-compliant device such as an IP surveillance camera.9
- High Gain 19 dBi Integrated Directional Antennas extends wireless networks up to 5 miles point-to-point. **[Model Number: EnStationAC and EnStation5-AC]**
- High Gain 14 dBi Integrated Directional Antennas extends wireless networks up to 2 miles point-to-point. **[Model Number: ENS500-AC]**
- Two detachable, 5 dBi 360° SMA-type antenna. **[Model Number: ENS500EXT-AC]**
- 3-Axis pivoting arm locks for precise alignment. **[Model Number: EnStationAC and EnStation5-AC]**
- Includes a suite of advanced AP management & security features
- Flexible Operation Modes: AP, Client Bridge & WDS
- Simple, Intuitive interface via EnWiFI app for local AP configuring & monitoring.
- Remotely & centrally manage via EnGenius Managed Switches, SkyKey Mini-controller or ezMaster™ software

ENS500EXT-AC

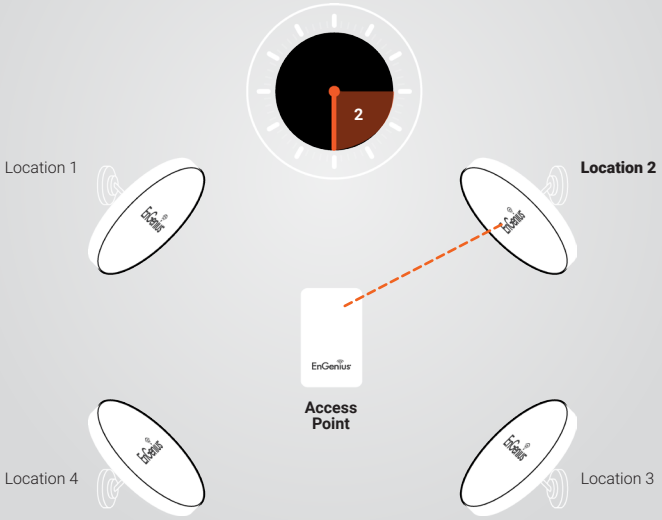
ENS500AC

EnStationAC
EnStation5-AC

EnJet™ Technology

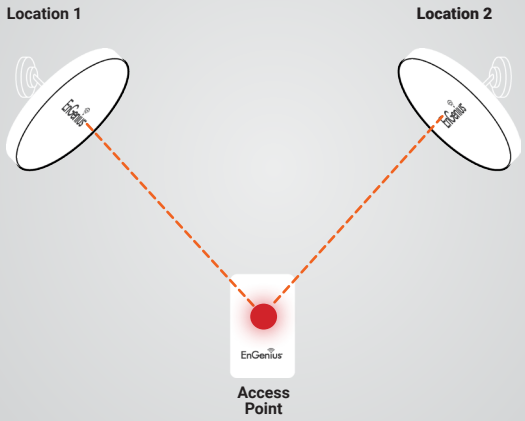
Optimized Maximum Airtime Efficiency

By dividing a signal into different time slots and assigning them, the EnJet™ system provides steady maximum troughout and high link reliability to every client—even when bandwidth demands increase & devices are added.



Avoids Hidden Node Issues

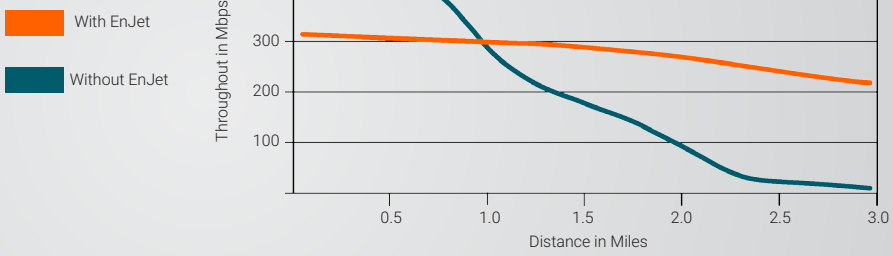
No more collisions and interferences caused by devices that can't "see" each other on a channel & transmit simultanously.



Data Transmission Collisions

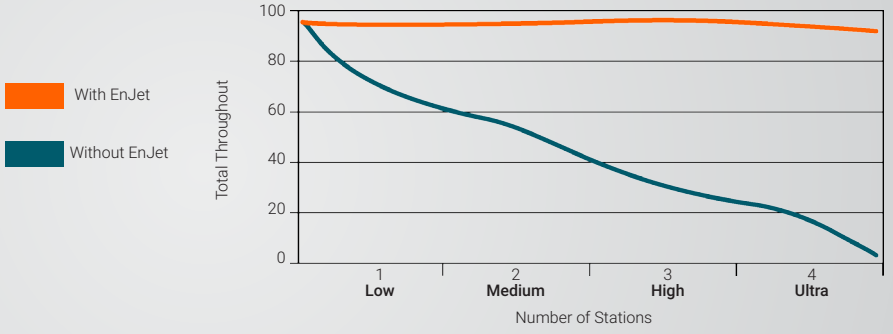
Retain Stable Performance

With EnJet™ you can keep the total throughout consistently high while even when the number of wireless stations increase in your outdoor network department



Steady, Uninterrupted Streaming

EnJet provides steady maximum throughput over long distances. Ideal for Video & Voice transmission for strong, uninterrupted steaming with low latency.



Prioritize Your Important Data

Achieve the speed your network needs for its most critical applications. Voice transmissions are latency-intensive and slotted at a higher priority than video recordings. Both receive higher priority than HTML pages.

Improve wireless performance to outdoor areas and point-to-point by replacing your old wireless with new, advanced 11ac Wave 2 Technology.

Improved Signal Reliability

Beamforming Antenna technology directs and adjusts signal beams ensuring optimal signal and reception reliability for users moving through outdoor coverage areas.

Increased User Capacities

Multi-User (MU) MIMO sends dedicated wireless streams to multiple user devices at the same time, improving your network's efficiency.

Outdoor Access Points

Provide broad-reaching, fast 11ac Wave 2 access to users in a variety of settings. EnJet™ Outdoor APs are flexible and small enough for use in either indoor or outdoor environments. Achieve high-powered, long-range connections with integrated or detachable antenna options.

Create Wi-Fi Hot-Spots

The ENS500EXT-AC with EnGenius' sector antennas to create a powerful wireless base station with 120° sector-wide coverage. Offer high-capacity, long-range, point-to-multipoint coverage and create large Wi-Fi hotspots for:

- Outdoor Shopping Centers
- Warehouses & Arenas
- Campus Quads & Stadiums
- Campgrounds & Marinas
- Outdoor Theaters & Recreational Facilities
- Internet Service Provider

Outdoor Long-Range Bridges

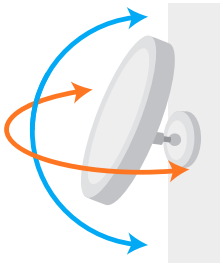
Extend the wireless network in locations where cabling is not possible or practical while eliminating the expense of extended cable runs. Connect a secondary device such as an IP surveillance camera or access point for greater deployment flexibility.

Deliver precise short and long-range point-to-point links in settings such as:

- Between Buildings
- Across Large Campuses & Stadiums
- Over Vast Acreage: Parks, Golf Courses, Ranches
- City Blocks, Parking Lots & Marinas
- In Sizeable Indoor Structures: Distribution Centers & Arenas

EnStation-AC & EnStation5-AC: Precise, Long-Range Point-to-Point Connectivity

The EnJet™ EnStation-AC & EnStation5-AC offers high 26 dBm output power and high receive sensitivity. This coupled with its embedded 19 dBi high-gain directional antennas that emit a narrow signal beam, deliver stable connectivity, optimal bandwidth and high-speed data rates over extremely long distances – up to 5 miles in clear, line of sight point-to-point deployments.

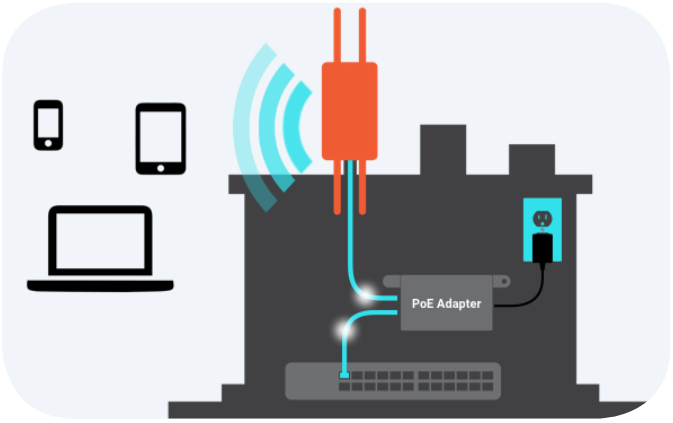


Position for Maximum Connectivity

Easily position EnStation5-AC/ EnStationAC for maximum connectivity with its 360-degree, 3-axis pivoting arm that locks in place to ensure precise alignment between other EnStation5-AC/EnStationAC devices.

PoE Supports Flexible Power Options

Connect and power EnJet™ Outdoor APs and Bridges via their dual-PoE Gigabit ports and included PoE Adapter for placement in locations where power outlets are unavailable such as on roofs, poles or other remote areas.



Flexible Operation & Configuration Options

Access Point, Client Bridge, and WDS mode configurations broaden the Outdoor APs and Bridge's adaptability to your network needs. With multiple operation modes, these flexible devices offer versatility in point-to-point or point-to-multipoint deployments.

Optimal Performance in Harsh Environments

EnJet™ Outdoor APs and Bridges are designed to perform in harsh conditions and feature ruggedized IP55-rated enclosures. Ensure your network operates in extreme outdoor climates and indoor industrial environments where temperature is a factor. EnJet™ is protected from prolonged exposure to sunlight, cold, frost, snow, rain, hail, heat and humidity.

EnSky Network Management Solution

The EnJet outdoor can operate as a stand-alone AP or as part of EnGenius Wireless Network Management Solution, locally managed by EnWiFi app, locally managed by EnGenius Switch (monitor only when EnJet™ enabled), centrally managed by SkyKey and ezMaster™ (monitor only when EnJet enabled). Users can get an overall view of their network or dive into the most granular data from anywhere via ezMaster or SkyKey..

Management via EnWiFi Mobile Application

Easily install, configure and manage EnStationAC with the intuitive EnWiFi mobile app. With EnWiFi app, you can easily configure a single or group of EnJet outdoor AP, view the status of your EnGenius wireless network at a glance, quickly identify healthy or offline EnJet outdoor devices.

Management via EnWiFi Mobile Application

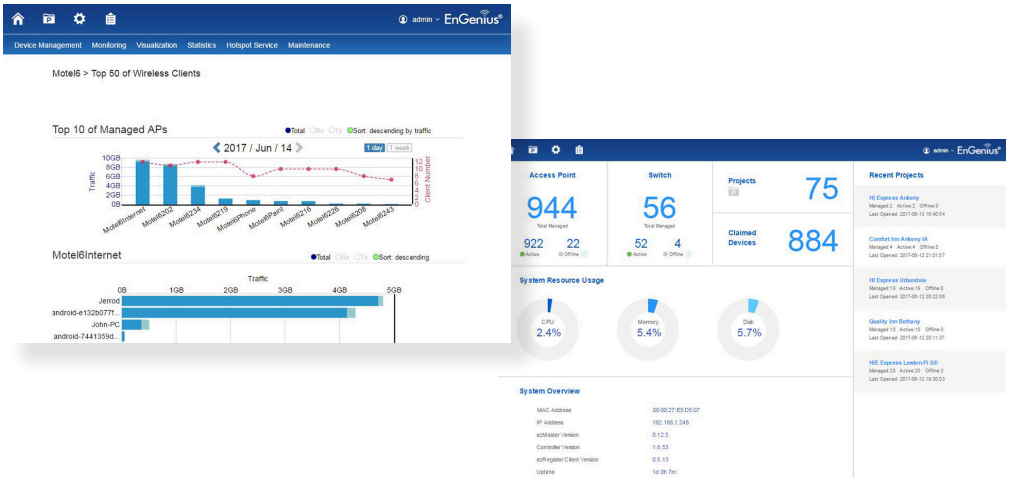
Any EnGenius Gigabit Managed Switch can manage up to 50 EnJet outdoor. Through the switch, gain access to all connected EnGenius APs and a full array of wireless and Layer 2 management tools. Choose between 8/24/48 Ports PoE+ switch models with flexible deployment and management options with no AP license or subscription fees.

Local & Remote Network Management via SkyKey Mini-Controller or ezMaster Software

The SkyKey mini-controller is an integrated computer with ezMaster Network Management Software. It features Qualcomm® Qual-Core processor with 1GB DRAM and 4GB eMMC flash. No need for a dedicated server or computer, simply connect the SkyKey to a PoE (802.3af) switch port and locally or remotely manage EnGenius Access Points and switches.

EnGenius ezMaster Software's simple, intuitive Web-based interface allows flexible access point monitoring locally or remotely. Quickly and easily set up, manage, monitor, and troubleshoot multiple APs at the same time. See real-time network performance and monitor AP traffic through ezMaster's at-a-glance dashboard.

ezMaster provides business-class features, unlimited scalability and centralized management of hundreds of EnGenius access points and switches locally, remotely or via a cloud-based service with no licensing or subscription fees.



ezMasterSoftware Features

- **Centralized Management**
  - Configure, Manage & Monitor
  - Cross-Network AP Management
  - AP Group Configuration
- **Access Point Configuration & Management**
  - Band Steering (Auto Band Steering & Band Balancing)
  - Client Isolation
  - Client Limiting
  - Fast Roaming
  - L2 Isolation
  - LED On/Off Control
  - Multiple SSID
  - RSSI Threshold
  - Secure Guest Network
  - Traffic Shaping
  - VLAN Isolation
  - VLAN Tag
- **Comprehensive Monitoring**
  - Device Status Monitoring
  - Floor Plan View
  - Map View
  - System Status Monitoring
  - Visual Topology View
  - Wireless Client Monitoring
  - Wireless Coverage View
  - Wireless Traffic & Usage Statistics
- **Management & Maintenance**
  - Bulk Firmware Upgrade
  - Email Alert
  - Kick/Ban Clients
  - One-Click Update
  - Remote Logging
  - Seamless Migration
  - Syslog

System Requirements

Recommended environment for managing up to 500 APs
CPU: Intel® Core™ i7 quad-core or above
RAM: 4 GB minimum
HDD: 500 GB (actual requirement dependent on log size)
OS: Microsoft® Windows® 7 or later + VMware® Player 7.0 or compatible virtualization software

Recommended environment for managing up to 1,000+ APs
CPU: Intel® Xeon® Processor E3 or above
RAM: 4 GB minimum
HDD: 500 GB (actual requirement dependent on log size)
OS: Microsoft® Windows® 7 or later + VMware® Player 7.0 or compatible virtualization software

Browser Requirements
Internet Explorer 10 or better
Firefox 34.0 or better
Chrome 31.0 or better
Safari 8.0 or better

Network Topology Requirements
At sites where APs are deployed: A DHCP-enabled network for APs to obtain an IP address

Access Point

Models	ENS500EXT-AC
Standard	802.11ac Wave 2
Frequency	5 GHz
Max. Data Rates	867 Mbps
Radio Chains/Streams	2 x 2:2
Transmit Power	26 dBm
Ethernet Ports	2x Gigabit PoE
Power-over-Ethernet	24V Propriety PoE
Power Consumption (Peak)	6.3W
Antennas	2 x 5 dBi Omni-Directional SMA-Type (Detachable)
Ingress Protection Rating	55

Bridges

Models	EnStationAC	EnStation5-AC	ENS500-AC
Standard	802.11ac Wave 2	802.11ac Wave 2	802.11ac Wave 2
Frequency	5 GHz	5 GHz	5 GHz
Max. Data Rates	867 Mbps	867 Mbps	867 Mbps
Streams	2 x 2:2	2 x 2:2	2 x 2:2
Transmit Power	26 dBm	26 dBm	26 dBm
Ethernet Ports	2x Gigabit PoE (Secondary PoE Pass Through Gigabit Port)	2x Gigabit PoE	2x Gigabit PoE
Power-over-Ethernet	802.3 at	24V Propriety PoE	24V Propriety PoE
Power Consumption (Peak)	8.3W	6.3W	6.3W
Antennas	19 dBi Directional (Integrated)	19 dBi Directional (Integrated)	14 dBi Directional (Integrated)
Ingress Protection Rating	55	55	55

Technical Specifications

Standards
IEEE802.11a/n/ac on 5 GHz

Processor
Qualcomm®

Antenna
EnStation5-AC
2 x 19 dBi Directional Integrated
EnStation5-AC
2 x 19 dBi Directional Integrated
ENS500EXT-AC
2 x 5 dBi Omni-Directional Detachable (SMA-Type)
ENS500-AC
2 x 14 dBi Directional Integrated

Physical Interface
2 x 10/100/1000 Gigabit Ethernet Ports
Reset Button

LED Indicators
ENS500EXT-AC/ENS500-AC
Power
LAN 1
LAN 2
WLAN
Signal
EnStation5-AC/EnStationAC
Power
WLAN
LAN

Power Source
Power-over-Ethernet: Proprietary 24V PoE
IEEE 802.11e Compliant Source
Active Ethernet (PoE)

Maximum Power Consumption
ENS500EXT-AC/ENS500-AC/EnStation5-AC 6.3W
EnStationAC 8.3W

Surge Protection
Line to Line: 1 KV
Line to Ground: 2 KV

ESD Protection
Contact: 4 KV
Air: 8 KV

Wireless & Radio Specifications
Operating Frequency
5 GHz

Operation Modes [EnJet Disable]
Access Point Mode (AP mode)
Client Bridge Mode (CB Mode)
WDS: WDS AP, WDS Bridge, WDS Station

Operation Modes [EnJet Enable]
Access Port Mode (AP Mode)
Client Bridge Mode (CB Mode)
WDS: WDS AP and WDS Station

Frequency Radio
5 GHz: 5180 MHz~5260 MHz, 5280 MHz~5320 MHz, 5500 MHz~5745 MHz, 5765 MHz~5805 MHz

Transmit Power
5 GHz: 26 dBm

Tx Beamforming (TxBF)

Radio Chains/Spatial Stream
2x2:2

SU-MIMO
Two (2) Spatial Stream SU-MIMO up to 867 Mbps to individual 2x2 VHT40 client devices

MU-MIMO
Two (2) Spatial Stream Multi User (MU) MIMO for up to 867 Mbps to two (2) MU-MIMO capable wireless devices simultaneously

Supported Data Rates (Mbps)
5 GHz: Max 867 Mbps
802.11a: 6, 9, 12, 18, 24, 36, 48, 54
802.11n: 6.5 to 300 Mbps (MCS0 to MCS15)
802.11ac: 6.5 to 867 Mbps (MCS0 to MCS9, NSS = 1 to 2)

Supported Radio Technologies
802.11a/n/ac: Orthogonal Frequency-Division Multiplexing (OFDM)
802.11n/ac: 2x2 MIMO With 2 Streams

Channelization
802.11ac Supports Very High Throughput (VHT)—VHT 20/40/80 MHz
802.11n Supports High Throughput (HT)—HT 20/40 MHz
802.11n/ac Packet Aggregation: AMPDU, ASPDU

Supported Modulation
802.11a/n: OFDM 16-QAM, 64-QAM
802.11ac: OFDM 16-QAM, 64-QAM, 256-QAM

Management
Multiple BSSID
Supports 8 SSIDs [EnJet Disable]
Supports 1 SSID [EnJet Enable]

VLAN Tagging
Supports 802.1q SSID-to-VLAN Tagging
Management VLAN
VLAN Pass-Through

Spanning Tree
Supports 802.1d Spanning Tree Protocol

QoS (Quality of Service)
Complaint With IEEE 802.11e Standard
WMM

SNMP
v1, v2c, v3

MIB
I/II, Private MIB

Management Features
Deployment Options
Stand-Alone (Individually Managed/EnWiFi App)
Managed Mode (w/ezMaster/EWS Series Switch/Skykey

Stand-Alone Management Features
Auto Channel Selection
Auto Transmit Power
Wireless STA (Client) Connected List
Guest Network (Support When EnJet Disabled)
Fast Roaming (802.11k & 802.11r)
Pre-Authentication (802.11i, 802.11x)
PMK Caching (802.11i)
RSSI Threshold
Traffic Shaping
VLANs for Access Point – Multiple SSIDs
Backup/Restore Settings
Auto Reboot
E-Mail Alert
Site Survey
Save Configuration as Users Default

Control Features
Operation Mode
Distance Control (ACK Timeout)
Multicast Supported
Wi-Fi Scheduler
Client Traffic Status
RADIUS Accounting
Power Save Mode (U-APSD Support)
CLI Support
HTTPS

Technical Specifications

Wireless Security

- WPA2 PSK & Enterprise (AES)
- Hide SSID in Beacons
- MAC Address Filtering, Up to 32 MACs per SSID
- Wireless STA (Client) Connected List
- SSH Tunnel
- Client Isolation

Wireless Management Features (w/ezMaster & EWS Switch) (Available in AP Mode) (Monitor When EnJet Enabled) (Support When EnJet Disabed)

- AP Auto Discovery and Provisioning
- AP Auto IP Assignment
- AP Group Management
- Auto AP Rebooting
- AP Device Name Editing
- AP Radio Settings
- Traffic Shaping
- Fast Roaming (802.11k & 802.11r)
- Pre-Authentication (802.11i, 802.11x)
- PMK Caching (802.11i)
- RSSI Threshold
- AP Client Limiting
- Client Fingerprinting
- AP VLAN Management
- VLANs for AP - Multiple SSIDs
- Secured Guest Network
- Access Point Status Monitoring
- Wireless Client Monitoring
- Email Alert
- Wireless Traffic & Usage Statistics
- Real-Time Throughput Monitoring
- Visual Topology View
- Floor Plan View
- Map View
- Wireless Coverage Display
- Secure Control Messaging (SSL Certificate)
- Local MAC Address Database
- Remote MAC Address Database (RADIUS)
- Unified Configuration Import/Export
- Bulk Firmware Upgrade Capability
- Intelligent Diagnostics
- Kick/Ban Clients
- Wi-Fi Scheduler

Temperature Range

- Operating: -4° F~140° F (-20° C~60° C)
- Storage: -22° F~176° F (-30° C~80° C)

Humidity (non-condensing)

- Operating: 90% or less
- Storage: 90% or less

Waterproof

- IP55-Rated Enclosure

Dimensions & Weights

ENS500EXT-AC/ENS500-AC

- Weight: 0.65 lbs. (0.29 kg)
- Width: 3.93" (100 mm)
- Length: 7.20" (185 mm)
- Height" 1.08" (27 mm)

EnStation5-AC/EnStationAC

- Weight: 1.11 lbs. (460 g)
- Depth: 7.48" (190 mm
- Height: 1.49" (38 mm)

Package Contents

ENS500EXT-AC

- ENS500EXT-AC Outdoor Access Point
- PoE Adapter (EPA2406GP)
- Pole-Mounting Brackets
- Wall-Mount Screw Set
- (2) 5 GHz 5 dBi SMA Antennas
- Power Cord
- Quick Installation Guide

ENS500-AC

- ENS500-AC Outdoor Bridge
- PoE Adapter (EPA2406GP)
- Pole-Mounting Brackets
- Wall-Mount Screw Set
- Power Cord
- Quick Installation Guide

EnStation5-AC

- EnStation5-AC Outdoor Wireless Bridge
- PoE Adapter (EPA2406GP)
- Pole-Mounting Brackets
- Wall-Mount Screw Set
- Power Cord
- Quick Installation Guide

EnStationAC

- EnStation5-AC Outdoor Wireless Bridge
- PoE Adapter (EPA5000GR)
- Pole-Mounting Brackets
- Wall-Mount Screw Set
- Power Cord
- Quick Installation Guide

Certifications

- FCC, CE

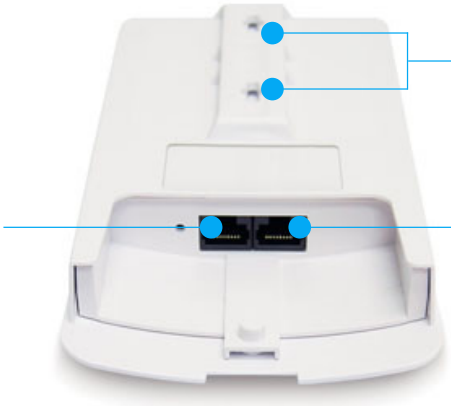
Warranty

- 1-Year Standard

ENS500EXT-AC Outdoor Access Point

Detachable Antenna
(SMA Type)

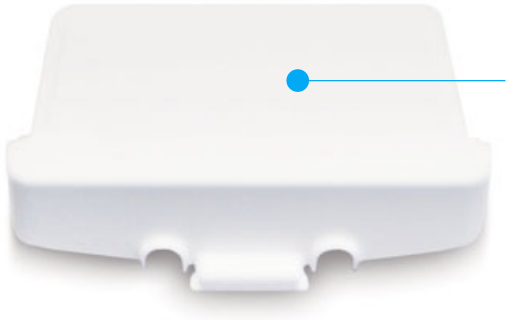
Top Cover
(UL Certified Plastic)



Mounting Holes

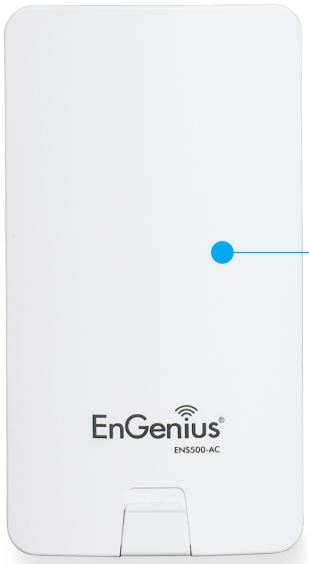
Gigabit
Ethernet Port

Gigabit Ethernet Port
(Proprietary 24V PoE
Input)

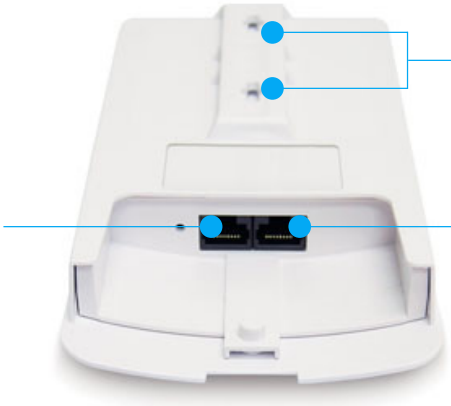


Cover

ENS500-AC Outdoor Bridge



Top Cover
(UL Certified Plastic)



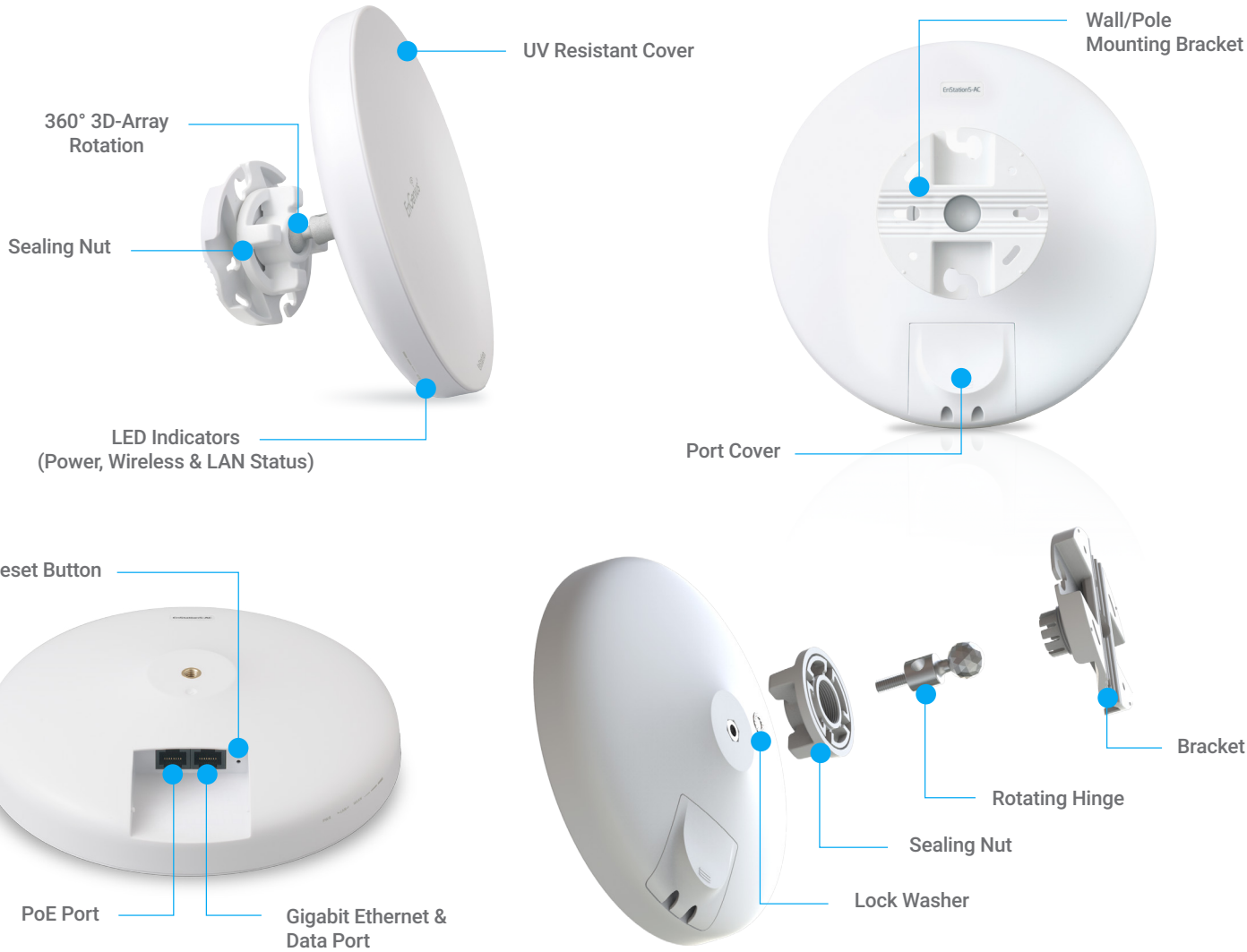
Mounting Holes

Gigabit
Ethernet Port

Gigabit Ethernet Port
(Proprietary 24V PoE
Input)

Cover

EnStation5-AC/EnStationAC Outdoor Bridge



Maximum data rates are based on IEEE 802.11 standards. Actual throughput and range may vary depending on distance between devices or traffic and bandwidth load in the network.

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