EnStation
The Solution for High-Speed, Long-Distance, Wireless Connectivity

2.4 GHz and 5 GHz Extreme Long-Range Outdoor Wireless Access Point/Client Bridge

The EnGenius EnStation is a family of Outdoor Access Point/Bridges designed to extend the wireless network over short and long distances and to substantially broaden wireless transmission ranges, delivering high bandwidth and wireless speeds in challenging, hard to reach point-to-point and point-to-multipoint installations.

EnStation is available in three models designed to meet various deployment needs: EnStationAC 11ac 5 GHz, EnStation5 N300 5 GHz and EnStation2 N300 2.4 GHz.

Features
• High-Gain Antennas Extend Wireless Networks Up-to 5-miles Point-to-Point
• 802.11ac Wireless Speeds to 867 Mbps; to 400 Mbps at ½ Mile (EnStationAC)
• 802.11n Wireless Speeds to 300 Mbps; to 90 Mbps at ½ Mile (EnStation5 & EnStation2)
• Optimal Bandwidth Supports Heavy Video Application Delivery Over Long Distances
• Point-to-Point & Point-to-Multipoint Connectivity Over Large Distances
• EnStationAC Features a Secondary 802.3af-Compliant PoE Port to Power Remote IP Cameras or APs
• 360-Degree 3-Axis Pivoting Arm Locks for Precise Alignment
• Focused Narrow Wireless Beam Reduces Frequency Interference for Long-Range Transmissions
• PoE Support & Included Injector Extends Power to Unwired Areas up to 328-ft./100m
• IP55-Rated Waterproof & Dustproof Casing Withstands Harsh Environments
• Flexible Deployment Modes Include: AP, Client Bridge or WDS Bridge
These enhanced power options allow the AP/CB and a secondary device to be deployed where power outlets are scarce or unavailable, such as under the eaves of roofs, high atop light poles or in other remote locations.

**EnStation5 & EnStation2**

The 5 GHz EnStation5 and the 2.4 GHz EnStation2 both reaching 802.11n wireless speeds up to 300 Mbps, and 90 Mbps speeds at ½ mile; creating a dependable wireless network over long distances.

**Going the Distance**

All EnStation models feature 26 dBm output power and high receive sensitivity, coupled with embedded high-gain directional antennas that emit a narrow signal beam to deliver stable robust 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.

EnStation extends the wireless network across large campus environments, over vast acreage in parks and recreational facilities, industrial, farming and ranching properties; in sizable indoor structures like arenas, shopping malls, warehouses and convention centers and in other challenging settings.

**EnStationAC**

Boasting 802.11ac wireless speeds to 867 Mbps, the 5 GHz EnStationAC offers dual-PoE Gigabit ports and a high-gain directional antenna that emits a narrow signal beam for limited interference, ensuring stable connectivity over extremely long distances, extending the network up to 5 miles point-to-point.

**Optimal Bandwidth, Wider Channel Range for Fast File Transfers & Smooth HD Video Streaming**

EnStationAC is engineered with a powerful independent RF interface that allows it to accommodate 4k Ultra High Definition (UHD) video and heavy multi-application traffic services, extending bandwidth over a wider channel range (20MHz, 40MHz and/or 80MHz), allowing network managers to fine tune channel usage based on their application needs.

**Connect and Power A Second Network Device for Greater Deployment Flexibility**

Offering greater flexibility in deployment, the EnStationAC features two Power-over-Ethernet (PoE) 802.3at-compliant Gigabit ports. Connect and power a second device such as a remote IP surveillance camera or Access Point and power both via the included passive 54v Gigabit PoE Adapter up to 328 feet.

EnStation is ideal for deployment in these venues:

- College Campuses
- Corporate Campuses
- Shopping Malls
- Resort Properties
- Parks & Campgrounds
- Military Bases
- Warehouse Operations
- Stadiums & Arenas
- Medical Centers
- Luxury Homes & Estates
- Farms & Ranches
- Docks & Marinas

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<table>
<thead>
<tr>
<th>Distance</th>
<th>Speeds (Mbps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 mile</td>
<td>EnStation2 to EnStation2 / EnStation5 to EnStation5: 90, 60, 30</td>
</tr>
<tr>
<td>1.5 mile</td>
<td>EnStation2 to EnStation2: 60; EnStation5 to EnStation5: 200, 100</td>
</tr>
<tr>
<td>3 mile</td>
<td>EnStationAC to EnStationAC: 50, 25</td>
</tr>
</tbody>
</table>

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**Flexibility in Deployment**

Configure EnStation to accommodate specific operation modes including **Access Point**, **Client Bridge** and **WDS Bridge** for Point-to-Point or Point-to-Multipoint deployments.

**Point-to-Point**
Connect two EnStations up to 5 miles

**Point-to-Multipoint**
Add on to an existing network using Client Bridge Mode

**Wireless Surveillance Scenario**
Connect an EnGenius IP Surveillance Camera to EnStation’s secondary Gigabit (EnStationAC) or Fast (EnStation5/2) Ethernet port and utilize its long-range connectivity to send surveillance video back through the wireless network for extended surveillance coverage. Tethering a series of EnGenius IP Cameras to the EnStation gives you “eyes on” places you might not otherwise see — no matter how far away, with significantly better results than traditional non-tethered wireless surveillance setups.

**Point-to-Point & Point-to-Multipoint Deployments**
Extended connectivity distances can be achieved when two EnStation units, of the same frequency band, are paired together in a Point-to-Point (PtP) or grouped with multiple units in a Point-to-Multipoint deployment. Aligning their respective dish-shaped antennas to directly face each other ensures each gets the full impact of the focused narrow wireless single beam, further reducing frequency interference over long-ranges.
Install Virtually Anywhere

With enhanced power options, EnStation supports Power-over-Ethernet extending power up to 328 feet (100 m) away from a power outlet to EnStation’s mounting location, such as high atop rooftops, poles, rafters or other remote locations via its PoE Adapter or a compatible PoE Switch.

Extreme Distances Even in Extreme Weather

EnStation is designed to perform, even in harsh environments. Its IP55-rated waterproof and dustproof casing ensures it can withstand harsh outdoor climates and indoor industrial environments. This includes prolonged exposure outdoors to sunlight, extreme cold, frost, snow, rain, hail, heat and humidity, and indoors where temperature may be a factor.

Position for Maximum Connectivity

A 360-degree, 3-axis pivoting arm locks in place for precise alignment with a matching EnStation unit in point-to-point scenarios. EnStation is easily mounted to a variety of surfaces or poles with the included mounting kits.

Control, Monitor & Configure

With EnGenius’ EZ Controller™ Software, EnStation units that are deployed on rooftops or in other difficult to access locations can be reconfigured to different operational modes and upgraded remotely without manually connecting to them onsite.
**EnGenius EnStation**

<table>
<thead>
<tr>
<th>Models</th>
<th>EnStationAC</th>
<th>EnStation5</th>
<th>EnStation2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standards</td>
<td>802.11a/n/ac</td>
<td>802.11a/n</td>
<td>802.11b/g/n</td>
</tr>
<tr>
<td>Frequency</td>
<td>5 GHz</td>
<td>5 GHz</td>
<td>2.4 GHz</td>
</tr>
<tr>
<td>Max. Data Rate</td>
<td>Up to 867 Mbps</td>
<td>Up to 300 Mbps</td>
<td>Up to 300 Mbps</td>
</tr>
<tr>
<td>Radio Chains/Streams</td>
<td>2 x 2:2</td>
<td>2 x 2:2</td>
<td>2 x 2:2</td>
</tr>
<tr>
<td>RF Output Power</td>
<td>26 dBm</td>
<td>26 dBm</td>
<td>26 dBm</td>
</tr>
<tr>
<td>Primary Ethernet Port</td>
<td>1 x Gigabit Port (PoE Input)</td>
<td>1 x Fast Ethernet Port</td>
<td>1 x Fast Ethernet Port</td>
</tr>
<tr>
<td>Secondary Gigabit Port</td>
<td>1 x Gigabit Port (PoE Output)</td>
<td>1 x Fast Ethernet Port</td>
<td>1 x Fast Ethernet Port</td>
</tr>
<tr>
<td>Power-over-Ethernet</td>
<td>802.3at (in)/802.3af (out)</td>
<td>Proprietary</td>
<td>Proprietary</td>
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<tr>
<td>Power Consumption (Peak)</td>
<td>23.4W</td>
<td>7W</td>
<td>7.2W</td>
</tr>
<tr>
<td>Integrated Antenna</td>
<td>19 dBi</td>
<td>19 dBi</td>
<td>13 dBi</td>
</tr>
<tr>
<td>Ingress Protection Rating</td>
<td>55</td>
<td>55</td>
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**Internal Antenna Specifications**

<table>
<thead>
<tr>
<th>Models</th>
<th>EnStationAC</th>
<th>EnStation5</th>
<th>EnStation2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenna</td>
<td>5 GHz (P1)</td>
<td>5 GHz (P1)</td>
<td>5 GHz (P1)</td>
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<tr>
<td>Antenna Gain</td>
<td>19 dBi</td>
<td>19 dBi</td>
<td>13 dBi</td>
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<tr>
<td>Polarization</td>
<td>Linear</td>
<td>Linear</td>
<td>Linear</td>
</tr>
<tr>
<td>Azimuth Beam-Width</td>
<td>30°</td>
<td>18°</td>
<td>67°</td>
</tr>
<tr>
<td>Elevation Beam-Width</td>
<td>18°</td>
<td>30°</td>
<td>33°</td>
</tr>
<tr>
<td>VSWR</td>
<td>1.2.0</td>
<td>1.2.0</td>
<td>1.2.0</td>
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<tr>
<td>Dimension</td>
<td>7.38”x7.38”x1.50”</td>
<td>7.38”x7.38”x1.50”</td>
<td>7.38”x7.38”x1.50”</td>
</tr>
</tbody>
</table>
Outdoor AP/Bridge

- UV Resistant Cover
- Wall / Pole Mounting Bracket
- 360° 3D-Array Rotation
- Sealing Nut
- LED Indicators (Power, Wireless & LAN Status)
- Port Cover
- Reset Button
- PoE Port
- Ethernet & Data Port (PoE-Pass Through Only EnStationAC)
- EPA5006GP Gigabit PoE Adapter (EnStationAC)
- EPA2406GP Gigabit PoR Adapter (EnStation5 & EnStation2)
- Power LED
- Power Connector
- PoE Port
- Ethernet Data Port
- Bracket
- Rotating Hinge
- Sealing Nut
- Lock Washer
Technical Specifications

Standards
EnStationAC: IEEE 802.11a/n/ac
EnStation5: IEEE 802.11a/n
EnStation2: IEEE 802.11b/g/n

Data Rates
EnStationAC: Up to 867 Mbps on 5 GHz
EnStation5: Up to 300 Mbps on 5 GHz
EnStation2: Up to 300 Mbps on 2.4 GHz

Internal Antennas
EnStationAC / EnStation5
(1) 19 dBi 5 GHz High-Gain Directional
EnStation2
(1) 13 dBi 2.4 GHz High-Gain Directional

Physical Interface
EnStationAC
(1) 10/100/1000 Mbps Port supports 802.3at/Proprietary 48V-54V PoE Input
(1) 10/100/1000 Mbps Port supports 802.3af PSE Output
EnStation5 / EnStation2
(1) 10/100 Mbps Port supports Proprietary 24V PoE Input
(1) 10/100 Mbps Port supports extension of an Internet signal

LED Indicators
1 x Power
1 x LAN 1
1 x LAN 2
1 x WLAN

Reset Button
Power
Power Source (PoE Adapter):
EnStationAC
802.3at/48V-54V Proprietary Compliant Source
Active Ethernet (Power-over-Ethernet, PoE+)
EnStation5 / EnStation2
24V/6A Proprietary Compliant Source
Active Ethernet (Power-over-Ethernet, PoE)

Power Consumption
EnStationAC: 23.4W
EnStation5: 7W
EnStation2: 7.2W

Wireless & Radio Specifications
Operating Frequency
EnStationAC / EnStation5: 5 GHz
EnStation2: 2.4 GHz

Operation Modes
Access Point
Client Bridge
WDS Mode

Transmit Power
Up to 26 dBm
Up to 400 mW
Max Power is limited by regulatory power

Radio I
EnStationAC: 11a/n/ac: 5.180-5.825 GHz
EnStation5: 11a/n: 5.180-5.825 GHz
EnStation2: 11b/g/n: 2.412-2.472 GHz

Radio Chains/Spatial Streams
2x2:2 MIMO

Supported Data Rates (Mbps)
EnStationAC
802.11a: 6, 9, 12, 18, 36, 48, 54
802.11n: 6.5~300 (MCS0 to MCS15)
802.11ac: 6.5~866 (MCS0 to MCS9)

EnStation5
802.11a: 6, 9, 12, 18, 36, 48, 54
802.11n: 6.5~300 (MCS0 to MCS15)

EnStation2
802.11b: 1, 2, 5.5, 11
802.11g: 6, 9, 12, 18, 36, 48, 54
802.11n: 6.5~300 (MCS0 to MCS15)

Supported Radio Technologies
EnStationAC
802.11a/n/ac: Orthogonal Frequency-Division Multiplexing (OFDM)
EnStation5
802.11a/n: Orthogonal Frequency-Division Multiplexing (OFDM)
EnStation2
802.11b: Direct-Sequence Spread-Spectrum (DSSS)
802.11n: Orthogonal Frequency-Division Multiplexing (OFDM)

Channelization
EnStationAC
802.11ac with 20/40/80 MHz Channel Width
802.11n with 20 MHz Channel Width
EnStation5
802.11n with 5/10/20/40 MHz Channel Width
802.11a with 20 MHz Channel Width
EnStation2
802.11n with 5/10/20/40 MHz Channel Width
802.11b/g with 5/10/20 MHz Channel Width

Supported Modulation
EnStationAC
802.11a/n/ac: BPSK, QPSK, 64-QAM, 802.11e QAM & 256-QAM
EnStation5
802.11a/n: BPSK, QPSK, 64-QAM
EnStation2
80.11b: BPSK QPSK, CCK
802.11n: BPSK, QPSK, 64-QAM, 802.11e QAM & 256-QAM

Management
Auto Channel Selection
Multiple SSIDs: 8 SSIDS
BSSID Support
VLAN Tagging - Independent VLAN settings can be enabled/disabled
VLAN Pass-through - Over WDS Bridge Mode
VLAN Per SSID - Isolate each SSID with Individual VLAN
Wireless STA (Client) Connection List
Email Alert
Client Traffic Status

Configuration
Web Interface (HTTPS)
SSH
SNMP V1/v2c/v3 Support
MIB I/II, Private MIB
CLI Support
Save Configurations as Default

Control Features
RADIUS Accounting - Helps operators to offload 3G to Wi-Fi seamlessly
CLI Comments Support
Distance Control (Ack Timeout)
Multicast Supported
RSSI Threshold
Wi-Fi Scheduler

Security
WEP Encryption: 64/128/152 bit
WPA/WPA2 Personal (WPA-EAP using TKIP AES)
WPA/WPA2 Enterprise (WPA-EAP using TKIP AES)
Hide SSID in Beacons
MAC Address Filtering (Up to 32 MAC addresses per SSID)
802.1x Authenticator

QoS
Compliant with IEEE 802.11e Standard
### Technical Specifications continued

<table>
<thead>
<tr>
<th>Environmental &amp; Physical</th>
<th>Packaging</th>
<th>Certifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature Range</strong></td>
<td>Weight: 2.29 lbs. (1.04 kg)</td>
<td>FCC, CE</td>
</tr>
<tr>
<td>Operating: -4 °F to 140 °F (-20 °C to 60 °C)</td>
<td>Width: 9.72” (247 mm)</td>
<td></td>
</tr>
<tr>
<td>Storage: -22 °F to 176 °F (-30 °C to 80 °C)</td>
<td>Length: 12.63” (321 mm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Height: 3.46” (88 mm)</td>
<td></td>
</tr>
<tr>
<td><strong>Humidity (non-condensing)</strong></td>
<td>Package Contents</td>
<td>Warranty:</td>
</tr>
<tr>
<td>Operating: 90% or less</td>
<td>• EnStation Outdoor CPE</td>
<td>1 Year</td>
</tr>
<tr>
<td>Storage: 90% or less</td>
<td>• Pole/Wall Mounting Kit</td>
<td></td>
</tr>
<tr>
<td><strong>Waterproof</strong></td>
<td>• Mounting Screw Set</td>
<td></td>
</tr>
<tr>
<td>IP55-Rated Enclosure</td>
<td>• Quick Installation Guide</td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions &amp; Weights:</strong></td>
<td>• PoE Adapter (EPA5006GP)</td>
<td></td>
</tr>
<tr>
<td>EnStation Device (Without Mounting Kit)</td>
<td><strong>Certifications</strong></td>
<td><strong>Warranty:</strong></td>
</tr>
<tr>
<td>Weight: 1.01 lbs. (460 g)</td>
<td>FCC, CE</td>
<td>1 Year</td>
</tr>
<tr>
<td>Depth: 7.48” (190 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height: 1.50” (38 mm)</td>
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</tbody>
</table>
EnStation5 Antenna Radiation Patterns

Port 1: E-Plane

Port 1: H-Plane

Port 2: E-Plane

Port 2: H-Plane
EnStation2 Antenna Radiation Patterns

Port 1: E-Plane

Port 1: H-Plane

Port 2: E-Plane

Port 2: H-Plane

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. Compliant with FCC - This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.