Delivers a Unique Mixture of Reliability, Redundancy, and Throughput
Go Wireless, Stay Connected

Today's industrial applications demand overall reliability for high network availability. Designed for industries, Moxa offers standards-based wireless products with an innovative combination of reliability, redundancy, and throughput for secure wireless LANs.

Support of 802.11n allows the reliable real-time delivery of video, voice, and data. Multi-redundant links guarantee that WLAN networks will always be in service, and fast secure roaming ensures seamless connectivity during mobility. Outdoor-rated features provide unparalleled reliability under extreme conditions, allowing you to extend your network wherever it is required. Application examples include shipyards, mining, onshore drilling, wind turbines, and rolling stock.

IEEE 802.11n Network

WLAN networks must now shoulder the burden of increasingly bandwidth-heavy applications, such as video streaming. Even as data traffic at the local level remains manageable, bandwidth bottlenecks may be generated from congested uplinks. Moxa's 802.11n solutions use MIMO (Multiple Input/Multiple Output) to overcome multipath interference and 40 MHz channels to achieve higher data rates. This creates WLAN networks with improved throughput, coverage, and reliability. Backward compatibility with 802.11a/b/g allows users to migrate securely to 802.11n networks.

50 ms Turbo Roaming

Reduced handoff time with security is essential to today's wireless LANs. Moxa's breakthrough wireless roaming greatly shrinks roaming time down to 50 ms, overcoming the connectivity gaps that plague latency-sensitive applications. Perfect for mobile WLAN scenarios such as steel plant networks, the client used in the ladle transfer car uses Turbo Roaming to move between different APs with low-latency handoff across the entire coverage area. A wireless controller with WPA2 is supported by the AWK-4121/3121 to build highly secure and large-scale wireless LANs. Benefits of Turbo Roaming include higher transfer rate, dependable remote monitoring and alerts, and resilience in extreme mobile environments.
Data integrity and network reliability are paramount concerns in mission-critical industrial wireless applications. Moxa offers an industry-leading wireless redundancy solution that features dual independent RF modules with 2.4 or 5 GHz dual-band operation to ensure interference-free and constant communications. In the above application, Moxa’s advanced WLAN redundancy using redundant dual-RF design works with Ethernet redundancy, such as RSTP, to achieve a complete redundant network that allows for maximum availability and reliability of the entire communications network.

Industrial environments are rife with hazards such as water, dust, EMI/noise, and temperature extremes. To rise to these challenges, Moxa’s outdoor AWK wireless devices are ruggedized with IP68-rated housing and an extended temperature design. The AWK series meets or exceeds a number of industry standards, such as EN50155 and EN50121-1/-4 for railway, EN61000-6-4/61000-6-2 for heavy industries, and UL C1D2 and ATEX Zone 2 for oil and gas. With this suite of industrially-hardened features, the AWK is a firm foundation for rock-solid WLANs that operate reliably and safely in critical environments.
Absolutely Reliable Wireless Networks

In critical industrial wireless applications, the level of availability and reliability is extremely important. The EMI/RFI normally found in an industrial environment may cause signal errors or data loss during transmissions, with interference usually occurring at a specific frequency.

In response, Moxa’s next generation dual-RF modules, the AWK-5222 and AWK-6222, can be configured to operate as redundant access points or redundant clients, and come with dual-band operations to allow the simultaneous use of two distinct channels to prevent transmission interference. In addition, Moxa’s WLAN devices can incorporate Ethernet redundancy using RSTP and power redundancy using dual DC power inputs and PoE. With multiple redundant mechanisms, you can be sure that your entire network will always be in service.

Dual RF Wireless Redundancy

Redundant Roaming for Fast and Stable Handoff

With the perfect mix of Turbo Roaming and dual-RF redundancy technologies, the AWK-5222 and AWK-6222 allow fast stable handoff for roaming clients during transitions between access points. The dual-RF client will start roaming as soon as it detects a weakening AP signal. Moxa’s innovative redundant roaming is your best choice for latency-sensitive applications.

Outdoor Rating Extends Wireless Range

The outdoor rated AWK-6222 offers a new perspective for wireless signal transmission in tough outdoor areas. The AWK-6222 comes with an IP68 housing and an extended temperature design for total protection against dust, water, temperature variations, and other environmental factors. Outdoor power distribution has never been easier. 802.3af PoE support simplifies the installation of field devices. These features create rock-solid WLANs and extend the reach of your wireless network.

Certifications

• Rolling Stock: EN50155/50121-3-2
• Trackside: EN50121-1/50121-4
• Heavy industry: EN61000-6-4/61000-6-2
Reliable, Versatile, and Flexible Dual-RF Design

Optimize WLAN Network Architecture

Moxa’s dual-RF solution provides a variety of advanced wireless connection modes that can optimize wireless coverage for flexible WLAN network architectures.

- **Redundant wireless connection mode**
- **AP-Client connection mode**
- **Bridge mode**

### Efficient Data Traffic Management
- Up to 20 Mbps data throughput
- QoS (WMM) to prioritize delay-sensitive traffic
- VLAN for network segmentation
- Redundant fail-safe connections
IEEE 802.11n Networks

Proven 802.11n Ensures Reliable Voice and Video Streams

- Increase effective throughput
- Extend wireless coverage
- Create reliable networks
- Interoperate with 802.11a/b/g

More Speed, More Data, More Advanced Applications

As the next-generation wireless applications emerge, such as real-time voice and video streaming, more bandwidths and reliability will be required. 802.11n addressed these challenges by providing higher data rates and more robust links when compared to legacy networks. There is no reason not to begin installing a new 802.11n WLAN or migrating an existing WLAN to support 802.11n.

New Performance with Backwards Compatibility and Future-proof Standards

To meet the growing needs of bandwidth-greedy applications, Moxa’s AWK-3131 and AWK-4131 3-in-1 AP/bridge/client devices support 802.11n with a maximum bandwidth of 300 Mbps. 802.11n can operate on either the 2.4 or 5 GHz bands and is backwards-compatible with existing 802.11a/b/g deployments to future-proof your wireless investments.

Moxa’s 802.11n products deliver blazing speeds, vast wireless coverage, and robust connections by using MIMO (Multiple Input, Multiple Output) and channel bonding/40 MHz operation in the physical (PHY) layer. It also adds frame aggregation at the MAC layer. This combined approach will be required to reliably satisfy the higher throughput demands of next-generation applications. To maximize wireless to wired performance, Gigabit Ethernet connectivity is supported to handle applications that require a large amount of bandwidth.

802.11 specifications

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<tr>
<th>Standard</th>
<th>IEEE 802.11b</th>
<th>IEEE 802.11a</th>
<th>IEEE 802.11g</th>
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</table>

High Speed Throughput

- WLAN standards: IEEE 802.11a/b/g/n
- Data rate of up to 300 Mbps
- MIMO increases data throughput and range
- Channel bonding/40 MHz transmits more data
- One RJ45/SFP Gigabit combo port

Seamless Handoff

- Turbo Roaming for seamless connectivity during handoffs

Advanced Security

- Robust security with WEP/WPA/WPA2/802.11X

Industrial Hardened

- Dual 12-48 VDC power inputs and PoE
- -40 to 75°C operating temperature range
- Outdoor IP68-rated housing (AWK-4131)
- Long-distance wireless transmission over 10 km

<< Product Spotlight >>

Outdoor

AWK-4131 802.11n Outdoor AP/Bridge/Client

Indoor

AWK-3131 802.11n Indoor AP/Bridge/Client
Migrating to 802.11n

Increases Throughput, Range, and Link Robustness in 802.11 Networks

Wireless networks face some challenges, including limited availability of the RF spectrum and transmission problems caused by factors such as fading and multipath. To solve these issues, Moxa introduces an 802.11n portfolio that includes many innovative features to provide higher bandwidth, less interference and reliable connections.

Key Techniques Used by 802.11n to Improve Speed and Reliability

**MIMO Technology**

The key technique behind enhanced PHY data rates in 802.11n networks, Multiple Input Multiple Output (MIMO) refers to a link where the transmitting end and the receiving end are both equipped with multiple antennas. Radio signals reflect off objects, creating multiple paths. In conventional radios this causes interference and fading, but MIMO leverages the multipath phenomenon. On the transmission side, MIMO uses spatial multiplexing to send multiple parallel data streams simultaneously in the same channel, thereby increasing the data rate and transmission power. On the receiving end, MIMO allows multiple signals to be combined into a single signal, eliminating the effects of multipath fading. MIMO actually takes advantage of radio reflection to improve wireless range and reliability.

**Channel Bonding/40 MHz**

The amount of data that can be delivered relies on the channel width used in data transmission. By bonding two or more channels together, more bandwidth is available for data transfer. 802.11n uses channel bonding to combine two adjacent 20 MHz channels into a single 40 MHz channel in both 2.4 and 5 GHz bands. This provides increased channel width to transmit more data.

**Frame Aggregation**

Every frame transmitted by an 802.11 device has fixed overhead that limits the effective throughput. To reduce this overhead, 802.11n introduces frame aggregation, which is the process of packing multiple frames in a single transmission. With this mechanism, instead of several sets of overhead for different frames, only one set of overhead will be used, which greatly reduces the average delay and increases the throughput performance of the 802.11 WLAN.

Application

- **Optimizes Video over 802.11n WLAN**

  For train video surveillance, if each carriage has six cameras installed, and each camera runs in full D1 with a 2 Mbps data rate, then just two carriers will need a total data rate of 24 Mbps. This poses obvious challenges for 802.11a/b/g networks with only up to 20 Mbps of throughput.

  Moxa offers 802.11n products with up to 120 Mbps throughput that can deliver demanding video streaming applications on trains. Additionally, MIMO technology and frame aggregation can transmit superior quality video streams. MIMO enables higher bandwidth, reduced interference and enhanced connectivity while frame aggregation ensures content is combined to support streaming video.
50 ms Turbo Roaming Empowers Real-time Communications

- Enable fast secure roaming
- Offer secure pre-authentication
- Prioritize real-time traffic with QoS
- Support a large-scale WLAN deployment

Designed for Latency-sensitive Traffic over WLAN

The goal of zero-latency-roaming is to create clients that can maintain communications seamlessly as they move from one access point to another. With the emergence of latency-sensitive real-time streaming applications such as voice over WLAN, fast and secure handoffs with minimal connectivity loss become more crucial.

Moxa has introduced next generation Turbo Roaming technology with the WAC-1001 Wireless Controller for the AWK series. This advanced roaming capability delivers high-speed secure handoffs. Wireless clients can roam between Moxa AWK access points in under 50 milliseconds while preserving robust security in extremely demanding environments.

Advanced Controller-managed Roaming

In a basic roaming system, the client is responsible for the handovers. When the client detects that the connection to the current AP is degraded, it starts to seek an alternative AP to roam on to. A more advanced system can shrink handover times by minimizing the time spent on searching for APs, re-association, and re-authentication. The WAC-1001 wireless controller is designed to help the client collaborate with APs and efficiently monitor RF signal intensity to speed up roaming decisions.

Fast Secure Roaming with the Wireless Controller

The WAC-1001 supports a high level of proactive authentication and encryption to ensure your network stays securely connected. To realize smooth handoffs, the wireless client can be pre-authenticated by the wireless controller to allow seamless roaming without re-authentication. This mechanism significantly reduces authentication latency during re-association and thus greatly enhances the speed and reliability of roaming connectivity for delay-sensitive real-time applications.

Build a Secure Large-scale Wireless LAN

The WAC-1001 wireless controller is usually located at either the on-site cabinet or the control center, to which hundreds of associated APs on the network are directly or indirectly connected. In addition, The WAC-1001 provides configuration back-up and redundant power to ensure maximum availability. This unique combination of capabilities makes Moxa WLAN solutions well suited for large-scale WLAN deployments.

<< Product Spotlight >>

WAC-1001 Wireless Controller

- Advanced Security
  - 64-bit and 128-bit WEP
  - Powerful filters for access control
  - IEEE802.11X/RADIUS supported
  - WPA/WPA2/802.11i supported

- Maximum Availability
  - Configuration back-up
  - Dual redundant DC power inputs

- Fast Handoff Approach
  - Support pre-authentication technology

- Industrially Hardened
  - IP68-rated protection (AWK-4121)
  - Dual power inputs and PoE for redundancy
  - Up to 10 km data transmission
  - -40 to 75°C operating temperature

- Efficient Network Traffic
  - QoS (WMM) to prioritize time-sensitive data
  - VLAN for network segment

- Certifications
  - UL C1D2/ATEX Zone 2 for hazardous areas
  - EN50155 for rolling stock
  - EN50121-1/50121-4 for tracksid
Zero Roaming Latency without Compromising Security

Real-time delay-sensitive applications grow more popular by the day, so it is critical to reduce the handoff delay when a wireless client moves from one AP to another. The time spent in handoff is consumed by many processes, including association, authentication, and encryption. Typically, these processes take between a few hundred milliseconds up to several seconds, which is long enough to severely compromise critical real-time applications. This problem only becomes more acute if the client is highly mobile and must change APs frequently.

Enable Secure Pre-authentication by the Wireless Controller

To overcome slow handoff, advanced Turbo Roaming technology performs seamless roaming using pre-authentication technology that helps reduce the delay time down to 50 ms with minimal data loss for reliable real-time communications during handover. To achieve secure pre-authentication, the WLAN needs to establish a proactive security association enabled by the WAC-1001 wireless controller with the authenticated client within the same WLAN. This efficient centralized authentication and management approach makes your WLAN robust enough to support real-time data traffic.

### Application

- **Voice over WLAN Roaming**

  VoIP is evolving to meet specific needs, such as warehouse tracking and mobile security applications. However, there are still a set of inherent challenges to face when preparing to roll out voice over WLAN. The major difference between VoIP applications and data applications is the sensitivity to transmission latency. Data applications are less sensitive to transmission delay. A few seconds of delay in receiving a data file is typically acceptable. On the contrary, a latency of tens of milliseconds in a voice call is normally intolerable.

  Roaming between APs inevitably involves latency. For VoIP, this latency should be about 50 milliseconds to prevent that dropped connections or voice quality degradation. Roaming latency is mainly due to re-association, and re-authentication.

  Given by the above challenges, Moxa introduces advanced roaming technology enabled by the WAC-1001 to reduce latency to acceptable levels. This new technology provides a proactive authentication and encryption mechanism, so that the security can be seamlessly maintained. In addition, seamless roaming with a latency of less than 50 ms is achieved to provide quality voice over WLAN. Since VoIP is extremely sensitive to delay, QoS (WMM) is supported to ensure that there is sufficient capacity to prioritize real-time voice traffic.
Case Study | Industry: Railway and Rolling Stock

At a Glance

Region: Asia, Americas
Customer Needs:
Fast roaming and high-speed throughput

Moxa’s Advantages:
- AP-client mode for inter-carriage link
- 802.11n compliant for on-demand video
- EN50155 compliant

Overview

Wireless LANs have become an increasingly attractive choice for intra-carriage and train-to-ground networks because they lower maintenance costs while still enhancing reliability and bandwidth. In these networks, industrial-grade WLANs are responsible for on-board video surveillance, passenger information systems, and train control, which are important components in ATO (Automatic Train Operations).

In this application, the single-RF AWK-3121 is used in the first and last carriages as a client to access the IP cameras. The dual-RF AWK-5222 is used in the other carriages, and can be configured in AP-client connection mode to provide inter-carriage links. The dual RF operation is a great way to withstand interference in complex RF environments.

To meet high-speed bandwidth demands, the 802.11n AWK-3131 is used as a client in the central carriage, and the 802.11n AWK-4131 is used as an AP outside the station. This 802.11n architecture delivers enough bandwidth for the real-time VoIP and video surveillance. Faster roaming delivers seamless train-to-ground data communications while the AWK-3131 client on the train is in motion.

Application Requirements
- Fast roaming for seamless train-to-ground connectivity
- Flexible carriage changes and low maintenance
- Reliable real-time passenger infotainment systems
- High throughput for real-time VoIP system and video surveillance
- Withstands harsh onboard conditions

Moxa Solutions
- Dual-RF design can be configured in AP-client connection mode
- Multiple SSID support for separate user groups
- Turbo Roaming for seamless mobility
- 802.11n compliant for demanding video streaming
- Meets EN50155 standards for rolling stock applications

Onboard and Train-ground Architecture

On-train Solutions
AWK-5222
Dual-RF modules for AP-client connection mode
AWK-3121
Client to access the camera

Train-to-Ground Solutions
AWK-4131
802.11n Outdoor AP
AWK-3131
802.11n Indoor Client

<< Supporting Products >>
Industry: Oil and Gas

Enhance Oil Well Productivity and Safety with Industrial WLAN

At a Glance
Region: USA, China
Customer Needs:
Wide-ranging wireless distribution system and real-time connectivity from oil well to remote control center

Moxa’s Advantages:
• Bridge mode network
• Dual RF design
• Rugged outdoor design

Overview
Oil wells are a particularly challenging deployment environment because they are typically unmanned, remotely operated, and scattered across a vast area. A reliable wireless remote control system can be used to telemetrically connect oil platforms from the wellheads and separator stations to the central control center. Moxa’s WLAN products are ideal solutions that empower efficient, consistent, and high quality daily well drilling operations.

For every drilling platform, one AWK-3121 is installed as a client to access the CPE device. All drilling condition data is transmitted to an AP, the AWK-4121. In addition, one dual-RF AWK-6222 is placed in this oil drilling platform. The dual RF solution can form a master-slave bridge mode to link other drilling platforms that creates wireless network coverage over the entire oil plant. The additional of a special 4.9 GHz channel is particularly helpful in preventing radio interference. Designed with reliability in mind, Moxa’s WLAN products have IP68-rated housing and ATEX directive-compliance to operate in hazardous locations.

Application Requirements
• A widely distributed WLAN network is required to inter-link many oil drills over distances of 300 km
• Data transmission: Distance between oil drills is from 500 m to 10 km
• Wireless access range with overlap to secure signal access
• Interference proof: special RF for less interferences
• WiFi access to CPE management

Moxa Solutions
• 802.11a/b/g Wireless AP/bridge/client in one device
• Dual RF design
  - Wireless bridge connections can be set with dual RF AP to connect oil drills over 300 km
  - 2.4 and/or 5 GHz RF bands
• Tailor-made RF band services
• Industrially hardened: IP68 rated housing, -40 to 75˚C and up to 10 km data transmission
• Antenna connections: omni-directional and directional options
• UL C1D2 and ATEX Zone 2 compliant

Onshore Wellhead Distributed Network Architecture

< [Supporting Products] >

Bridge Mode Networks
AWK-6222
Dual-RF Outdoor AP

AP on the Oil Well
AWK-4121
Single RF Outdoor AP

Client to Link the Well Drilling CPE
AWK-3121
Single-RF Client
Extend your Wireless Range and Performance

Moxa’s Antenna series is specially designed for outdoor wireless networking under extreme conditions. Using the right antenna system can greatly enhance transmission coverage and power. Therefore, knowing which antenna to use and where to place it is crucial to optimize the overall performance of a Moxa wireless LAN.

2.4 GHz Frequency Antennas

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5 GHz Frequency Antennas

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2.4/5 GHz Dual-band Antennas

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Optimize Overall WLAN Performance with the Right Antenna

- Extend effective range
- Increase data throughput
- Improve signal quality
- Extend to outdoor use

Use Moxa’s Online WLAN Distance Calculator to Pick the Perfect Antenna

Moxa’s wireless antennas improve effective wireless reach and overall performance. Use Moxa’s Online WLAN distance calculator to choose the perfect antenna for the specific requirements of your project.
Get a Perfect Fit for your Long-distance Application

Before you expand a wireless LAN network, verify if your wireless equipment can achieve the necessary transmission distance. Several variables affect transmission distance, particularly the combination of wireless device transmission power and antenna gain.

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**Signal Power**

**Determine Total Transmission Power of Your System**

**Transmission Power**

In essence, the distance from the transmitting antenna determines how much energy an antenna intercepts. This loss of signal strength due to increased distance is known as path attenuation and is expressed in decibels or dB. Please refer to the “TX Transmit Power” of AWK series products on the Moxa website.

**Antenna Gain**

Moxa offers a variety of antennas in the 2.4 GHz and 5 GHz frequency bands for use with both access points and bridges, with each antenna providing different coverage capabilities. Higher gain translates into stronger sent and received signals.

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**Tech Tip**

<table>
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<th>Antenna Type</th>
<th>Gain Range</th>
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<tr>
<td>Directional antenna</td>
<td>12 to 18 dBi</td>
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**Throughput**

**Determine How Much Throughput is Required**

Wireless connections are distance-sensitive, so a longer range connection will also affect throughput performance. Determine in the planning process how much throughput the network will need. You also need to evaluate the expected traffic (average and peak data transmission rate) and unexpected traffic (concurrent peak rate). Use this information to select a suitable antenna. As an antenna increases its coverage range, its throughput will decrease.

The throughput of your wireless connection will vary depending on the strength of the signal you can receive and transmit. Antenna selection can therefore have a significant impact on the speed of your wireless link.

**Tradeoff between Throughput and Distance**

The relationship between distance and throughput is always a trade-off in the 802.11a/b/g standard. The longer the transmission distance, the greater the antenna gain must be. High gain directional antennas are recommended for long distance transmissions.

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**Frequency**

**Choose the Right Frequency for Your Project**

Different wireless applications use different frequencies, 5 GHz and 2.4 GHz, to achieve their purposes. For a successful wireless network, choose the right antenna along with the right frequency. 5 GHz band of IEEE 802.11a has a much narrower coverage, and less interference than 2.4 GHz band. On the other hand, signal of 802.11a can not be transmitted as far as IEEE 802.11b/g because it is much easier for signals to be absorbed by surrounding objects.

2.4 GHz standards can provide excellent range, but this is dependent on your signal strength and the noise level of your wireless device. Generally speaking, the greater the signal strength and the lower the noise level of your wireless device, the better.

**Environmental Interference**

The real world presents many variable interference sources that result in less-than-perfect wireless performance. In addition, rolling hills make it difficult to establish line-of-sight propagation, and in a city, buildings can compromise integrity, speed, and connectivity. These conditions lower the strength of the radio signal.

**802.11b/g Is Preferred for Long Distance**

The 802.11a (5 GHz) standard will yield a shorter communication distance than 802.11b/g (2.4 GHz). Users who wish to communicate long distances should therefore select 802.11b/g as their operating standard.
Make Universal TCP/IP Connectivity Easy

- Fast, secure TCP/IP connectivity over cellular
- Real-time cellular TCP/IP access to remote devices
- Dual SIM redundancy, GuaranLink, and VPN supported
- Intelligent centralized private IP management

Industrial-grade Cellular Portfolio from Moxa

Moxa’s Industrial cellular solutions are designed for WWAN (Wireless Wide Area Network) communications with serial and Ethernet devices over cellular networks. A wide selection of products is available for wide range and remote applications, including cellular routers, cellular IP gateways, cellular IP modems, GSM/GPRS modems that adopt GSM/GPRS/EDGE, UMTS/HSDPA, and WCDMA cellular technologies.

- **Cellular Routers**
  Moxa’s OnCell cellular routers allow up to four Ethernet-based devices to simultaneously use a single cellular data account for primary or backup network connectivity to remote sites and devices.
  - Universal tri-band UMTS/HSDPA 850/1900/2100 MHz
  - Quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz
  - Dual SIM for primary and backup wireless WAN connectivity
  - GuaranLink for continuous cellular connections
  - Connect to 4 10/100BaseT(X) devices over an integrated VPN
  - Centralized private IP management with OnCell Central Manager
  - Redundant DC power inputs
  - 2 digital inputs and 1 relay output (OnCell 5104 series only)
  - DIN-Rail and wall mountable housing

  **OnCell 5004/5104**
  Industrial Quad-band GSM/GPRS Cellular Routers

  **OnCell 5004/5104-HSDPA Series**
  Industrial Five-band GSM/GPRS/EDGE/UMTS/HSDPA Cellular

- **Cellular IP Gateways**
  Moxa OnCell cellular IP gateways are “intelligent” devices with a built-in memory and a ready-to-use TCP/IP operation mode. OnCell G3000 units are equipped with dial-up capability that make it easy to connect to serial and Ethernet devices over a cellular network.
  - Connect both Ethernet and serial devices over an integrated VPN
  - Built-in memory and a ready-to-use TCP/IP operation mode
  - Tri-band UMTS/HSDPA 850/1900/2100 MHz
  - Quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz
  - Centralized private IP management with OnCell Central Manager
  - Redundant DC power inputs
  - 2 digital inputs and 1 relay output
  - DIN-Rail mounting

  **OnCell G3110/G3150**
  Industrial Quad-band GSM/GPRS/EDGE IP Gateways

  **OnCell G3110/G3150-HSDPA Series**
  Industrial Five-band GSM/GPRS/EDGE/UMTS/HSDPA IP Gateways

- The 5104 series has an IA design and is DIN-Rail mountable, whereas the 5004 series is wall mountable and can be placed on a desktop.

- OnCell G3111/3151/3211/3251
  1 and 2-port RS-232 and RS-232/422/485 Cellular IP Gateways

- Secure modes for TCP Server, TCP Client, UDP, Real COM, and Reverse Real COM
- Centralized private IP management with OnCell Central Manager
- Choice of configuration method: web console, serial console, and Telnet
- Desktop or DIN-Rail installation
Extend Range to Connect Remote Devices over Cellular

Cellular technology offers an extended range and the coverage to connect remote devices to a central office over a cellular network. Fulfill the requirements of your WWAN application with Moxa’s varied portfolio of advanced OnCell cellular products.

Dual WWAN Network Redundancy

OnCell 5000 series cellular routers are typically deployed as the WAN link in areas where using wired connections is too costly or unfeasible. Unlike general routers, an OnCell 5000 can establish a primary and backup WAN network with its innovative Dual SIM card feature. Either of the two SIM cards can be configured as a backup communication link in case the primary SIM card fails. One of the most significant advantages of this feature is that your cellular transmission will not be interrupted.

GuaranLink Offers Continuous Cellular Connections

Conventional cellular routers are not alerted when cellular connections become inactive due to signal fading, interference, or connection termination by the operator. Moxa’s OnCell includes GuaranLink, which ensures that your cellular connection will be there whenever you need it, and includes precautionary features to deliver steady and dependable connections.

OnCell Central Manager

Most Internet Service Providers (ISPs) only offer private IP addresses to mobile devices due to the limited availability of public addresses. Mobile devices configured with a private IP address can access resources on the Internet, but the mobile devices cannot be managed or accessed directly from the Internet since the private IP address is hidden.

Moxa’s OnCell technology solves this problem by using an OnCell central server with a public IP address that accepts connections from both mobile devices and remote hosts. The OnCell Central Manager offers an industrial-grade solution that allows web browsers to access private network devices remotely. This is a simple and convenient way to securely configure, manage, and monitor your devices from anywhere on the Internet, freeing you from the limitations of private IPs.

VPN

A VPN allows a computer to use a virtual IP address to access the Internet. Instead of running across a single private network, some of the links between nodes in a VPN use open connections or virtual circuits in a larger network, such as the Internet. With the help of VPNs, cellular devices acting as VPN clients can initiate a connection with a VPN server. Once the connection is established, the cellular devices can communicate with other network devices on the same private network. Moxa’s OnCell IP gateways are equipped with VPN functions to provide a secure extension of a private network into an insecure network.

Benefits

- Access your private IP network devices over the web
- No need to modify existing application software
Absolutely Reliable WLAN Networks

- Redundant dual-RF for high availability
- 50 ms roaming for fast secure connectivity
- 802.11n for reliable voice and video streaming

Trusted Business Partnership with Moxa

Trusted Solution
- A unified source for providing both of wireless and wired LAN solutions
- Long-term, sustained value from upgradable, standards-based solutions

Trusted Partnership
- 23 years of proven experience in industrial networking
- Client references: Caterpillar, Siemens, Ansaldo, Yokogawa, Bombardier

Trusted Quality
- 5-year warranty
- Strict 24-hour dynamic burn-in policy
- Certifications: UL C1D2/ATEX Zone 2 and EN50155/50121

Trusted Service
- Tailor-made RF band service
- Strong technical experts who understand unique customer needs
- Branch offices and distributors in over 60 countries

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