Master Catalog

2016-2017

Enabling Connectivity for the Industrial Internet of Things

• Edge Connectivity • Industrial Computing • Network Infrastructure

MOXA®

Reliable Networks ▲ Sincere Service

Moxa: Your Trusted Partner in Automation

As the Industrial Internet of Things (IoT) interconnects our world faster than ever, we rely more than ever on network infrastructures. Since its establishment in 1987, Moxa has had a proven track record of providing customers with the most reliable networks for a variety of industrial applications.

With over 25 years of industry experience, Moxa has connected more than 40 million devices worldwide. These devices have delivered highly reliable communications between people, systems, and processes to achieve all forms of automation and collaboration.

Promise for the Future

Reliable Networks, Sincere Service continues to be Moxa's promise to enable connectivity for the Industrial IoT. Moxa stays ahead of the curve with innovative Ethernet-core technology and solutions to help customers tap into the potential of the Industrial IoT market.

Reliable Networks

Network reliability is the cornerstone of Moxa's commitment to deliver the best value to our customers and partners. Moxa's many solutions share a common set of robust features designed to provide maximum network uptime, especially in harsh environments. Our cutting-edge product portfolio comprises quality and innovative technology to ensure nonstop productivity, operational efficiency, and robust security for complex industrial communications and automation applications.

Sincere Service

At Moxa, we listen carefully to learn more about our customers' expectations and needs before we develop a solution. With extensive experience and innovative technology, we provide premium customization, expert network consulting, and a broad range of technical support services. Through close collaboration with our worldwide partners, we help customers optimize their applications' performance, adapt to fast-changing technologies, and seize opportunities to achieve the best time-to-market results.

Product Offerings

Edge Connectivity

Moxa's edge connectivity products bridge various industrial devices to streamline the acquisition and transmission of data, voice, and video to backbone networks. Customers can enjoy seamless network integration for various cross-system collaborations.

- Serial connectivity
- Industrial Ethernet gateways
- RTU controllers and smart I/O devices
- Industrial IP cameras and video management software

Industrial Computing

Moxa provides RISC- and x86-based industrial computers to work in the most demanding conditions. The world's first wide-temperature-range 4G LTE computer is a perfect example of a device that delivers reliable 4G performance without requiring a fan or a heater.

- Mission-critical computers
- Displays and panel computers
- Compact and wireless computers
- Embedded CPU modules

Network Infrastructure

Moxa's network infrastructure solutions provide comprehensive building blocks to develop robust wired and wireless backbones for mission-critical applications with regard to device reliability, connection availability, cybersecurity, and easy management.

- Industrial Ethernet switches
- Industrial wireless AP/bridge/client and cellular routers
- Industrial secure routers
- Ethernet media converters
- Network management software

Get Connected to Success and Opportunity

Worldwide, Moxa's expert sales team is ready to provide the best quality, support, and services to assist you in all aspects of your projects—from concept to completion—to empower your network operations and applications.

Global Service Coverage

Customer-Oriented Service

Moxa has established a global service network to be closer to our customers to better understand their needs and respond faster to their requirements. Leveraging Moxa's industrial experiences and technological intelligence, our service team provides professional solutions and consulting services, backed by our extensive global resources and solution capabilities.

Extended Teamwork

Through our annual MTSC (Moxa Technical Support Certification) training, Moxa provides the most up-to-date solutions and technologies to our global partners to ensure the best service to customers. Integrating the strengths of our worldwide industry and technology partners, we deliver sincere service and an extended range of innovative solutions to customers.

Total Quality Management

Our commitment to quality is at the heart of Moxa's promise of *Reliable Networks, Sincere Service.* Moxa employs a corporate-wide Total Quality Management System (TQMS) to achieve customer satisfaction and unbeatable results in the following categories:

Robust Technology

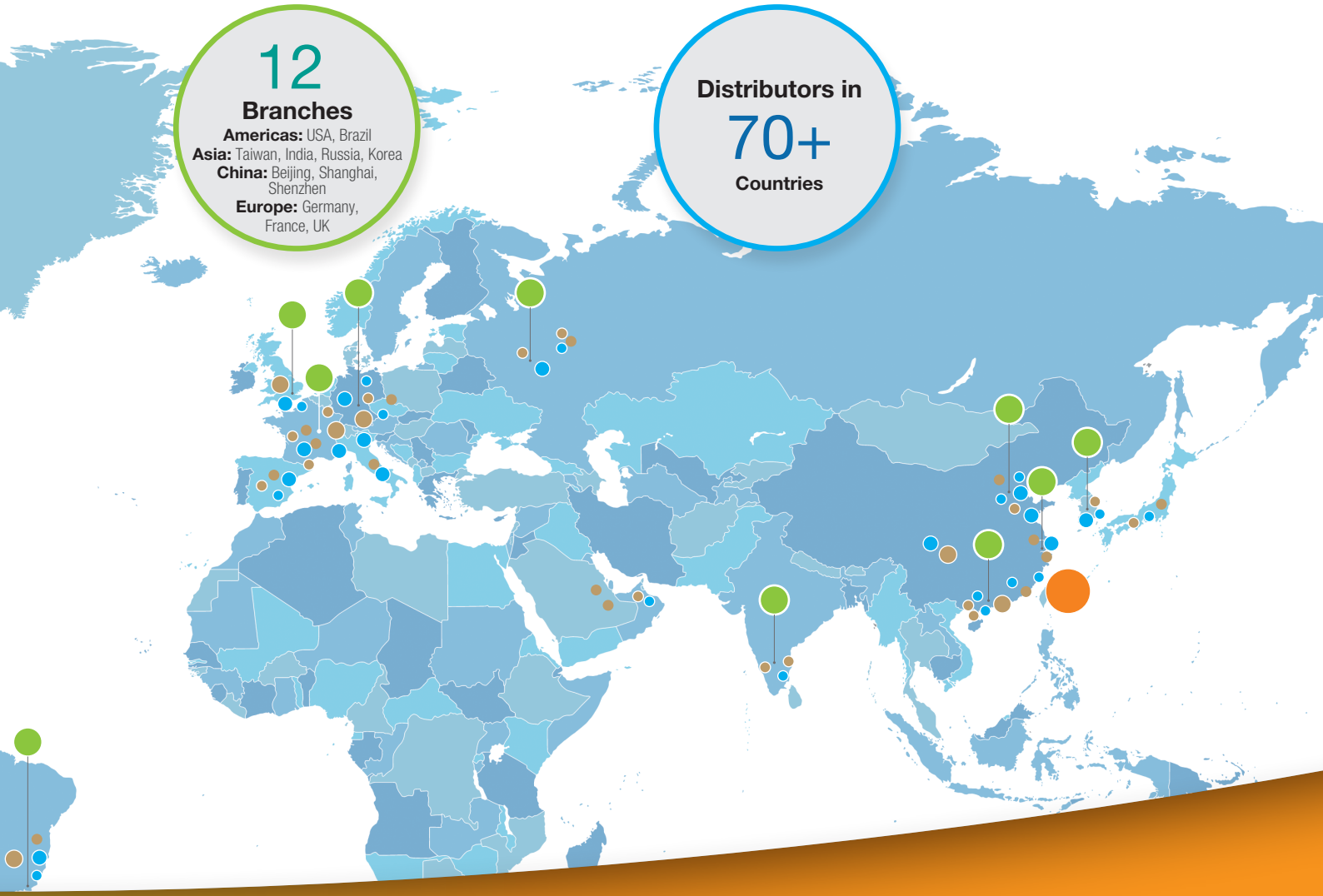
At Moxa, quality starts with concepts that benefit our partners and customers. Moxa attracts a broad spectrum of talent and encourages new ideas to nurture innovation at every level. Following the well-defined New Product Development Process (NPDP), all of Moxa's products must undergo strict tests, verifications, and validations to achieve tangible quality-related benchmarks for various industrial applications.

Project Life-Cycle Management

Moxa is IRIS-certified and implements a rigorous management process to ensure quality and optimal results for long-term projects. Specific RAMS and LCC management guidelines guarantee reliability, longevity, low life-cycle costs, and easy maintenance throughout a project's lifetime.

Continuous Improvement

Moxa motivates each employee to work smarter and find ways for continuous improvement. Our Quality Improvement Team (QIT) and Eight Disciplines Problem-Solving (8D) methodology for solving problems and preventing crises promote continuous progress in the quality of our products, service, and technology, to ensure customer satisfaction.



Technological Innovation

Moxa cultivates continuous technological innovation to meet the constantly changing requirements of industrial environments. To enable the most capable and reliable connectivity required for the Industrial IoT, Moxa strives to achieve application-driven innovations in the following aspects.

■ Performance
High-speed wired/wireless connectivity for future-proof networks

■ Reliability
Proven reliability for continuous productivity

■ Availability
Millisecond-level redundancy for nonstop operations

■ Security
Industrial cybersecurity for critical device protection and secure remote access

■ Manageability
Easy operations in deployment, monitoring, and diagnostics maintenance

■ Interoperability
Leading legacy and versatile fieldbus technologies for seamless automation communication

Industrial Ethernet

Industrial Wireless

Device Connectivity

Remote Automation

IP Surveillance

Industrial Computing

Enabling Connectivity for the Industrial Internet of Things

Moxa's industrial network and automation solutions are ready to take connectivity to new frontiers. With a forecast of more than 50 billion devices connected worldwide by 2020, Moxa focuses on connectivity enablement to expand communication and collaboration between various devices, technologies, and people.

Edge Connectivity

Serial/Fieldbus Connectivity

Serial or fieldbus connectivity bridges legacy, fieldbus, and Ethernet devices to reap the benefits of legacy-to-IP communications and operational efficiency.

I/O Connectivity

Industrial I/Os and controllers enable faster data transfer and SCADA response, as well as programming-free logic control.

Video Connectivity

Extreme weather IP cameras activate 360-degree HD surveillance for extreme applications.

Smart Value for Your Applications

Through our fully converged communication solutions, Moxa helps customers build remote control and monitoring networks suited for highly automated industrial operations and demanding public-safety applications.

Powering Productivity

Our cutting-edge product portfolio delivers superior performance thanks to high bandwidth, reliability, availability, and interoperability in mixed-protocol and legacy environments.

- High-speed transmission
- Maximum uptime and availability
- Video always-on networking
- Reliable mobile communications
- Industry-proven reliability
- Legacy compatibility
- Protocol interoperability

Optimizing Operational Efficiency

Moxa's extensive software solutions are the key to operational efficiency, including intuitive management software for operations that are faster and less error-prone, as well as an API platform for faster development and ease-of-use.

- Faster deployment
- Visualized management
- Easier troubleshooting
- Preventive maintenance
- APIs for easy application deployment
- Seamless integration with SCADA systems

Strengthening Security

A convergence of cybersecurity and physical security systems forge a reinforced network to ensure the full protection of control systems and staff safety in industrial applications.

- Device security with authentication, integrity, and firewall protection
- Secure remote access with IPSec, L2TP, or OpenVPN encryption
- IEC 62443 standard compliance *(Available in Q4, 2016)*
- Industrial-grade IP surveillance systems

Factory Automation

Moxa's factory automation solutions are designed to drive productivity and cost reduction through network convergence from the edge to the core. The solutions deliver optimized process integration and automation-friendly management to improve throughput and performance.

Industrial Computing

Industrial Computers

Embedded computers enable seamless data aggregation, analytics, and reporting from the extreme edge to the cloud/core.

Network Infrastructure

Industrial Ethernet

Industrial Wireless

Industrial Ethernet and WLAN solutions offer leading performance, availability, and reliability to achieve maximum uptime and efficiency for wired and wireless connectivity.

Industrial Routers

Industrial secure and cellular routers enable asset protection and secure access across public networks.

Management

IA-friendly device management and network management address easy deployment, supervision, troubleshooting, and seamless collaboration with SCADA and third-party platforms.

Railway Automation

Moxa's IRIS-certified railway solutions come with the top-notch service, quality, and commitment that industrial customers demand. Moxa's railway solutions deliver EN 50155-compliant control and communications between train, ground, and trackside to ensure safety and uninterrupted passenger services.

Power Automation

Moxa has delivered solutions in more than 300 successful substation networking and computing applications. Moxa's solutions ensure GOOSE compliance and zero-packet-loss performance in compliance with IEC 61850-3 and IEEE 1613 standards.

Oil and Gas Automation

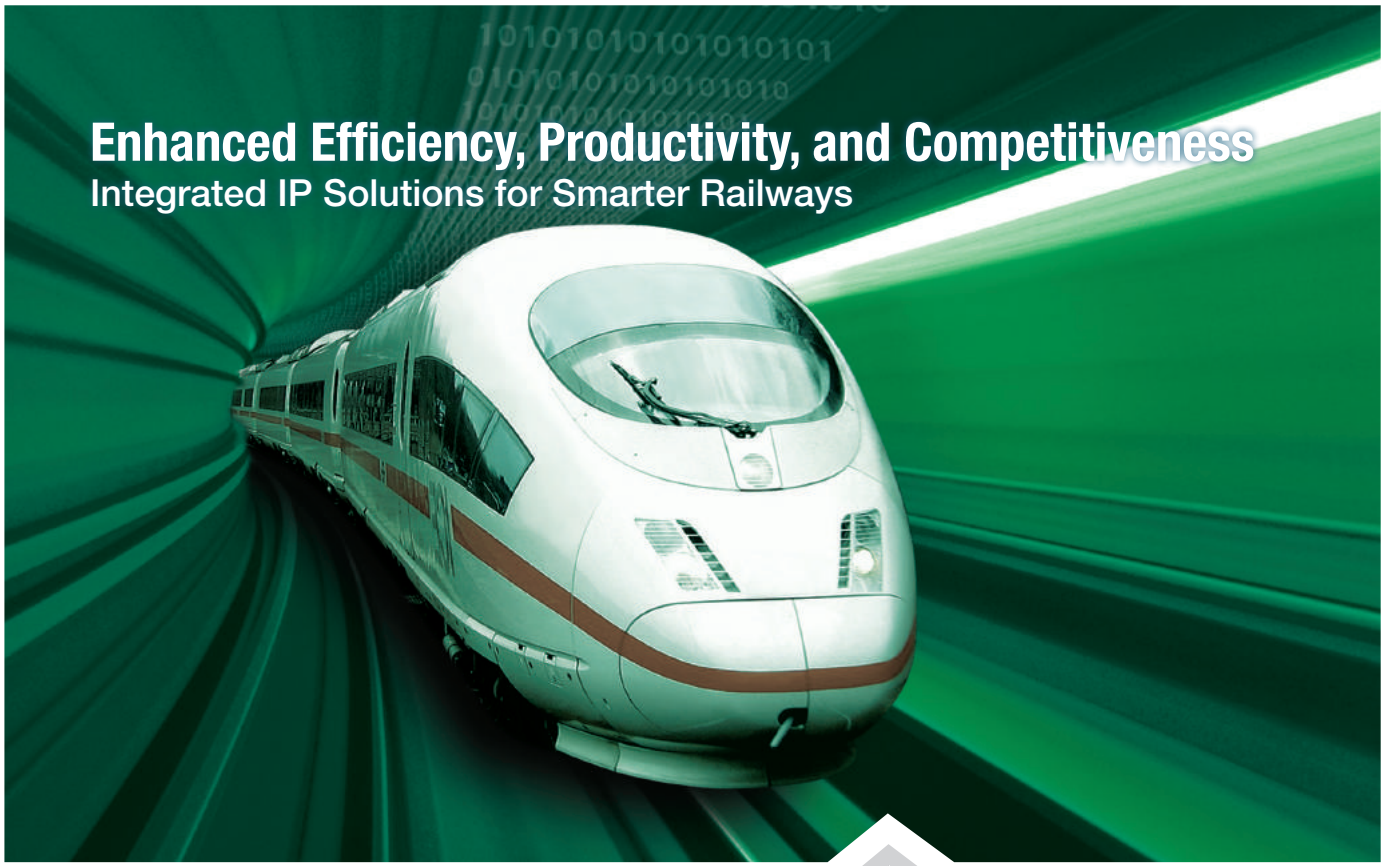
Moxa's oil and gas automation solutions comply with UL Class 1 Division 2, ATEX Zone 2, and IECEx standards, allowing customers to achieve maximum uptime and improved productivity with our oil and gas networking, monitoring, and computing solution portfolio.

Marine Automation

Moxa's marine solutions, compliant with all major maritime certifications, offer a wide range of marine-grade industrial Ethernet and computer products that ensure long-lasting and reliable operations in the challenging environments experienced by ship, offshore oil and gas, and windmill applications.

Intelligent Transportation Systems

Moxa's ITS solutions combine high-bandwidth networks and HD IP video solutions to ensure fast information convergence and nonstop operational continuity, allowing traffic control managers to make decisions quickly in the event of road traffic emergencies.



IRIS-Certified Rail Solutions Verified for Maximum Quality

Moxa is an IRIS-certified global leader in a wide range of IP-based communications solutions. Now, Moxa is contributing its networking expertise to the railway industry through membership in IEC railway committees. Railway operators world-wide have discovered new operational efficiencies by deploying Moxa's unique time and cost-saving railway technologies. By designing for a long MTBF, owning all the core component IPs, and building long-term partnerships, Moxa helps railway integrators create sustainable solutions with low life-cycle costs for passenger comfort and railway operation networks.

Application Focus

- Passenger-oriented service (e.g., onboard Wi-Fi, passenger information systems)
- Railway CCTV
- CBTC (Communication-Based Train Control)
- Wayside data communications systems

Leading Technologies

- Turbo Ring and Turbo Chain: Advanced Ethernet redundancy solutions
- Turbo Roaming: Fast and secure train-to-ground wireless communications
- ACC: Intelligent wireless inter-carriage links
- FLI: Flexible, location-based, intelligent industrial-grade auto-configuration technology

IRIS Certification

Visit www.moxa.com/rail

ACC Auto Carriage Connection FLI Industrial Auto Configuration EN 50155 EN 50121

ToughNet, EDS Series
Industrial Ethernet Switches
▶Page 1-12

TAP, AWK-RCC/RTG Series
Industrial Wireless AP/Bridge/Client
▶Page 8-4

NPort 5000AI-M12 Series
RS-232/422/485 Serial Device Servers
▶Page 10-18

TC-6000, V2000 Series
Industrial Embedded Computers
▶Page 22-4/22-11

VPort Series
Industrial IP Cameras
▶Page 19-19

ioPAC Series
Industrial RTU Controllers
▶Page 15-4

ioLogik E1500 Series
Remote I/Os
▶Page 17-17

Connect to the Smart Grid Today

End-to-End Networking and Computing Solutions for the Power Industry

Many Successful Deployments in Power Projects Worldwide

Create rock-solid and future-proof power networks by partnering with Moxa. Moxa is a Collective Member of CIGRE and has delivered solutions in over 500 successful substation transmission and distribution networking and computing applications around the world. Moxa is now the leading solar energy monitoring supplier in North America with many diverse projects in advanced metering infrastructures worldwide. You can rely on our expertise of more than 25 years in proven solutions in the following industry applications.

Application Focus

- Solar power
- Wind power
- IEC 61850 transmission and distribution substation
- Advanced metering infrastructure

Leading Technologies

- Industry's first IEC 61850 switch with MMS data modeling: SNMP/MMS management with integrated network monitoring solutions for power substation SCADA
- Industry's first integrated PRP/HSR redundancy box for zero recovery time
- Turbo Chain: Different redundant networks can be extended without any ring coupling effort
- Patented computing platform for heat dissipation with wide temperature tolerance
- ThingsPro: Asset management for solar energy monitoring

Visit www.moxa.com/SmartGrid

Turbo Chain | PRP HSR | IEC 61850 IEEE 1613 | ThingsPro

PT-7528 Series
IEC 61850 28-port IEEE 1613 Class 2 Managed Ethernet Switches
▶Page 2-44

PT-7728-PTP Series
IEC 61850 14-port IEEE 1588v2 Managed PRP/HSR Switches
▶Page 2-40

PT-G503-PHR-PTP Series
IEC 61850 3-port Full Gigabit Managed PRP/HSR Redundancy Boxes
▶Page 2-63

DA-820 Series
x86 IEC 61850-3 Certified i7 Rackmount Computers
▶Page 21-4

NPort S8000 Series
Combo Switches / Serial Device Servers
▶Page 10-14

UC-8100 Series
RISC Energy Monitoring Computers
▶Page 21-36

ioLogik E1200 Series
Compact Ethernet Remote I/O
▶Page 17-6

DCU-8620-T Series
Data Concentration Units
▶Available by request

Proven Solutions for the Harshest Oil & Gas Environments

Integrated Networking, Monitoring, and Computing Systems

Your Trusted Partner in Oil & Gas Automation

Moxa is a leading provider of industrial automation solutions and has proven experience in providing networking equipment and service suitable for the harshest oil & gas environments. Moxa's industrial-grade products and well respected technology enable efficient remote monitoring and easy asset management, delivering business value to customers all over the world. To assure the highest level of safety, the computing, networking, and automation products Moxa develops especially for use in oil & gas facilities meet important global certifications, including ATEX Zone 2, Class 1 Division 2, and IECEx.

Application Focus

- Offshore oil drilling control systems
- Onshore drilling / wellhead monitoring
- Pump stations and pipeline monitoring
- Oil refining and gas station operations

Leading Technologies

- Turbo Ring and Turbo Chain: Unrivaled network redundancy solutions with 20 ms recovery
- Dual-Radio and Turbo Roaming: Zero packet loss and millisecond-level wireless roaming
- ISA99/IEC 62443 compliant for industrial security: Layered cybersecurity solution with innovative PacketGuard™ for Modbus TCP deep packet inspection
- World-leading panel computer design: 1000-nit LCD, glove-friendly multi-touch, system bootup within 3 minutes, -40 to 70°C operating temperature without heater
- MXview, MXview ToGo, QuickLink, MX-AOPC UA Server: Efficient network management by smart visualization, automated configuration, and seamless integration with SCADA systems

Visit www.moxa.com/Solutions/Oil_and_gas

EDS/IKS/ICS Series

Edge-to-Core Ethernet Switches

▶Page 1-12

EDR Series

VPN/Firewall Secure Routers

▶Page 5-2

AWK Series

IEEE 802.11a/b/g/n Wireless AP/Bridge/Client

▶Page 6-6

MGate and NPort Series

Industrial Gateways and Device Servers

▶Page 4-5; 10-43

ICF Series

Industrial Serial/PROFIBUS-to Fiber Converters

▶Page 14-32

ioLogik 2500 Series and ioLogik E1200 Series

Smart Remote I/O and Ethernet Remote I/O

▶Page 16-4; 17-6

VPort Series

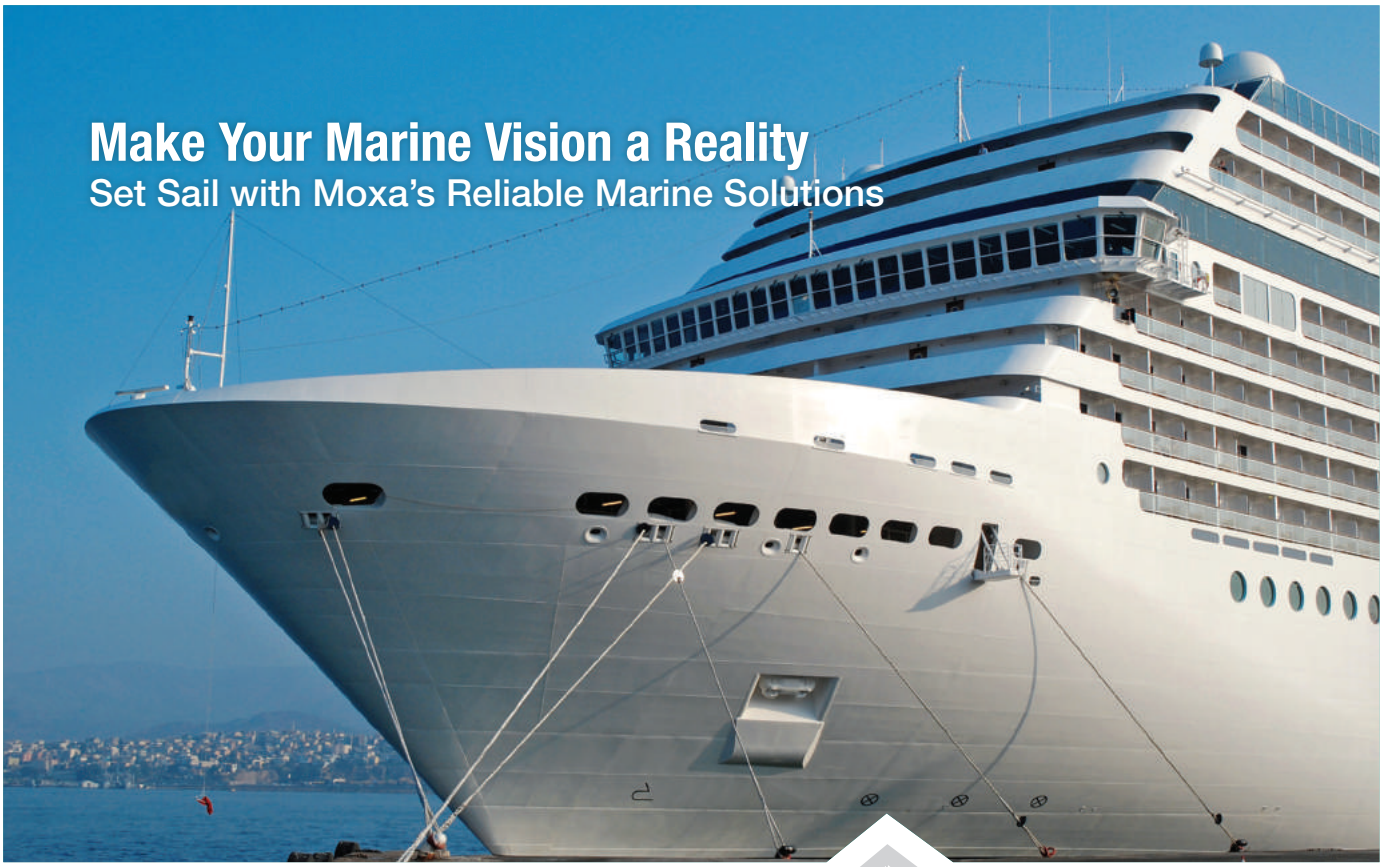
HD IP Cameras

▶Page 19-14

EXPC-1519 Series

Zone 2 Panel Computers

▶Page 25-12



Make Your Marine Vision a Reality

Set Sail with Moxa's Reliable Marine Solutions

Successful Deployment of Integrated Marine Bridge Solutions Worldwide

Moxa provides maritime professionals with industrial-grade marine computers, panel PCs, displays, and Ethernet switches that use leading technologies and reliable designs perfect for applications on docks, marine bridges, open decks, and in control rooms.

Moxa's marine solutions pass strict tests and follow critical industrial standards to ensure compliance with international marine standards, including DNV, ABS, GL, LR, IEC 60945, IEC 61174, IEC 61162, and IACS E10, making Moxa's marine solutions the best option for marine applications.

Application Focus

- Electronic Chart Display and Information System (ECDIS)
- Radar System
- Integrated Navigation System (INS)
- Integrated Platform Management System (IPMS)

Leading Technologies

- Advanced ECDIS color calibration technology: more consistent color rendering for a longer period of use
- Customer initiated smart OSD design: Off-Screen-Display control allows users to easily control the monitor in low light environments
- High performance computing power in a fanless design enhances computers' reliability and reduces customers' maintenance costs

Visit www.moxa.com/marine

GL Lloyd's Register DNV ABS

IACS - E10 IEC 61162 IEC 60945 ClassNK

MPC-2150/2190/2240/2260 Series
Marine Panel Computers
▶Page 24-9

MD-219/224/226 Series
Marine Displays
▶Page 24-3

MC-7200 Series
Marine ECDIS Computers
▶Page 23-3

MGate 5101-PBM-MN Series
PROFIBUS-to-Modbus TCP Gateways
▶Page 4-18

ioLogik E1200H Series
Ethernet Remote I/O
▶Page 17-13

EDS-408A Series
Managed Ethernet Switches
▶Page 1-46

Maximize Your Factory Potential

With Reliability, Ease of Integration, and Global Support

Your Trusted Partner for Factory Automation

To help manufacturers maximize the benefits of integrating network and automation technology, Moxa has focused on the factory automation market for over 26 years. Moxa provides leading solutions for industrial communications, including wired and wireless infrastructures, industrial computing, remote monitoring, and video surveillance.

Application Focus

- SCADA
- Control system networks
- Wireless infrastructures and machine-to-machine communication
- Packaging equipment
- Cybersecurity
- Industrial video surveillance
- Material handling

Main Benefits

Reliability

- Industry leading communication redundancy for < 20 ms recovery time
- Unique thermal design that supports fanless wide temperature operation (-40 to 75°C)
- High level EMI/EMC shielding
- Redundant power supply with isolation protection
- Continual improvement of total quality management
- ISO 9001 quality management standard recognized

Ease of Integration

- User-friendly network and device management software
- Serial, Ethernet, I/O, and wireless solutions integrated into a single network
- Quick mass configuration tool for 90% time savings (with up to 100 switches)
- OPC server for cost-effective SCADA integration

Global Support

- Access to products and support in over 70 countries
- Customization service

VPort Series
Industrial IP Cameras
▶Page 19-1

EDS Series
Industrial Ethernet Switches
▶Page 1-27

MGate Series
Industrial Ethernet Gateways
▶Page 4-1

NPort Series
Serial-to-Ethernet Device Servers
▶Page 10-1

ioLogik 2500-WL1 Series
Smart Wireless I/O
▶Page 16-4

EDR-810 Series
Industrial 8+2G Multiport Secure Routers
▶Page 5-7

AWK-A Series
Industrial Wireless AP/Bridge/Client
▶Page 6-6

Integrated Network Solutions for Intelligent Transportation

Real-Time Convergence for Non-Stop Safety

Today more than ever before, roadway safety and efficiency depend on real-time information and communication. To increase traffic flow, reduce congestion, and improve incident response times, Moxa's industrial Ethernet solutions facilitate real-time convergence of various sensor data, voice, and video by providing high-speed throughputs and a wide range of network devices. All of these devices emphasize extreme reliability, smart redundancy, easy manageability, and a lower total cost of ownership.

Application Focus

- Advanced Transportation Management Systems
- Tunnels
- Intelligent E-Bus
- Electronic Toll Collection (ETC)

Leading Technologies

High Bandwidth

- 1GbE/10GbE switching and routing
- Up to 500 Mbps router throughput
- Up to 300 Mbps wireless transmission
- Up to 150 Mbps VPN traffic

Extreme Reliability

- Turbo Ring and Turbo Chain self-recovery (< 20 ms @ 250 switches)
- V-ON network redundancy under 50 ms for mission-critical IP surveillance
- Turbo Roaming with millisecond-level handoff times for seamless mobility

Efficient Management

- MXstudio network management suite for installation, operation, maintenance, and diagnostics
- OnCell Central Manager for remote cellular device management
- IP surveillance software solutions for easy SCADA surveillance

Visit www.moxa.com/ITS

ICS Series
Industrial 10GbE Ethernet Switches
▶Page 1-12

AWK-A Series
Industrial 802.11n AP/Bridge/Client
▶Page 6-6

EDS-G512E-8PoE
8-port PoE+ Full Gigabit Managed Switch
▶Page 1-64

VPort Series
Industrial HD IP Cameras
▶Page 19-7

IEX-408E-2VDSL2 Series
Copper Extender Switches
▶Page 3-26

NPort IA5000A Series
2-Port Industrial Serial Device Servers
▶Page 10-43

MXstudio
Industrial Network Management Suite
▶Page 5-11

Industrial Wireless LAN Solutions

6

Industrial Wireless LAN Solutions

Industrial Wireless IEEE 802.11 Solutions

	Single-RF Wireless Tranceiver				Dual-RF Wireless Tranceiver	
	AWK-1131A	AWK-3131A	AWK-4131A	AWK-3191	AWK-5232	AWK-6232
WLAN						
Wireless Standard	802.11a/b/g/n	802.11a/b/g/n	802.11a/b/g/n	900 MHz	802.11a/b/g/n	802.11a/b/g/n
Number of RF Modules	1	1	1	1	2	2
Maximum Data Rate	300 Mbps	300 Mbps	300 Mbps	54 Mbps	300 Mbps	300 Mbps
Transmission Distance (with Default Antennas)	Up to 100 meters (in open areas)	Up to 100 meters (in open areas)	Up to 100 meters (in open areas)	Up to 30 km point-to-point (with high gain Yagi-antennas)	Up to 100 meters (in open areas)	Up to 100 meters (in open areas)
Interfaces						
Total Number of Antenna Ports	2 (2x2 MIMO)	2 (2x2 MIMO)	2 (2x2 MIMO)	2 (2R1T Diversity)	4 (2x2 MIMO)	4 (2x2 MIMO)
Antenna Port Type	RP-SMA (female)	RP-SMA (female)	N-Type (female)	RP-SMA (female)	RP-SMA (female)	N-Type (female)
Total Number of LAN Ports	1	1	1	1	2	2
LAN Port Type	RJ45	RJ45	Waterproof RJ45	RJ45	RJ45	M12 (female 8-pin A-coded)
LAN Port Speed	10/100/1000BaseT(X)	10/100/1000BaseT(X)	10/100/1000BaseT(X)	10/100BaseT(X)	10/100/1000BaseT(X)	10/100/1000BaseT(X)
RS-232 Console Ports	1, RJ45	1, RJ45	1, waterproof RJ45	1, RJ45	1, RJ45	1, waterproof RJ45
DI/DO	–	✓	✓	✓	✓	✓
DI/DO Connection Type	–	10-pin terminal block	M12 (female 8-pin A-coded)	10-pin terminal block	10-pin terminal block	M12 (male 8-pin A-coded)
Housing Protection						
IP-rating	IP30	IP30	IP68	IP30	IP30	IP68
Installation Options						
DIN-Rail Mounting	✓	✓	✓ (optional)	✓	✓	✓ (optional)
Wall Mounting	✓ (optional)	✓ (optional)	✓	✓ (optional)	✓ (optional)	✓
Pole Mounting	–	–	✓ (optional)	–	–	✓ (optional)
Supported Operating Temperatures						
-25 to 60°C (-13 to 140°F)	–	✓	–	✓	✓	–
0 to 60°C (32 to 140°F)	✓	–	–	–	–	–
-40 to 75°C (-40 to 167°F)	✓	✓	✓	✓	✓	✓
Power Requirements						
Input Voltage	12 to 48 VDC	12 to 48 VDC	12 to 48 VDC	12 to 48 VDC	12 to 48 VDC	12 to 48 VDC
Connector Type	4-pin terminal block	10-pin terminal block	M12 (male 5-pin A-coded)	10-pin terminal block	10-pin terminal block	M12 (male 5-pin A-coded)
PoE Support	–	✓	✓	✓	✓	✓
Reverse Polarity Protection	✓	✓	✓	✓	✓	✓
Standards and Certifications						
Safety	UL 60950-1, EN 60950-1	UL 60950-1, EN 60950-1	UL 60950-1, EN 60950-1	UL 60950-1	UL 60950-1, EN 60950-1	UL 60950-1, EN 60950-1
Hazardous Location	–	UL/cUL CI D2, ATEX Zone 2, IECEx	–	UL/cUL CI D2	–	–
EMC	EN 55022/24	EN 61000-6-2/6-4	EN 61000-6-2/6-4	–	EN 55022/55024	EN 55022/24
Radio	EN 301 489-1/17, EN 300 328, EN 301 893, TELEC, FCC ID SLE-WAPN005	EN 301 489-1/17, EN 300 328, EN 301 893, TELEC, FCC ID SLE-WAPN005	EN 301 489-1/17, EN 300 328, EN 301 893, TELEC, FCC ID SLE-WAPN008	FCC ID SLE-WAFS001	EN 301 489-1/17, EN 300 328, EN 301 893, TELEC, FCC ID SLE-WAPN001	EN 301 489-1/17, EN 300 328, EN 301 893, TELEC, FCC ID SLE-WAPN001
Page	6-6	6-9	6-12	6-15	6-17	6-19

Introduction to Industrial Wireless LAN Solutions

Industry has already accepted wireless networking as an excellent solution for many different applications. The main advantages are the convenience of connecting devices without relying on wired networks, and avoiding the cost of installing wire conduits at sites where doing so would be prohibitive.

IEEE 802.11 is not a wholesale replacement of broadband, but it is a fast and efficient way to distribute broadband transmissions. Wireless communication provides an easier way to connect devices, particularly in remote locations or harsh environments.

Enabling Mobile Wi-Fi Networks for the Industrial Internet of Things

In this age of the Industrial Internet of Things (IoT), mobile Wi-Fi networks are the cornerstones of industrial applications as many of them include equipment that's constantly on the move. Automated guided vehicles, transport vehicles, and other vehicles that use Wi-Fi technology to connect to a single converged network can take advantage of the continuing improvements in IEEE 802.11 technology, which include higher bandwidth protocols and IP-based networking that make it possible to enable big bandwidth communication from wired to wireless Ethernet networks for the Industrial IoT.

Although the Industrial IoT increases the ability of machine to machine communications, it also increases the risk of downtime on these large converged networks due to their single point of failure. Constructing a reliable mobile Wi-Fi network is essential to minimizing system downtime and achieving non-stop operation for industrial applications.

Moxa's industrial wireless LAN solutions offer high reliability and availability features that make it easy for industrial operators to build an unbreakable wireless network that takes advantage of all the latest innovations to deliver substantial cost savings, easier set up and maintenance, and greater operational efficiency.

Wi-Fi Networks Enable a Variety of Mobile Applications

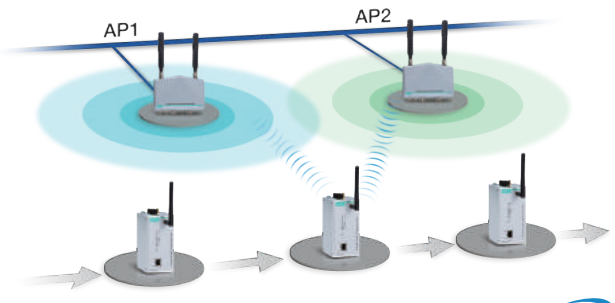
Automated Guided Vehicles

Transportation

Mining

Client-Based Turbo Roaming for Seamless Connections

IEEE 802.11 technology gives networks an effective range of only a few hundred meters. When wireless clients are on moving objects they need to "roam" between many wireless access points. However, in many applications, users need an uninterrupted network data connection when the client moves from one access point to another. Without fast roaming time, constant roaming could create frequent handoffs and poor performance. Moxa's proprietary Turbo Roaming has a fast handover time of less than 150 ms. Turbo Roaming increases the roaming speed by pre-defining AP channels and avoiding wasted channel-hopping time while roaming. Moxa's APs support Turbo Roaming technology to provide fast seamless roaming on wireless networks.



Turbo Roaming

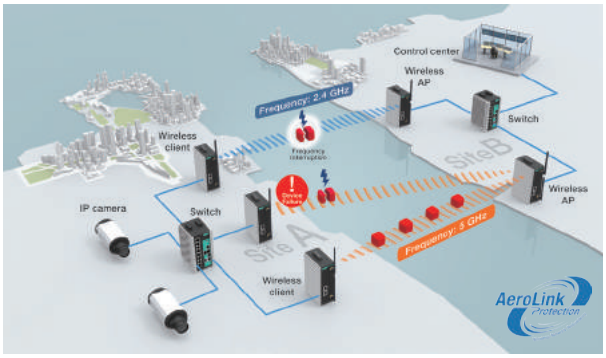
Wireless Redundancy

Industrial environments contain many elements that can cause failures in the underlying wireless network. For example, a microwave transmitter that constantly emits radio waves at 2.4 GHz will likely interfere with or interrupt the operation of Wi-Fi radios that are not configured to guard against such interference. Another example is a wireless network in a harbor that is interrupted when a truck unexpectedly blocks the wireless signal's line-of-sight. Wireless redundancy is essential to ensure continuous wireless transmission for mission-critical applications and to guard against interference from the industrial environment.

Network-Level Wireless Redundancy: AeroLink Protection

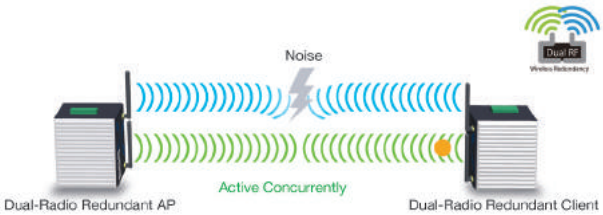
Moxa's innovative AeroLink Protection technology provides a smart failover method with fast recovery time and scalability, making it easy to enable multiple layers of wireless connection protection to maximize your mission-critical system uptime and keep your entire network alive for continuous transmission.

With AeroLink Protection, a network has two or more AeroLink Protection-enabled wireless client nodes connected to a single access point. One serves as the active node, while the others are passive, backup nodes. If the active node stops sending or receiving data for any reason, AeroLink Protection completely restores the communication link within milliseconds by bringing backup nodes online. Furthermore, the passive node can be connected to a different access point on a different frequency, providing frequency-level redundancy. It prevents system downtime from both device failure and frequency interruption offering comprehensive wireless redundancy for your wireless networks.



Dual-Radio Wireless Redundancy

Moxa's concurrent dual-radio transmission technology virtually eliminates the possibility of wireless interference. The concept of concurrent dual-radio technology is simple: for every outbound packet, a duplicate packet is sent simultaneously via the secondary frequency to ensure that at least one of the packets reaches the receiver. Latency-sensitive applications can be deployed across a concurrent dual-radio wireless network because the chance that an unintentional source of interference can simultaneously disrupt both bands (2.4 GHz and 5 GHz) is highly unlikely. In case of any frequency interruptions, unlike traditional solutions, this technology can achieve zero packet loss.



Industrial Designs

Industrial-grade rugged design is indispensable for mission-critical systems running under harsh conditions. Moxa's wireless products offer RF isolation, power isolation, wide operating temperature, and high ingress protection to ensure that your wireless connections are stable, even in severe environments.

Dual Isolation: Power and RF

To simplify installation, the new AWK-A series is designed with integrated dual isolation protection. First, Integrated RF Isolation provides 500 V insulation protection and level 4 ESD protection on all antenna ports, without loss of the RF signal. In addition, Integrated Power Isolation provides 500 V insulation protection and stabilizes system voltage from unstable power inputs. This unique built-in design not only protects your device from environmental damage, it also makes field site installation much easier by reducing the need for additional accessories.

DFS Channel Support

Wi-Fi frequency channels are strictly limited by regulations. Therefore, using as much of the available bandwidth as possible is the only way to maximize wireless throughput and performance. So channel planning is extremely important in the system integrator's initial design. As well as using all the normally available frequencies, Moxa's AWK-A series is certified to operate on DFS (Dynamic Frequency Selection) channels, significantly increasing the total number of available channels. When switching to a new DFS channel, regulations require a 60-second delay to ensure that the channel is clear of radar signals before transmitting. Even so, the ability to use DFS channels greatly improves the overall bandwidth capacity of wireless networks.

Designed for Harsh Environments

Moxa's wireless LAN solutions operate in a wide temperature range of -40 to 75°C. Moreover, their IP30 and IP68 ratings provide additional protection in outdoor environments.

900 MHz Long Distance Communications

Deploying long distance communication is usually expensive for industrial applications that require a fast and reliable connection. Moxa's AWK-3191 wireless AP/bridge/client not only eliminates the wiring expense, it also gives users field tested 900 MHz wireless communication at a 6 Mbps data rate over a distance of 30 km, providing an excellent alternative to expensive microwave radios.

Unlike traditional point-to-point 900 MHz devices, the AWK-3191 supports both master/slave and AP/client operation modes to enable both point-to-point and point-to-multi-point communication for the line-of-sight applications required by a wide range of applications, including open-pit mining, offshore drilling, pipeline monitoring, and various oil and gas field communication applications.

Wireless Interoperability

High interoperability in wireless devices makes it easier for operators to install, operate, and maintain wireless networks. The next generation of devices in the AWK-A series comes with a certification for interoperability from the Wi-Fi Alliance, and features the MAC clone function that simplifies the deployment of your wireless network.

Smart Factory Automation with MAC Clone Function

The AWK-A series can automatically clone the MAC address of a connected Ethernet device by simply enabling the MAC Clone feature. The MAC Clone feature is particularly important for automation networks where PLCs won't allow connection requests from unregistered MAC addresses.

Wi-Fi Alliance Certified Interoperability

With the advancement of handheld technologies, smart phones and tablet computers have become important gadgets in everyone's life. These devices are not only serving daily personal communication and entertainment needs, but also are now increasingly being used in work-related operations. To ensure that the Wi-Fi access points can reliably communicate with different brands of handheld devices, they must conform to the Wi-Fi standard. Wi-Fi Alliance is a non-profit organization that promotes Wi-Fi technology and certifies Wi-Fi products. The devices are certified only after they go through rigorous testing on multiple radio and data formats, security protocols, and power management mechanisms. Devices certified by the Wi-Fi Alliance have a higher level of interoperability than the non-certified devices. Moxa's AWK-A series wireless radios certified by the Wi-Fi Alliance for interoperability are compatible with other Wi-Fi devices that are available in the field today.

			Single-RF Wireless Transceiver				Dual-RF Wireless Transceiver	
Category	**Features**		**AWK-1131A**	**AWK-3131A**	**AWK-4131A**	**AWK-3191**	**AWK-5232**	**AWK-6232**
Wireless Communication	Client-based Turbo Roaming		✓	✓	✓	–	✓	✓
	Long Distance Communication		–	10 km point-to-point communication (with high-gain directional antenna)	10 km point-to-point communication (with high-gain directional antenna)	30 km point-to-point communication (with high-gain directional antenna)	–	–
Wireless Redundancy	AeroLink Protection		–	✓	✓	–	–	–
	Dual Radio Wireless Redundancy		–	–	–	–	✓	✓
Extreme Reliability	Power Isolation		✓	✓	✓	✓	–	–
	Antenna Isolation		✓	✓	✓	✓	–	–
	Operating Temp.	Standard	0 to 60°C (32 to 140°F)	-25 to 60°C (-13 to 140°F)	–	-25 to 60°C (-13 to 140°F)	-25 to 60°C (-13 to 140°F)	–
		Wide	-40 to 75°C (-40 to 167°F)	-40 to 75°C (-40 to 167°F)	-40 to 75°C (-40 to 167°F)	-40 to 75°C (-40 to 167°F)	-40 to 75°C (-40 to 167°F)	-40 to 75°C (-40 to 167°F)
	Ingress Protection		IP30	IP30	IP68	IP30	IP30	IP68
	Hazardous Location		–	Class I Div II ATEX Zone 2	–	Class I Div II	–	–
	5 GHz DFS Channel Support		✓	✓	✓	–	–	–
Interoperability	MAC Clone		✓	✓	✓	–	–	–
	Wi-Fi Alliance Certified		✓	✓	✓	–	–	–

AWK-1131A Series

Entry-level industrial IEEE 802.11a/b/g/n wireless AP/client

- IEEE 802.11a/b/g/n AP/client support
- Seamless roaming with Turbo Roaming
- Integrated antenna and power isolation
- 5 GHz DFS channel support

Introduction

The AWK-1131A industrial wireless AP/client meets the growing need for faster data transmission speeds by supporting IEEE 802.11n technology with a net data rate of up to 300 Mbps. The AWK-1131A is compliant with industrial standards and approvals covering operating temperature, power input voltage, surge, ESD, and vibration. The two redundant DC power inputs increase the reliability of the power supply. The AWK-1131A 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.

Improved Higher Data Rate and Channel Capacity

- High-speed wireless connectivity with up to 300 Mbps data rate
- MIMO technology to improve the capability of transmitting and receiving multiple data streams
- Increased channel width with channel bonding technology
- Supports flexible channel selection to build up wireless communication system with DFS

Specifications for Industrial-Grade Applications

- Redundant DC power inputs
- Integrated isolation design with enhanced protection against environmental interference
- Compact aluminum housing, IP30-rated

Specifications

WLAN Interface

Standards:
IEEE 802.11a/b/g/n for Wireless LAN
IEEE 802.11i for Wireless Security
IEEE 802.3 for 10BaseT
IEEE 802.3u for 100BaseT(X)
IEEE 802.3ab for 1000BaseT

Spread Spectrum and Modulation (typical):
• DSSS with DBPSK, DQPSK, CCK
• OFDM with BPSK, QPSK, 16QAM, 64QAM
• 802.11b: CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, DBPSK @ 1 Mbps
• 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps
• 802.11n: 64QAM @ 300 Mbps to BPSK @ 6.5 Mbps (multiple rates supported)

Operating Channels (central frequency):
US:
2.412 to 2.462 GHz (11 channels)
5.180 to 5.240 GHz (4 channels)
5.260 to 5.320 GHz (4 channels)*
5.500 to 5.700 GHz (8 channels, excluding 5.600 to 5.640 GHz)*
5.745 to 5.825 GHz (5 channels)
EU:
2.412 to 2.472 GHz (13 channels)
5.180 to 5.240 GHz (4 channels)
5.260 to 5.320 GHz (4 channels)*
5.500 to 5.700 GHz (11 channels)*
JP:
2.412 to 2.484 GHz (14 channels, DSSS)
5.180 to 5.240 GHz (4 channels)
5.260 to 5.320 GHz (4 channels)*
5.500 to 5.700 GHz (11 channels)*

*DFS (Dynamic Frequency Selection) channel support: In AP mode, when a radar signal is detected, the device will automatically switch to another channel. However according to regulations, after switching channels, a 60-second availability check period is required before starting the service.

Security:
• SSID broadcast enable/disable
• Firewall for MAC/IP/Protocol/Port-based filtering
• 64-bit and 128-bit WEP encryption, WPA/WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP, and AES)

Transmission Rates:
802.11b: 1, 2, 5.5, 11 Mbps
802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
802.11n: 6.5 to 300 Mbps (multiple rates supported)

TX Transmit Power:
802.11b:
Typ. 23±1.5 dBm @ 1 Mbps, Typ. 23±1.5 dBm @ 2 Mbps, Typ. 20±1.5 dBm @ 5.5 Mbps, Typ. 19±1.5 dBm @ 11 Mbps
802.11g:
Typ. 20±1.5 dBm @ 6 to 24 Mbps, Typ. 19±1.5 dBm @ 36 Mbps, Typ. 18±1.5 dBm @ 48 Mbps, Typ. 17±1.5 dBm @ 54 Mbps

802.11n (2.4 GHz):
Typ. 20±1.5 dBm @ MCS0/8 20 MHz,
Typ. 16±1.5 dBm @ MCS7/15 20 MHz
Typ. 20±1.5 dBm @ MCS0/8 40 MHz,
Typ. 16±1.5 dBm @ MCS7/15 40 MHz
802.11a:
Typ. 20±1.5 dBm @ 6 to 24 Mbps, Typ. 19±1.5 dBm @ 36 Mbps,
Typ. 16±1.5 dBm @ 48 Mbps,Typ. 15±1.5 dBm @ 54 Mbps
802.11n (5 GHz):
Typ. 19±1.5 dBm @ MCS0/8 20 MHz,
Typ. 14±1.5 dBm @ MCS7/15 20 MHz
Typ. 18±1.5 dBm @ MCS0/8 40 MHz,
Typ. 14±1.5 dBm @ MCS7/15 40 MHz
Note: Based on regional regulations, the maximum transmission power allowed on the UNII bands is restricted in the firmware, as indicated below:

	US	EU	JP
2.4 GHz	20 dBm	20 dBm	20 dBm
5 GHz (UNII-1)	17 dBm	20 dBm	20 dBm
5 GHz (UNII-2)	20 dBm	20 dBm	20 dBm
5 GHz (UNII-2e)	20 dBm	20 dBm	20 dBm
5 GHz (UNII-3)	20 dBm	20 dBm	20 dBm

RX Receive Sensitivity:
802.11b:
-90 dBm @ 1 Mbps, -88 dBm @ 2 Mbps,
-86 dBm @ 5.5 Mbps, -84 dBm @ 11 Mbps
802.11g:
-85 dBm @ 6 Mbps, -84 dBm @ 9 Mbps,
-83 dBm @ 12 Mbps, -82 dBm @ 18 Mbps,
-80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps,
-70 dBm @ 48 Mbps, -70 dBm @ 54 Mbps
802.11n (2.4 GHz):
-70 dBm @ MCS7 20 MHz, -68 dBm @ MCS15 20 MHz
-65 dBm @ MCS7 40 MHz, -63 dBm @ MCS15 40 MHz
802.11a:
-92 dBm @ 6 Mbps, -89 dBm @ 9 Mbps,
-85 dBm @ 12 Mbps, -82 dBm @ 18 Mbps,
-80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps,
-74 dBm @ 48 Mbps, -72 dBm @ 54 Mbps
802.11n (5 GHz):
-70 dBm @ MCS7 20 MHz, -67 dBm @ MCS15 20 MHz
-68 dBm @ MCS7 40 MHz, -66 dBm @ MCS15 40 MHz

Protocol Support
General Protocols: Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, DHCP, LLDP

Interface
Default Antennas: 2 dual-band omni-directional antennas, 2 dBi, RP-SMA (male)
Connector for External Antennas: RP-SMA (female)
LAN Ports: 1, RJ45, 10/100/1000BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
Console Port: RS-232 (RJ45-type)
Reset: Present
LED Indicators: PWR, FAULT, STATE, SIGNAL*, WLAN, 10/100/1000 (RJ45 port)
*signal strength indicator

Management
Device Management: Wireless Search Utility, MXconfig, SNMP
Network Monitoring: MXview

Physical Characteristics
Housing: Metal, IP30 protection
Weight: 307 g (0.68 lb)
Dimensions: 58 x 115 x 70 mm (2.29 x 4.53 x 2.76 in)
Installation: DIN-rail mounting (standard), wall mounting (optional)

Environmental Limits
Operating Temperature:
Standard Models: 0 to 60°C (32 to 140°F)
Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5% to 95% (non-condensing)

Power Requirements
Input Voltage: 12 to 48 VDC, redundant dual DC power inputs
Input Current: 0.56 A @ 12 VDC; 0.14 A @ 48 VDC
Connector: 4-pin removable terminal block, 500 V insulation
Power Consumption: 6.96 W
Reverse Polarity Protection: Present

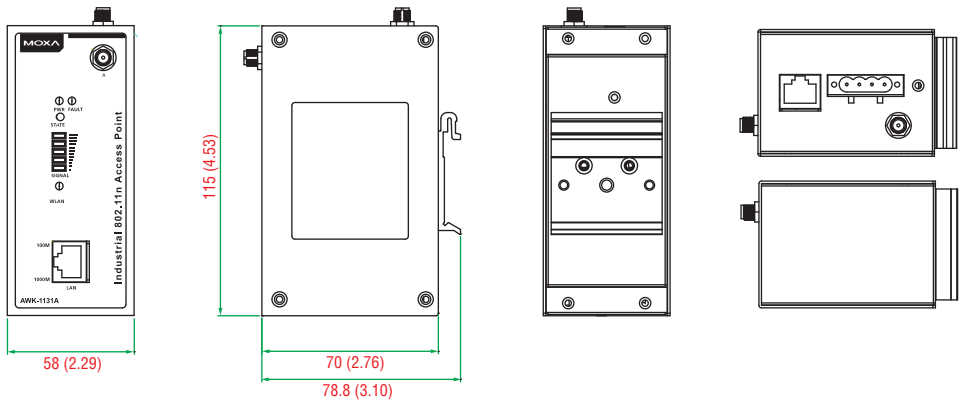
Standards and Certifications
Safety: UL 60950-1, EN 60950-1
EMC: EN 55022/24
EMI: CISPR 22, FCC Part 15B Class B
EMS:
IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m
IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV
IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV
IEC 61000-4-6 CS: 3 V
IEC 61000-4-8
Radio: EN 301 489-1/17, EN 300 328, EN 301 893, TELEC, FCC ID SLE-WAPN005
Note: Please check Moxa's website for the most up-to-date certification status.

MTBF (mean time between failures)
Time: 810,022 hrs
Standard: Telcordia SR332

Warranty
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)



Front View | Side View | Rear View | Top & Bottom Views

Ordering Information

Available Models

AWK-1131A-US: IEEE 802.11a/b/g/n wireless AP/client, US band, 0 to 60°C operating temperature
AWK-1131A-US-T: IEEE 802.11a/b/g/n wireless AP/client, US band, -40 to 75°C operating temperature
AWK-1131A-EU: IEEE 802.11a/b/g/n wireless AP/client, EU band, 0 to 60°C operating temperature
AWK-1131A-EU-T: IEEE 802.11a/b/g/n wireless AP/client, EU band, -40 to 75°C operating temperature
AWK-1131A-JP: IEEE 802.11a/b/g/n wireless AP/client, JP band, 0 to 60°C operating temperature
AWK-1131A-JP-T: IEEE 802.11a/b/g/n wireless AP/client, JP band, -40 to 75°C operating temperature

Note: Please visit Moxa's website for a complete list of optional wireless accessories and antennas available for Moxa's wireless products.

Package Checklist

- AWK-1131A wireless AP/client
- 2 2.4/5 GHz antennas: ANT-WDB-ARM-02
- DIN-rail kit
- 1 plastic RJ45 protective cap
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

AWK-3131A Series

Industrial IEEE 802.11a/b/g/n wireless AP/bridge/client

- IEEE 802.11a/b/g/n AP/bridge/client support
- Seamless roaming with Turbo Roaming
- Complete redundancy with AeroLink Protection
- Integrated antenna and power isolation
- -40 to 75°C operating temperature range (-T models)
- 5 GHz DFS channel support

Introduction

The AWK-3131A 3-in-1 industrial wireless AP/bridge/client meets the growing need for faster data transmission speeds by supporting IEEE 802.11n technology with a net data rate of up to 300 Mbps. The AWK-3131A is compliant with industrial standards and approvals covering operating temperature, power input voltage, surge, ESD, and vibration. The two redundant DC power inputs increase the reliability of the power supply, and the AWK-3131A can be powered via PoE to make deployment easier. The AWK-3131A 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.

Advanced 802.11n Industrial Wireless Solution

- 802.11a/b/g/n compliant AP/bridge/client for flexible deployment
- Software optimized for long distance (LoS, 1 km) wireless communication with external high-gain antenna (available on 5 GHz)
- Supports 60 clients connected concurrently
- DFS channel support allows a wider range of 5 GHz channel selection to avoid existing wireless infrastructure and interference

Advanced Wireless Technology

- Seamless roaming with Client-based Turbo Roaming for < 150 ms roaming recovery time between APs (Client mode)
- Supports AeroLink Protection for creating a redundant wireless link (< 300 ms recovery time) between AP and clients (Client mode)

Industrial Ruggedness

- Integrated antenna and power isolation designed to provide 500 V insulation protection against external electrical interference
- Hazardous location wireless communication with Class I Div II and ATEX Zone 2 certifications
- -40 to 75°C wide operating temperature models (-T) provided for smooth wireless communication in harsh environments

Specifications

WLAN Interface

Standards:
IEEE 802.11a/b/g/n for Wireless LAN
IEEE 802.11i for Wireless Security
IEEE 802.3 for 10BaseT
IEEE 802.3u for 100BaseT(X)
IEEE 802.3ab for 1000BaseT
IEEE 802.3af for Power-over-Ethernet Plus
IEEE 802.1D for Spanning Tree Protocol
IEEE 802.1w for Rapid STP
IEEE 802.1Q for VLAN

Spread Spectrum and Modulation (typical):
• DSSS with DBPSK, DQPSK, CCK
• OFDM with BPSK, QPSK, 16QAM, 64QAM
• 802.11b: CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, DBPSK @ 1 Mbps
• 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps
• 802.11n: 64QAM @ 300 Mbps to BPSK @ 6.5 Mbps (multiple rates supported)

Operating Channels (central frequency):
US:
2.412 to 2.462 GHz (11 channels)
5.180 to 5.240 GHz (4 channels)
5.260 to 5.320 GHz (4 channels)*
5.500 to 5.700 GHz (8 channels, excluding 5.600 to 5.640 GHz)*
5.745 to 5.825 GHz (5 channels)
EU:
2.412 to 2.472 GHz (13 channels)
5.180 to 5.240 GHz (4 channels)
5.260 to 5.320 GHz (4 channels)*
5.500 to 5.700 GHz (11 channels)*
JP:
2.412 to 2.484 GHz (14 channels)
5.180 to 5.240 GHz (4 channels)
5.260 to 5.320 GHz (4 channels)*
5.500 to 5.700 GHz (11 channels)*
*DFS (Dynamic Frequency Selection) channel support: In AP mode, when a radar signal is detected, the device will automatically switch to another channel. However according to regulations, after switching channels, a 60-second availability check period is required before starting the service.

Security:
• SSID broadcast enable/disable
• Firewall for MAC/IP/Protocol/Port-based filtering
• 64-bit and 128-bit WEP encryption, WPA/WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP, and AES)
Transmission Rates:
802.11b: 1, 2, 5.5, 11 Mbps
802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
802.11n: 6.5 to 300 Mbps (multiple rates supported)
TX Transmit Power:
802.11b:
Typ. 23±1.5 dBm @ 1 Mbps, Typ. 23±1.5 dBm @ 2 Mbps,
Typ. 20±1.5 dBm @ 5.5 Mbps, Typ. 19±1.5 dBm @ 11 Mbps
802.11g:
Typ. 20±1.5 dBm @ 6 to 24 Mbps, Typ. 19±1.5 dBm @ 36 Mbps,
Typ. 18±1.5 dBm @ 48 Mbps, Typ. 17±1.5 dBm @ 54 Mbps
802.11n (2.4 GHz):
Typ. 20±1.5 dBm @ MCS0/8 20 MHz,
Typ. 16±1.5 dBm @ MCS7/15 20 MHz
Typ. 20±1.5 dBm @ MCS0/8 40 MHz,
Typ. 16±1.5 dBm @ MCS7/15 40 MHz
802.11a:
Typ. 20±1.5 dBm @ 6 to 24 Mbps, Typ. 19±1.5 dBm @ 36 Mbps,
Typ. 16±1.5 dBm @ 48 Mbps,Typ. 15±1.5 dBm @ 54 Mbps
802.11n (5 GHz):
Typ. 19±1.5 dBm @ MCS0/8 20 MHz,
Typ. 14±1.5 dBm @ MCS7/15 20 MHz
Typ. 18±1.5 dBm @ MCS0/8 40 MHz,
Typ. 14±1.5 dBm @ MCS7/15 40 MHz
Note: Based on regional regulations, the maximum transmission power allowed on the UNII bands is restricted in the firmware, as indicated below:

	US	EU	JP
2.4 GHz	20 dBm	20 dBm	20 dBm
5 GHz (UNII-1)	17 dBm	20 dBm	20 dBm
5 GHz (UNII-2)	20 dBm	20 dBm	20 dBm
5 GHz (UNII-2e)	20 dBm	20 dBm	20 dBm
5 GHz (UNII-3)	20 dBm	20 dBm	20 dBm

RX Receive Sensitivity:
802.11b:
-90 dBm @ 1 Mbps, -88 dBm @ 2 Mbps,
-86 dBm @ 5.5 Mbps, -84 dBm @ 11 Mbps
802.11g:
-85 dBm @ 6 Mbps, -84 dBm @ 9 Mbps,
-83 dBm @ 12 Mbps, -82 dBm @ 18 Mbps,
-80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps,
-70 dBm @ 48 Mbps, -70 dBm @ 54 Mbps
802.11n (2.4 GHz):
-70 dBm @ MCS7 20 MHz, -68 dBm @ MCS15 20 MHz
-65 dBm @ MCS7 40 MHz, -63 dBm @ MCS15 40 MHz
802.11a:
-92 dBm @ 6 Mbps, -89 dBm @ 9 Mbps,
-85 dBm @ 12 Mbps, -82 dBm @ 18 Mbps,
-80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps,
-74 dBm @ 48 Mbps, -72 dBm @ 54 Mbps
802.11n (5 GHz):
-70 dBm @ MCS7 20 MHz, -67 dBm @ MCS15 20 MHz
-68 dBm @ MCS7 40 MHz, -66 dBm @ MCS15 40 MHz

Protocol Support

General Protocols: Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, DHCP, VLAN, STP/RSTP

Interface

Default Antennas: 2 dual-band omni-directional antennas, 2 dBi, RP-SMA (male)
Connector for External Antennas: RP-SMA (female), 500 V insulation
LAN Ports: 1, RJ45, 10/100/1000BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
Console Port: RS-232 (RJ45-type)
Reset: Present
LED Indicators: PWR1, PWR2, PoE, FAULT, STATE, SIGNAL*, WLAN, LAN
*signal strength indicator
Alarm Contact (digital output): 1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Inputs: 2 electrically isolated inputs
• +13 to +30 V for state “1”
• +3 to -30 V for state “0”
• Max. input current: 8 mA

Management

Device Management: Wireless Search Utility, MXconfig, SNMP
Network Monitoring: MXview

Physical Characteristics

Housing: Metal, IP30 protection
Weight: 860 g (1.9 lb)
Dimensions: 52.7 x 135 x 105 mm (2.08 x 5.32 x 4.13 in)
Installation: DIN-rail mounting (standard), wall mounting (optional)

Environmental Limits

Operating Temperature:
Standard Models: -25 to 60°C (-13 to 140°F)
Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5% to 95% (non-condensing)

Power Requirements

Input Voltage: 12 to 48 VDC, redundant dual DC power inputs or 48 VDC Power-over-Ethernet Plus (IEEE 802.3af compliant)
Input Current: 0.6 A @ 12 VDC;0.15 A @ 48 VDC
Connector: 10-pin removable terminal block, 500 V insulation
Power Consumption: 7.2 W
Reverse Polarity Protection: Present

Standards and Certifications

Safety: UL 60950-1, EN 60950-1
Hazardous Location: UL/cUL Class I Division 2, ATEX Zone 2
EMC: EN 61000-6-2/6-4
EMI: CISPR 22, FCC Part 15B Class B
EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m
IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV
IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV
IEC 61000-4-6 CS: 10 V
IEC 61000-4-8
Radio: EN 301 489-1/17, EN 300 328, EN 301 893, TELEC, FCC ID SLE-WAPN005
Note: Please check Moxa’s website for the most up-to-date certification status.

MTBF (mean time between failures)

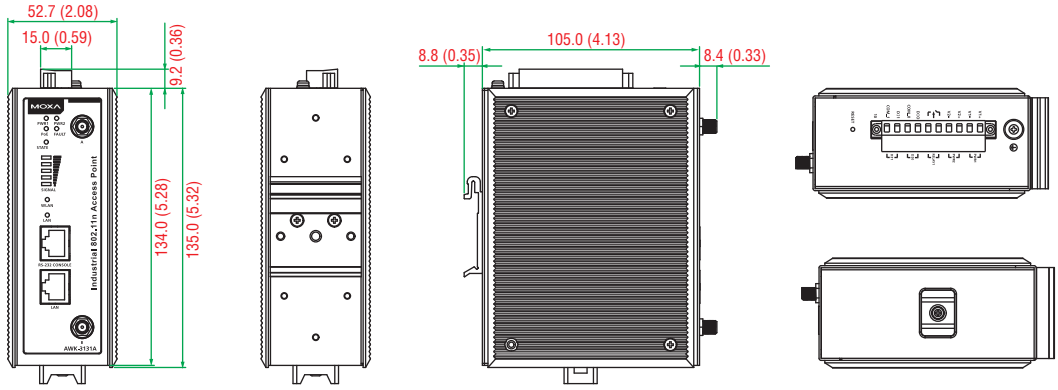
Time: 477,425 hrs
Standard: Telcordia SR332

Warranty

Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)



Front View | Rear View | Side View | Top & Bottom Views

Ordering Information

Available Models

AWK-3131A-US: IEEE 802.11a/b/g/n wireless AP/bridge/client, US band, -25 to 60°C operating temperature
AWK-3131A-US-T: IEEE 802.11a/b/g/n wireless AP/bridge/client, US band, -40 to 75°C operating temperature
AWK-3131A-EU: IEEE 802.11a/b/g/n wireless AP/bridge/client, EU band, -25 to 60°C operating temperature
AWK-3131A-EU-T: IEEE 802.11a/b/g/n wireless AP/bridge/client, EU band, -40 to 75°C operating temperature
AWK-3131A-JP: IEEE 802.11a/b/g/n wireless AP/bridge/client, JP band, -25 to 60°C operating temperature
AWK-3131A-JP-T: IEEE 802.11a/b/g/n wireless AP/bridge/client, JP band, -40 to 75°C operating temperature

Note: Please visit Moxa's website for a complete list of optional wireless accessories and antennas available for Moxa's wireless products.

Package Checklist

- AWK-3131A wireless AP/bridge/client
- 2 2.4/5 GHz antennas: ANT-WDB-ARM-02
- DIN-rail kit
- 2 plastic RJ45 protective caps
- Cable holder with one screw
- Quick installation guide (printed)
- Warranty card

AWK-4131A Series

Preliminary

Outdoor industrial IEEE 802.11a/b/g/n wireless AP/bridge/client

- IEEE 802.11a/b/g/n AP/bridge/client support
- Seamless roaming with Turbo Roaming
- Complete redundancy with AeroLink Protection
- Integrated antenna and power isolation
- Rugged IP68-rated housing and -40 to 75°C operating temperature
- 5 GHz DFS channel support

Introduction

The AWK-4131A IP68 outdoor industrial AP/bridge/client meets the growing need for faster data transmission speeds by supporting 802.11n technology and allowing 2X2 MIMO comunication with a net data rate of up to 300 Mbps. The AWK-4131A is compliant with industrial standards and approvals covering operating temperature, power input voltage, surge, ESD, and vibration. The two redundant DC power inputs increase the reliability of the power supply, and the AWK-4131A can be powered via PoE to make deployment easier. The AWK-4131A 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 investments in wireless networks.

Advanced 802.11n Industrial Wireless Solution

- 802.11a/b/g/n compliant AP/bridge/client for flexible deployment
- Software optimized for long distance (LoS, 1 km) wireless communication with external high-gain antenna (available on 5 GHz)
- Supports 60 clients connected concurrently
- DFS channel support allows a wider range of 5 GHz channel selection to avoid existing wireless infrastructure and interference

Advanced Wireless Technology

- Seamless roaming with Client-based Turbo Roaming for < 150 ms roaming recovery time between APs (Client mode)
- Supports AeroLink Protection for creating a redundant wireless link (< 300 ms recovery time) between AP and clients (Client mode)

Industrial Ruggedness

- Integrated antenna and power isolation designed to provide 500 V insulation protection against external electrical interference
- IP68 rated metal casing for complete ingress protection for any outdoor weather
- -40 to 75°C wide operating temperature provided for smooth wireless communication in harsh environments

Specifications

WLAN Interface

Standards:
IEEE 802.11a/b/g/n for Wireless LAN
IEEE 802.11i for Wireless Security
IEEE 802.3 for 10BaseT
IEEE 802.3u for 100BaseT(X)
IEEE 802.3ab for 1000BaseT
IEEE 802.3af for Power-over-Ethernet
IEEE 802.1D for Spanning Tree Protocol
IEEE 802.1w for Rapid STP
IEEE 802.1Q for VLAN

Spread Spectrum and Modulation (typical):
• DSSS with DBPSK, DQPSK, CCK
• OFDM with BPSK, QPSK, 16QAM, 64QAM
• 802.11b: CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, DBPSK @ 1 Mbps
• 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps
• 802.11n: 64QAM @ 300 Mbps to BPSK @ 6.5 Mbps (multiple rates supported)

Operating Channels (central frequency):
US:
2.412 to 2.462 GHz (11 channels)
5.180 to 5.240 GHz (4 channels)
5.260 to 5.320 GHz (4 channels)*
5.500 to 5.700 GHz (8 channels, excluding 5.600 to 5.640 GHz)*
5.745 to 5.825 GHz (5 channels)
EU:
2.412 to 2.472 GHz (13 channels)
5.180 to 5.240 GHz (4 channels)*
5.260 to 5.320 GHz (4 channels)
5.500 to 5.700 GHz (11 channels)*
JP:
2.412 to 2.484 GHz (14 channels)
5.180 to 5.240 GHz (4 channels)
5.260 to 5.320 GHz (4 channels)*
5.500 to 5.700 GHz (11 channels)*
*DFS (Dynamic Frequency Selection) channel support: In AP mode, when a radar signal is detected, the device will automatically switch to another channel. However according to regulations, after switching channels, a 60-second availability check period is required before starting the service.

Security:
• SSID broadcast enable/disable
• Firewall for MAC/IP/Protocol/Port-based filtering
• 64-bit and 128-bit WEP encryption, WPA/WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP, and AES)
Transmission Rates:
802.11b: 1, 2, 5.5, 11 Mbps
802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
802.11n: 6.5 to 300 Mbps (multiple rates supported)
TX Transmit Power:
802.11b:
Typ. 26±1.5 dBm @ 1 Mbps, Typ. 26±1.5 dBm @ 2 Mbps
Typ. 26±1.5 dBm @ 5.5 Mbps, Typ. 25±1.5 dBm @ 11 Mbps
802.11g:
Typ. 23±1.5 dBm @ 6 to 24 Mbps, Typ. 22±1.5 dBm @ 36 Mbps
Typ. 20±1.5 dBm @ 48 Mbps, Typ. 19±1.5 dBm @ 54 Mbps
802.11n (2.4 GHz):
Typ. 23±1.5 dBm @ MCS0/8 20 MHz,
Typ. 18±1.5 dBm @ MCS7/15 20 MHz
Typ. 23±1.5 dBm @ MCS0/8 40 MHz,
Typ. 17±1.5 dBm @ MCS7/15 40 MHz
802.11a:
Typ. 23±1.5 dBm @ 6 to 24 Mbps, Typ. 21±1.5 dBm @ 36 Mbps
Typ. 20±1.5 dBm @ 48 Mbps,Typ. 18±1.5 dBm @ 54 Mbps
802.11n (5 GHz):
Typ. 23±1.5 dBm @ MCS0/8 20 MHz,
Typ. 18±1.5 dBm @ MCS7/15 20 MHz
Typ. 23±1.5 dBm @ MCS0/8 40 MHz,
Typ. 18±1.5 dBm @ MCS7/15 40 MHz
Note: Based on regional regulations, the maximum transmission power allowed on the UNII bands is restricted in the firmware, as per the following list:

	US	EU	JP
2.4 GHz	20 dBm	20 dBm	20 dBm
5 GHz (UNII-1)	17 dBm	20 dBm	20 dBm
5 GHz (UNII-2)	20 dBm	20 dBm	20 dBm
5 GHz (UNII-2e)	20 dBm	20 dBm	20 dBm
5 GHz (UNII-3)	20 dBm	20 dBm	20 dBm

RX Receive Sensitivity:
802.11b:
-93 dBm @ 1 Mbps, -93 dBm @ 2 Mbps
-93 dBm @ 5.5 Mbps, -88 dBm @ 11 Mbps
802.11g:
-88 dBm @ 6 Mbps, -86 dBm @ 9 Mbps
-85 dBm @ 12 Mbps, -85 dBm @ 18 Mbps
-85 dBm @ 24 Mbps, -82 dBm @ 36 Mbps
-78 dBm @ 48 Mbps, -74 dBm @ 54 Mbps
802.11n (2.4 GHz):
-70 dBm @ MCS7 20 MHz, -69 dBm @ MCS15 20 MHz
-67 dBm @ MCS7 40 MHz, -67 dBm @ MCS15 40 MHz
802.11a:
-90 dBm @ 6 Mbps, -88 dBm @ 9 Mbps
-88 dBm @ 12 Mbps, -85 dBm @ 18 Mbps
-81 dBm @ 24 Mbps, -78 dBm @ 36 Mbps
-74 dBm @ 48 Mbps, -72 dBm @ 54 Mbps
802.11n (5 GHz):
-69 dBm @ MCS7 20 MHz, -71 dBm @ MCS15 20 MHz
-63 dBm @ MCS7 40 MHz, -68 dBm @ MCS15 40 MHz

Protocol Support
General Protocols: Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, DHCP, VLAN, STP/RSTP

Interface
Default Antennas: 2 dual-band omni-directional antennas, 5 dBi at 2.4 GHz, 2 dBi at 5 GHz, N-type (male)
Connector for External Antennas: N-Type (female), 500 V insulation
LAN Ports: 1, RJ45, 10/100/1000BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
Console Port: RS-232 (waterproof RJ45-type)
Reset: Present
LED Indicators: PWR, FAULT, STATE, WLAN, LAN
Alarm Contact (digital output): 8-pin M12 A-coded connector (female), 1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Inputs: 8-pin M12 A-coded connector (female), 2 electrically isolated inputs
• +13 to +30 V for state “1”
• +3 to -30 V for state “0”
• Max. input current: 8 mA

Management
Device Management: Wireless Search Utility, MXconfig, SNMP
Network Monitoring: MXview

Physical Characteristics
Housing: Metal, IP68 protection
Weight: 1400 g (3.09 lb)
Dimensions: 224 x 148 x 67 mm (8.82 x 5.82 x 2.62 in)
Installation: Wall mounting (standard), DIN-rail mounting (optional), pole mounting (optional)

Environmental Limits
Operating Temperature: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5% to 95% (non-condensing)

Power Requirements
Input Voltage: 12 to 48 VDC, redundant dual DC power inputs or 48 VDC Power-over-Ethernet (IEEE 802.3af compliant)
Input Current: 0.64 A @ 12 VDC; 0.16 A @ 48 VDC
Connector: 5-pin M12 A-coded connector (male), 500 V insulation
Power Consumption: 7.68 W
Reverse Polarity Protection: Present

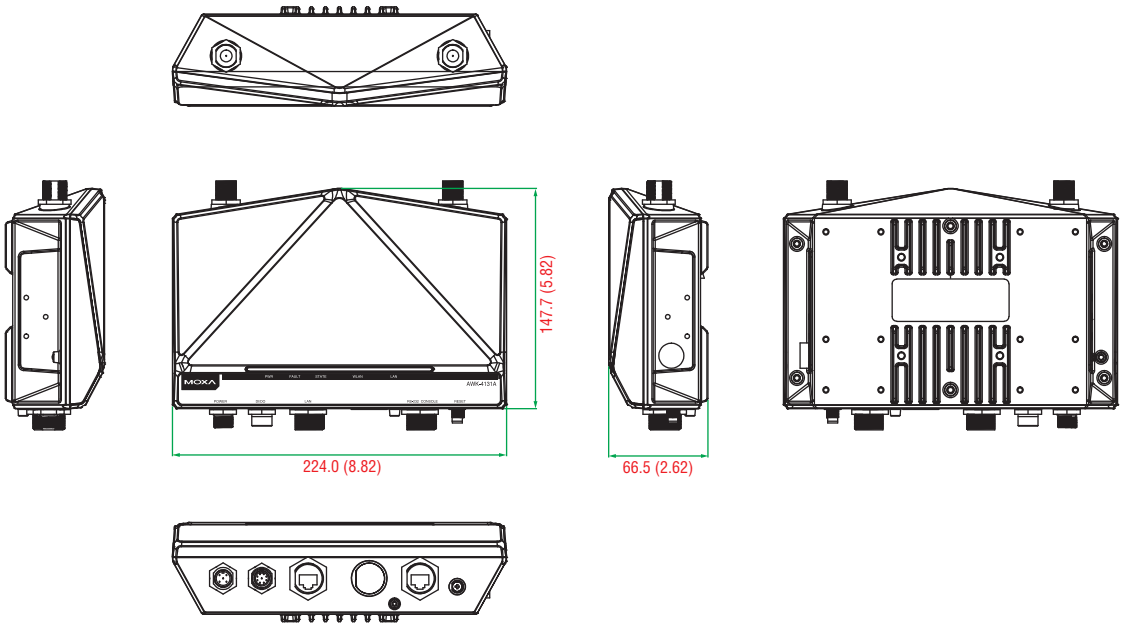
Standards and Certifications
Safety: UL 60950-1, EN 60950-1
EMC: EN 61000-6-2/6-4
EMI: CISPR 22, FCC Part 15B Class B
EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m
IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV
IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV
IEC 61000-4-6 CS: 10 V
IEC 61000-4-8
Radio: EN 301 489-1/17, EN 300 328, EN 301 893, TELEC, FCC ID SLE-WAPN008
Note: Please check Moxa’s website for the most up-to-date certification status.

MTBF (mean time between failures)
Time: 440,764 hrs
Standard: Telcordia SR332

Warranty
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)



Side View | Front, Top, and Rear Views | Side View | Bottom View

Ordering Information

Available Models

AWK-4131A-US-T: IEEE 802.11a/b/g/n IP68 wireless AP/bridge/client, US band, -40 to 75°C operating temperature

AWK-4131A-EU-T: IEEE 802.11a/b/g/n IP68 wireless AP/bridge/client, EU band, -40 to 75°C operating temperature

AWK-4131A-JP-T: IEEE 802.11a/b/g/n IP68 wireless AP/bridge/client, JP band, -40 to 75°C operating temperature

Note: Please visit Moxa's website for a complete list of optional wireless accessories and antennas available for Moxa's wireless products.

Package Checklist

- AWK-4131A wireless AP/bridge/client
- 2 2.4/5 GHz antennas: ANT-WDB-ANM-0502
- Wall-mounting kit (includes 2 supports)
- Field-installable power plug
- Field-installable RJ45 plug
- Metal cap to cover RJ45 connector
- Metal cap to cover M12-female connector
- Transparent plastic sticks for field-installable plugs
- Quick installation guide (printed)
- Warranty card

AWK-3191 Series

Industrial 900 MHz wireless AP/bridge/client

- 900 MHz transmission for long distance wireless communication
- AP/client and master/slave modes supported for point-to-point and point-to-multi-point connections
- Maximum security with WEP/WPA/WPA2/802.11X and powerful filters
- Integrated antenna and power isolation
- -40 to 75°C operating temperature range (T models)

Introduction

The AWK-3191 900 MHz wireless AP/bridge/client is Moxa's answer to long distance wireless communication for industrial applications. By combining the characteristics of the 33-centimeter band and the proven 802.11 standards, Moxa is able to provide a reliable long distance wireless solution. Unlike traditional point-to-point 900 MHz radios, the AWK-3191 supports both master/slave and AP/client operation modes to enable both point-to-point and point-to-multi-point communication for higher flexibility and lower total cost of ownership.

Furthermore, the AWK-3191 is designed to be deployed easily, but in case of external interference, Moxa also provides the ability to allow engineers to adjust their 900 MHz central frequency and bandwidth (5/10 MHz and 20 MHz) to optimize their wireless performance.

The AWK-3191 is rated to operate at temperatures ranging from -25 to 60°C for standard models and -40 to 75°C for wide temperature models, and with an industrial-oriented design, it is compliant with various standards and approvals, making it rugged enough for any harsh industrial environment.

Advanced Security

- Enable/disable SSID broadcasts
- WPA/WPA2 (Wi-Fi Protected Access) and 802.11i support
- IEEE 802.1X / RADIUS support
- MAC/IP/protocol/port filtering for applications that require more restricted access control

Specifications for Industrial-Grade Applications

- Long-distance data transmission over 30 km with directional antenna
- Power and antenna isolation design for a complete separation between system ground, chassis ground, and antenna system to protect against interference from unstable environmental factors
- Redundant DC power inputs
- Integrated DI/DO for on-site monitoring and warnings
- Signal strength LEDs for easy deployment and antenna alignment

Specifications

WLAN Interface

Standards:
IEEE 802.11i for Wireless Security
IEEE 802.1Q for VLAN
IEEE 802.3af for Power-over-Ethernet
Spread Spectrum and Modulation (typical):
• OFDM with BPSK, QPSK, 16QAM, 64QAM
• 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps
Operating Channels (central frequency):
US: 902 to 928 MHz (ISM band)
• 915 MHz (BW = 20 MHz)
• 908.5, 915, 921.5 MHz (BW = 10 MHz)
• 905.25, 908.5, 911.75, 915, 918.25, 921.5, 924.75 MHz (BW = 5 MHz)
Security:
• SSID broadcast enable/disable
• Firewall for MAC/IP/protocol/port-based filtering
• 64-bit and 128-bit WEP encryption, WPA/WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP, and AES)

Transmission Rates:
6, 9, 12, 18, 24, 36, 48, 54 Mbps
TX Transmit Power:
Typ. 24±1.5 dBm @ 6 to 24 Mbps
Typ. 23±1.5 dBm @ 36 Mbps
Typ. 22±1.5 dBm @ 48 Mbps
Typ. 21±1.5 dBm @ 54 Mbps
RX Sensitivity:
-90 dBm @ 6 Mbps
-88 dBm @ 9 Mbps
-87 dBm @ 12 Mbps
-85 dBm @ 18 Mbps
-81 dBm @ 24 Mbps
-77 dBm @ 36 Mbps
-73 dBm @ 48 Mbps
-71 dBm @ 54 Mbps
Channel Band Width:
US: 5 MHz, 10 MHz, 20 MHz

Protocol Support

General Protocols: Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, DHCP, VLAN, STP/RSTP

Interface

Default Antennas: N/A, antenna purchase seperately
Connector for External Antennas: RP-SMA (female), 500 V insulation
LAN Ports: 1, RJ45, 10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
Console Port: RS-232 (RJ45-type)
Reset: Present
LED Indicators: PWR1, PWR2, PoE, FAULT, STATE, SIGNAL*, CLIENT MODE, BRIDGE MODE, WLAN, 10M, 100M
*signal strength indicator
Alarm Contact (digital output): 1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Inputs: 2 electrically isolated inputs
• +13 to +30 V for state "1"
• +3 to -30 V for state "0"
• Max. input current: 8 mA

Management

Device Management: Wireless Search Utility, SNMP

Physical Characteristics

Housing: Metal, IP30 protection
Weight: 930 g (2.05 lb)
Dimensions: 53 x 135 x 105 mm (2.08 x 5.31 x 4.13 in)
Installation: DIN-rail mounting (standard), wall mounting (optional)

Environmental Limits

Operating Temperature:
Standard Models: -25 to 60°C (-13 to 140°F)
Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5% to 95% (non-condensing)

Power Requirements

Input Voltage: 12 to 48 VDC, redundant dual DC power inputs or 48 VDC Power-over-Ethernet (IEEE 802.3af compliant)
Input Current: 0.49 A @ 12 VDC; 0.12 A @ 48 VDC
Connector: 10-pin removable terminal block, 500 V insulation
Power Consumption: 5.76 W
Reverse Polarity Protection: Present

Standards and Certifications

Safety: UL 60950-1
EMI: CISPR 22, FCC Part 15B Class B
Radio: FCC ID SLE-WAFS001
Note: Please check Moxa's website for the most up-to-date certification status.

MTBF (mean time between failures)

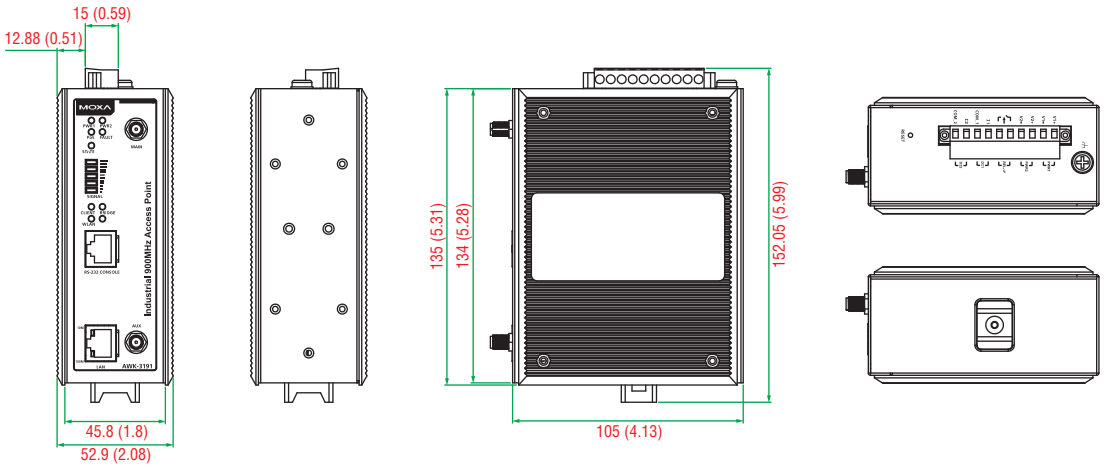
Time: 484,469 hrs
Standard: Telcordia SR332

Warranty

Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)



Front View | Side View | Rear View | Top & Bottom Views

Ordering Information

Available Models

AWK-3191-US: Industrial 900 MHz wireless AP/bridge/client, US band (902 to 928 MHz), -25 to 60°C operating temperature
AWK-3191-US-T: Industrial 900 MHz wireless AP/bridge/client, US band (902 to 928 MHz), -40 to 75°C operating temperature
Note: Moxa's AWK-3191 does NOT include default antennas; refer to the following information to choose a suitable antenna system

Optional Accessories (can be purchased separately)

A-CRF-RMNM-L1-X00: N-type (male) to RP SMA (male), LMR-195 Lite RF cable, available in lengths of 3 m, 6 m, and 9 m
ANT-WSB0.9-YNF-12: 900 MHz, Yagi antenna for point-to-point applications, 12 dBi, N-type (female)
ANT-WSB0.9-ANF-9: 900 MHz, omni-directional antenna for point-to-multi-point applications, 9 dBi, N-type (female)
Note: Please visit Moxa's website for a complete list of optional wireless accessories and antennas available for Moxa's wireless products.

Package Checklist

- AWK-3191 wireless AP/bridge/client
- DIN-rail kit
- 2 plastic RJ45 protective caps
- Cable holder with one screw
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

AWK-5232 Series

Industrial IEEE 802.11a/b/g/n dual-radio wireless AP/bridge/client

- IEEE 802.11a/b/g/n compliant
- Dual-radio design for 2.4 GHz and/or 5 GHz bands
- Redundant power inputs and PoE+
- Industrial grade QoS (WMM) and VLAN supported
- Supports client-based Turbo Roaming
- -40 to 75°C operating temperature range (T models)

Dual RF | Turbo Roaming | 802.11

Introduction

The AWK-5232 industrial a/b/g/n wireless AP/bridge/client is an ideal wireless solution for hard-to-wire situations and all mobile equipment that is connected over a TCP/IP network. It provides a faster connection and wider range than 802.11g models, with the connection noticeably stronger at a distance. With two independent RF modules, the AWK-5232 allows two independent wireless connections over different frequencies, and supports a great variety of wireless configurations and applications. The AWK-5232 is compliant with the industrial standards and approvals covering operating temperature, power input voltage, surge, ESD, and vibration. The AWK-5232's two DC power inputs increases the power supply's reliability, and can also be powered via PoE+ for easier deployment.

Higher Data Rate and Greater Bandwidth

- High-speed wireless connectivity with up to 300 Mbps data rate in each radio module
- MIMO technology improves data throughput via mulitplexed, smart antenna transmissions and receptions
- Channel bonding technology for increased throughput or channel redundancy
- Dual DC power inputs and PoE+
- Immunity against disconnection caused by radio interference

Specifications for Higher Security

- 64-bit and 128-bit WEP (Wired Equivalent Privacy)
- Enable/disable SSID broadcasts
- Power filters for access control
- IEEE/802.11X/RADIUS supported
- WPA/WPA2/802.11i supported

Specifications

WLAN Interface

Standards:
IEEE 802.11a/b/g/n for Wireless LAN
IEEE 802.11i for Wireless Security
IEEE 802.3 for 10BaseT
IEEE 802.3u for 100BaseTX
IEEE 802.3ab for 1000BaseT
IEEE 802.3at for Power-over-Ethernet Plus
IEEE 802.1D for Spanning Tree Protocol
IEEE 802.1w for Rapid STP
IEEE 802.1Q for VLAN
Spread Spectrum and Modulation (typical):
• DSSS with DBPSK, DQPSK, CCK
• OFDM with BPSK, QPSK, 16QAM, 64QAM
• 802.11b: CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, DBPSK @ 1 Mbps
• 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps
• 802.11n: 64QAM @ 300 Mbps to BPSK @ 6.5 Mbps (multiple rates supported)
Operating Channels (central frequency):
US:
2.412 to 2.462 GHz (11 channels)
5.18 to 5.24 GHz (4 channels)
EU:
2.412 to 2.472 GHz (13 channels)
5.18 to 5.24 GHz (4 channels)
JP:
2.412 to 2.472 GHz (13 channels, OFDM)
2.412 to 2.484 GHz (14 channels, DSSS)
5.18 to 5.24 GHz (4 channels for W52)
Security:
• SSID broadcast enable/disable
• Firewall for MAC/IP/Protocol/Port-based filtering
• 64-bit and 128-bit WEP encryption, WPA/WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP, and AES)
Transmission Rates:
802.11b: 1, 2, 5.5, 11 Mbps
802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
802.11n: 6.5 to 300 Mbps (multiple rates supported)
TX Transmit Power:
802.11b:
Typ. 18±1.5 dBm @ 1 to 11 Mbps
802.11g:
Typ. 18±1.5 dBm @ 6 to 24 Mbps,
Typ. 17±1.5 dBm @ 36 to 48 Mbps,
Typ. 15±1.5 dBm @ 54 Mbps
802.11n (2.4 GHz):
Typ. 14±1.5 dBm @ MCS15 20 MHz
802.11a:
Typ. 17±1.5 dBm @ 6 to 24 Mbps,
Typ. 16±1.5 dBm @ 36 to 48 Mbps,
Typ. 14±1.5 dBm @ 54 Mbps
802.11n (5 GHz):
Typ. 13±1.5 dBm @ MCS15 20 MHz,
Typ. 12±1.5 dBm @ MCS15 40 MHz

RX Receive Sensitivity:
802.11b:
-92 dBm @ 1 Mbps, -90 dBm @ 2 Mbps,
-88 dBm @ 5.5 Mbps, -84 dBm @ 11 Mbps
802.11g:
-87 dBm @ 6 Mbps, -86 dBm @ 9 Mbps,
-85 dBm @ 12 Mbps, -82 dBm @ 18 Mbps,
-80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps,
-72 dBm @ 48 Mbps, -70 dBm @ 54 Mbps
802.11n (2.4 GHz):
-69 dBm @ MCS15 20 MHz,
-71 dBm @ MCS7 20 MHz
802.11a:
-87 dBm @ 6 Mbps, -86 dBm @ 9 Mbps,
-85 dBm @ 12 Mbps, -82 dBm @ 18 Mbps,
-80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps,
-72 dBm @ 48 Mbps, -70 dBm @ 54 Mbps
802.11n (5 GHz):
-68 dBm @ MCS15 40 MHz, -69 dBm @ MCS15 20 MHz,
-70 dBm @ MCS7 40 MHz, -71 dBm @ MCS7 20 MHz

Protocol Support

General Protocols: Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, DHCP, VLAN, STP/RSTP

Interface

Default Antennas: 4 dual-band omni-directional antennas, 2 dBi, RP-SMA (male)
Connector for External Antennas: RP-SMA (female)
LAN Ports: 2, RJ45, 10/100/1000BaseT(X), auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
Console Port: RS-232 (RJ45-type)
Reset: Present
LED Indicators: PWR1, PWR2, PoE+, FAULT, STATE, WLAN1, WLAN2, 100M, 1000M
Alarm Contact (digital output): 1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Inputs: 2 electrically isolated inputs
• +13 to +30 V for state "1"
• +3 to -30 V for state "0"
• Max. input current: 8 mA

Management

Device Management: Wireless Search Utility, SNMP

Physical Characteristics

Housing: Metal, IP30 protection
Weight: 1320 g (2.91 lb)
Dimensions: 75 x 135 x 105 mm (2.9 x 5.3 x 4.1 in)
Installation: DIN-rail mounting (standard), wall mounting (optional)

Environmental Limits

Operating Temperature:
Standard Models: -25 to 60°C (-13 to 140°F)
Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5% to 95% (non-condensing)

Power Requirements

Input Voltage: 12 to 48 VDC, redundant dual DC power inputs or 48 VDC Power-over-Ethernet Plus (IEEE 802.3at compliant)
Input Current: 1.5 A @ 12 VDC
Connector: 10-pin removable terminal block
Power Consumption: 18 W
Reverse Polarity Protection: Present

Standards and Certifications

Safety: UL 60950-1, EN 60950-1
EMC: EN 55022/24
EMI: CISPR 22, FCC Part 15B Class B
EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m
IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV
IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV
IEC 61000-4-6 CS: 3 V
IEC 61000-4-8
Radio: EN 301 489-1/17, EN 300 328, EN 301 893, TELEC, FCC ID SLE-WAPN001
Note: Please check Moxa's website for the most up-to-date certification status.

MTBF (mean time between failures)

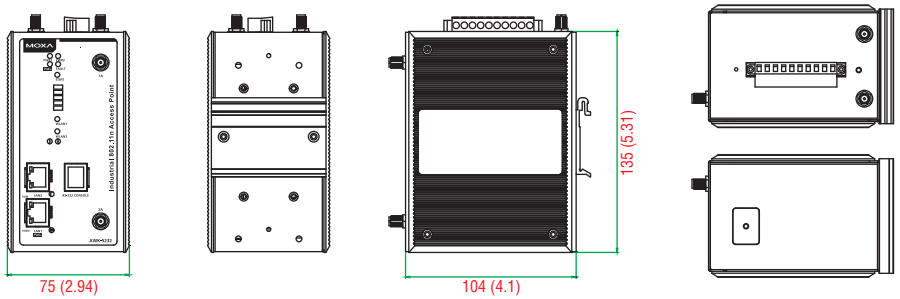
Time: 290,422 hrs
Standard: Telcordia SR332

Warranty

Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)



Front View | Rear View | Side View | Top & Bottom Views

Ordering Information

Available Models

AWK-5232-US: IEEE 802.11a/b/g/n dual-radio wireless AP/bridge/client, US band, -25 to 60°C operating temperature
AWK-5232-US-T: IEEE 802.11a/b/g/n dual-radio wireless AP/bridge/client, US band, -40 to 75°C operating temperature
AWK-5232- EU: IEEE 802.11a/b/g/n dual-radio wireless AP/bridge/client, EU band, -25 to 60°C operating temperature
AWK-5232- EU -T: IEEE 802.11a/b/g/n dual-radio wireless AP/bridge/client, EU band, -40 to 75°C operating temperature
AWK-5232-JP: IEEE 802.11a/b/g/n dual-radio wireless AP/bridge/client, JP band, -25 to 60°C operating temperature
AWK-5232-JP-T: IEEE 802.11a/b/g/n dual-radio wireless AP/bridge/client, JP band, -40 to 75°C operating temperature
Note: Please visit Moxa's website for a complete list of optional wireless accessories and antennas available for Moxa's wireless products.

Package Checklist

- AWK-5232 wireless AP/bridge/client
- 4 2.4/5 GHz antennas: ANT-WDB-ARM-02
- DIN-rail kit
- 2 plastic RJ protective caps for LAN and Console ports
- Cable holder with 1 screw
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

AWK-6232 Series

Outdoor industrial IEEE 802.11a/b/g/n dual-radio wireless AP/bridge/client

- IEEE 802.11a/b/g/n compliant
- Dual-radio design for 2.4 GHz and/or 5 GHz bands
- M12 anti-vibration connectors
- Industrial grade QoS (WMM) and VLAN supported
- Supports client-based Turbo Roaming
- Rugged IP68-rated housing and -40 to 75°C operating temperature

Introduction

Moxa's AWK-6232 3-in-1 outdoor wireless AP/bridge/client meets the growing need for faster data transmission speeds and wider coverage by supporting IEEE 802.11n technology with a net data rate of up to 300 Mbps for each radio module. The AWK-6232 provides a flexible and efficient way to deploy your wireless network with its dual 2.4/5 GHz RF modules, which allow two independent wireless connections over different frequencies. The AWK-6232 is compliant with the industrial standards and approvals covering operating temperature, power input voltage, surge, ESD, and vibration. In addition, the AWK-6232 is housed in an IP68 metal casing with M12 connectors for total protection against dust, water, vibration, and other environmental effects.

Improved Higher Data Rate and Bandwidth

- High-speed wireless connectivity with up to 300 Mbps data rate for each radio module
- MIMO technology to improve the capacity of multiple data stream transmits and receives
- Increased channel width with channel bonding technology

Features for Critical Environments

- IP68-rated metal housing and -40 to 75°C wide operating temperature
- Anti-vibration M12 design and waterproof/dust-tight RJ45 connectors
- Wall, DIN-rail, and pole-mounting options for versatile outdoor installation

Specifications

WLAN Interface

Standards:
IEEE 802.11a/b/g/n for Wireless LAN
IEEE 802.11i for Wireless Security
IEEE 802.3 for 10BaseT
IEEE 802.3u for 100BaseTX
IEEE 802.3ab for 1000BaseT
IEEE 802.3at for Power-over-Ethernet Plus
IEEE 802.1D for Spanning Tree Protocol
IEEE 802.1w for Rapid STP
IEEE 802.1Q VLAN
Spread Spectrum and Modulation (typical):
• DSSS with DBPSK, DQPSK, CCK
• OFDM with BPSK, QPSK, 16QAM, 64QAM
• 802.11b: CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, DBPSK @ 1 Mbps
• 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps
• 802.11n: 64QAM @ 300 Mbps to BPSK @ 6.5 Mbps (multiple rates supported)
Operating Channels (central frequency):
US:
2.412 to 2.462 GHz (11 channels)
5.18 to 5.24 GHz (4 channels)
EU:
2.412 to 2.472 GHz (13 channels)
5.18 to 5.24 GHz (4 channels)
JP:
2.412 to 2.472 GHz (13 channels, OFDM)
2.412 to 2.484 GHz (14 channels, DSSS)
5.18 to 5.24 GHz (4 channels for W52)

Security:
• SSID broadcast enable/disable
• Firewall for MAC/IP/Protocol/Port-based filtering
• 64-bit and 128-bit WEP encryption, WPA/WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP, and AES)
Transmission Rates:
802.11b: 1, 2, 5.5, 11 Mbps
802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
802.11n: 6.5 to 300 Mbps (multiple rates supported)
TX Transmit Power:
802.11b:
Typ. 18±1.5 dBm @ 1 to 11 Mbps
802.11g:
Typ. 18±1.5 dBm @ 6 to 24 Mbps,
Typ. 17±1.5 dBm @ 36 to 48 Mbps,
Typ. 15±1.5 dBm @ 54 Mbps
802.11n (2.4 GHz):
Typ. 14±1.5 dBm @ MCS15 20 MHz
802.11a:
Typ. 17±1.5 dBm @ 6 to 24 Mbps,
Typ. 16±1.5 dBm @ 36 to 48 Mbps,
Typ. 14±1.5 dBm @ 54 Mbps
802.11n (5 GHz):
Typ. 13±1.5 dBm @ MCS15 20 MHz,
Typ. 12±1.5 dBm @ MCS15 40 MHz
RX Receive Sensitivity:
802.11b:
-92 dBm @ 1 Mbps, -90 dBm @ 2 Mbps,
-88 dBm @ 5.5 Mbps, -84 dBm @ 11 Mbps

802.11g:
-87 dBm @ 6 Mbps, -86 dBm @ 9 Mbps,
-85 dBm @ 12 Mbps, -82 dBm @ 18 Mbps,
-80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps,
-72 dBm @ 48 Mbps, -70 dBm @ 54 Mbps
802.11n (2.4 GHz):
-69 dBm @ MCS15 20 MHz,
-71 dBm @ MCS7 20 MHz
802.11a:
-87 dBm @ 6 Mbps, -86 dBm @ 9 Mbps,
-85 dBm @ 12 Mbps, -82 dBm @ 18 Mbps,
-80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps,
-72 dBm @ 48 Mbps, -70 dBm @ 54 Mbps
802.11n (5 GHz):
-68 dBm @ MCS15 40 MHz, -69 dBm @ MCS15 20 MHz,
-70 dBm @ MCS7 40 MHz, -71 dBm @ MCS7 20 MHz

Protocol Support

General Protocols: Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, DHCP, VLAN, STP/RSTP

Interface

Default Antennas: 4 dual-band omni-directional antennas, 5 dBi at 2.4 GHz, 2 dBi at 5 GHz, N-type (male)
Connector for External Antennas: N-type (female)
LAN Ports: 2, 8-pin M12 A-coded (female), 10/100/1000BaseT(X), auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection (female)
Console Port: RS-232 (waterproof RJ45-type)
Reset: Present
LED Indicators: PWR, FAULT, STATE, WLAN1, WLAN2, LAN1, LAN2
Alarm Contact (digital output): 8-pin M12 A-coded (male), 1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Inputs: 8-pin M12 A-coded (male), 2 electrically isolated inputs
• +13 to +30 V for state "1"
• +3 to -30 V for state "0"
• Max. input current: 8 mA

Management

Device Management: Wireless Search Utility, SNMP

Physical Characteristics

Housing: Metal, IP68 protection
Weight: 1699 g (3.75 lb)
Dimensions: 224 x 148 x 67 mm (8.82 x 5.82 x 2.62 in)
Installation: Wall mounting (standard), DIN-rail mounting (optional), pole mounting (optional)

Environmental Limits

Operating Temperature: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5% to 95% (non-condensing)

Power Requirements

Input Voltage: 12 to 48 VDC, redundant dual DC power inputs or 48 VDC Power-over-Ethernet plus (IEEE 802.3at compliant)
Input Current: 1.5 A @ 12 VDC
Connector: 5-pin M12 A-coded (male)
Power Consumption: 18 W
Reverse Polarity Protection: Present

Standards and Certifications

Safety: UL 60950-1, EN 60950-1
EMC: EN 55022/24
EMI: CISPR 22, FCC Part 15B Class A
EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m
IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV
IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV
IEC 61000-4-6 CS: 10 V
IEC 61000-4-8
Radio: EN 301 489-1/17, EN 300 328, EN 301 893, TELEC, FCC ID SLE-WAPN001
Note: Please check Moxa's website for the most up-to-date certification status.

MTBF (mean time between failures)

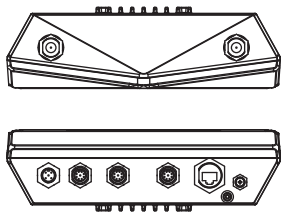
Time: 317,948 hrs
Standard: Telcordia SR332

Warranty

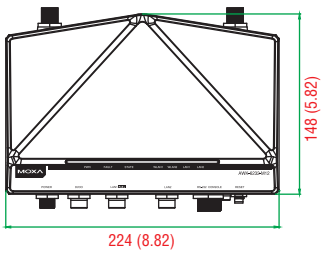
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

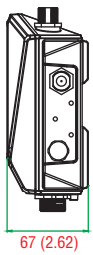
Unit: mm (inch)



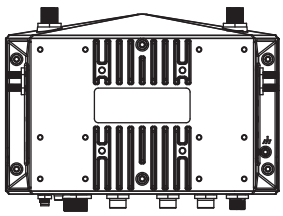
Top & Bottom Views



Front View



Side Views



Rear View

Ordering Information

Available Models

AWK-6232-M12-US-T: IEEE 802.11a/b/g/n IP68 dual-radio wireless AP/bridge/client, US band, -40 to 75°C operating temperature
AWK-6232-M12-EU-T: IEEE 802.11a/b/g/n IP68 dual-radio wireless AP/bridge/client, EU band, -40 to 75°C operating temperature
AWK-6232-M12-JP-T: IEEE 802.11a/b/g/n IP68 dual-radio wireless AP/bridge/client, JP band, -40 to 75°C operating temperature
Note: Please visit Moxa's website for a complete list of optional wireless accessories and antennas available for Moxa's wireless products.

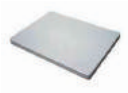
Package Checklist

- AWK-6232 wireless AP/bridge/client
- 4 2.4/5 GHz antennas: ANT-WDB-ANM-0502
- Wall-mounting kit (includes 2 supports)
- Field-installable power plug
- Field-installable Ethernet plug
- 1 metal cap to cover RJ45 connector
- 1 metal cap to cover M12-female LAN connector
- 1 metal cap to cover M12-male DI/O connector
- 2 transparent plastic sticks for field-installable plugs
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

Wireless Antenna Selection Guide





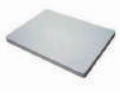



	IEEE 802.11b/g 2.4 GHz Wireless Antennas				IEEE 802.11a 5 GHz Wireless Antennas	
	ANT-WSB-AHRM-05-1.5m	ANT-WSB-ANF-09	ANT-WSB-PNF-12	ANT-WSB-PNF-18	ANT-WSB5-ANF-12	ANT-WSB5-PNF-18
Frequency Range	2.4 to 2.5 GHz				5.1 to 5.9 GHz	
Antenna Type	Omni-directional, λ/4 Dipole	Omni-directional, Dipole	Directional, Panel	Directional, Panel	Omni-directional	Directional, Panel
Typical Antenna Gain	1.5 dBi	9 dBi	12 dBi	18 dBi	12 dBi	18 dBi
Description	2.4 GHz, omni-directional/ dipole antenna, 5 dBi, RP-SMA (male)	2.4 GHz, Dipole antenna, 9 dBi, N-type (female)	2.4 GHz, panel antenna, 12 dBi, N-type (female)	2.4 GHz, panel antenna, 18 dBi, N-type (female)	5 GHz, Dipole antenna, 12 dBi, N-type (female)	5 GHz, panel antenna, 18 dBi, N-type (female)
Impedance	50 ± 5 ohms	50 ± 5 ohms	50 ± 5 ohms	50 ± 5 ohms	50 ± 5 ohms	50 ± 5 ohms
Polarization	Linear	Linear	Linear	Linear	Linear	Linear
HPBW/Horizontal	360°	360°	50°	30°	360°	10°
HPBW/Vertical	80°	10°	30°	20°	6°	10°
V.S.W.R.	2.0	1:1.3 Max.	1:1.5 Max.	1:1.5 Max.	1:1.3 Max.	1:1.5 Max.
Power Handling	–	15 W Max.	10 W Max.	15 W Max.	10 W Max.	10 W Max.
Connector(s)	RP-SMA (male)	N-type (female)	N-type (female)	N-type (female)	N-type (female)	N-type (female)
Operating Temperature	-40 to 80°C (-40 to 176°F)	-40 to 80°C (-40 to 176°F)	-40 to 80°C (-40 to 176°F)	-40 to 80°C (-40 to 176°F)	-40 to 80°C (-40 to 176°F)	-40 to 80°C (-40 to 176°F)
IP rating	–	IP65	IP65	IP65	IP65	IP65
Antenna Profile	–	Length: 420 mm (16.54 in)	215 x 90 x 30 mm (8.46 x 3.54 x 1.18 in)	270 x 205 x 15 mm (10.63 x 8.07 x 0.59 in)	Length: 420 mm (16.54 in)	270 x 205 x 15 mm (10.63 x 8.07 x 0.59 in)
Weight	300 g (0.66 lb)	430 g (0.95 lb)	560 g (1.23 lb)	310 g (0.68 lb)	430 g (0.95 lb)	990 g (2.18 lb)









	IEEE 802.11a/b/g 2.4/5 GHz Dual-band Antennas							900 MHz Antennas	
	ANT-WDB-ARM-02	ANT-WDB-ANM-0502	ANT-WDB-ANM-0407	ANT-WDB-ANF-0407	ANT-WDB-ANM-0609	ANT-WDB-ANF-0609	ANT-WDB-PNF-1518	ANT-WSB0.9-ANF-09 (Available in US and ANZ Regions Only)	ANT-WSB0.9-YNF-12 (Available in US and ANZ Regions Only)
Frequency Range	2.4 to 2.5 and 5.2 to 5.8 GHz	2.4 to 2.5 / 5.1 to 5.9 GHz						902 to 928 MHz	902 to 928 MHz
Antenna Type	Omni-directional	Omni-directional, Dipole	Omni-directional, Dipole	Omni-directional, Dipole	Omni-directional, Dipole	Omni-directional	Directional, Panel	Omni-directional	Directional Yagi type
Typical Antenna Gain	2 dBi	5/2 dBi	4/7 dBi	4/7 dBi	6/9 dBi	6/9 dBi	15/18 dBi, Dipole	9 dBi	12 dBi
Description	2.4/5.5 GHz 2 dBi dual-band antenna, RP-SMA (male) connector	2.4/5 GHz, dual-band omni-directional antenna, 5/2 dBi, N-type (male)	2.4/5 GHz, dual-band omni-directional antenna, 4/7 dBi, N-type (male)	2.4/5 GHz, dual-band omni-directional antenna, 4/7 dBi, N-type (female)	2.4/5 GHz, dual-band omni-directional antenna, 6/9 dBi, N-type (male)	2.4/5 GHz, dual-band omni-directional antenna, 6/9 dBi, N-type (female)	2.4/5 GHz, dual-band panel antenna, 15/18 dBi, N-type (female)	900 MHz, omni-directional antenna, 9 dBi, N-type (female)	900 MHz, Yagi directional antenna, 12 dBi, N-type (female)
Impedance	50±5 ohms	50 ± 5 ohms	50 ± 5 ohms	50 ± 5 ohms	50 ± 5 ohms	50 ± 5 ohms	50 ± 5 ohms	50±5 ohms	50±5 ohms
Polarization	Linear, Vertical	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
HPBW/Horizontal	360°	360°	360°	360°	360°	360°	50/10°	360°	25°
HPBW/Vertical	80°	65°	10/8°	10/8°	10/8°	10/8°	30/10°	11°	15°
V.S.W.R.	1:2.0 Max.	1:2.0 Max.	1:1.5 Max.	1:1.5 Max.	1:1.5 Max.	1:1.5 Max.	1:1.5 Max.	1:1.5 Max.	1:1.5 Max.
Power Handling	–	2 W Max.	10 W Max.	10 W Max.	10 W Max.	10 W Max.	20 W Max.	50 W Max.	30 W Max.
Connector(s)	RP-SMA (male)	N-type (male)	N-type (male)	N-type (female)	N-type (male)	N-type (female)	N-type (female)	N-type (female)	N-type (female)
Operating Temperature	-40 to 80°C (-40 to 176°F)	-40 to 80°C (-40 to 176°F)	-40 to 80°C (-40 to 176°F)	-40 to 80°C (-40 to 176°F)	-40 to 80°C (-40 to 176°F)	-40 to 80°C (-40 to 176°F)	-40 to 80°C (-40 to 176°F)	-40 to 80°C (-40 to 176°F)	-40 to 80°C (-40 to 176°F)
IP rating	–	IP67	IP65	IP65	IP65	IP65	IP65	IP65	IP65
Antenna Profile	Length: 108 mm (4.25 in)	Length: 220 mm (8.66 in)	Length: 220 mm (8.66 in)	Length: 238 mm (9.37 in)	Length: 632 mm (24.88 in)	Length: 660 mm (25.98 in)	270 x 205 x 15 mm (10.63 x 8.07 x 0.59 in)	Diameter: 51 mm (2.01 in); Length: 1,470 mm (57.87 in)	Length: 1400 mm (55.11 in)
Weight	10 g (0.02 lb)	72 g (0.16 lb)	115 g (0.95 lb)	297 g (0.65 lb), incl. antenna holder	238 g (0.52 lb)	286 g (0.63 lb)	1020±10 g (2.25±0.02 lb)	716 g (1.58 lb)	570 g (1.26 lb)

Wireless Accessories Selection Guide

	Cables										
	CRF-N0117SA-3M	CRF-N0429N-3M	A-CRF-NMNM-LL4-300	A-CRF-NMNM-LL4-600	A-CRF-NMNM-LL4-900	A-CRF-RMNM-L1-300	A-CRF-RMNM-L1-600	A-CRF-RMNM-L1-900	A-CRF-RFRM-S1-060	A-CRF-QMAMNM-R2-50	A-CRF-RFQMAM-R2-50
Description	CFD200 cable, N-type (male) to RP SMA (male), 3 m	CFD400 cable, N-type (male) to N-type (male), 3 m	LMR-400 Lite cable, N-type (male) to N-type (male), 3 m	LMR-400 LITE cable, N-type (male) to N-type (male), 6 m	LMR-400 LITE cable, N-type (male) to N-type (male), 9 m	LMR-195 Lite cable, N-type (male) to RP SMA (male), 3 m	LMR-195 Lite cable, N-type (male) to RP SMA (male), 6 m	LMR-195 Lite cable, N-type (male) to RP SMA (male), 9 m	S141 cable, RP-SMA (male) to RP-SMA (female), 0.6 m	RG316 cable, QMA (male) to N-type (male)	RG316 cable, QMA (male) to RP-SMA (female)
Cable Type	CFD200	CFD400	LMR-400 Lite	LMR-400 Lite	LMR-400 Lite	LMR-195 Lite	LMR-195 Lite	LMR-195 Lite	S141	RG316	RG316
Connector Type	N-type male to RP SMA male	N-type male to N-type male	N-type male to N-type male	N-type male to N-type male	N-type male to N-type male	N-type male to RP SMA male	N-type male to RP SMA male	N-type male to RP SMA male	RP-SMA male to RP-SMA female	QMA male to N-type male	QMA male to RP-SMA female
Cable Length	3 m (118.11 in)	3 m (118.11 in)	3 m (118.11 in)	6 m (236.22 in)	9 m (354.33 in)	3 m (118.11 in)	6 m (236.22 in)	9 m (354.33 in)	0.6 m (23.62 in)	0.5 m (19.69 in)	0.5 m (19.69 in)
Outer Dimension	5 mm (0.20 in)	10.3 mm (0.41 in)	10.29 mm (0.41 in)	10.29 mm (0.41 in)	10.29 mm (0.41 in)	4.95 mm (0.20 in)	4.95 mm (0.20 in)	4.95 mm (0.20 in)	5 mm (0.20 in)	2.54 mm (0.10 in)	2.54 mm (0.10 in)
Min. Bend Radius	12.7 mm (0.5 in)	24.5 mm (0.96 lb)	25.4 mm (1 in)	25.4 mm (1 in)	25.4 mm (1 in)	12.7 mm (0.5 in)	12.7 mm (0.5 in)	12.7 mm (0.5 in)	12.7 mm (0.5 in)	15 mm (0.59 in)	15 mm (0.59 in)
Attenuation (dB/100 m)	55.4@2.5 GHz 86.5@5.8 GHz	22.2@2.5 GHz 35.5@5.8 GHz	22.2@2.5 GHz 35.5@5.8 GHz	22.2@2.5 GHz 35.5@5.8 GHz	22.2@2.5 GHz 35.5@5.8 GHz	62.4@2.5 GHz 98.1@5.8 GHz	62.4@2.5 GHz 98.1@5.8 GHz	62.4@2.5 GHz 98.1@5.8 GHz	75.4@3 GHz 98.4@5 GHz	206@2.4 GHz 345@6 GHz	206@2.4 GHz 345@6 GHz
Related Products	AWK-1131A, AWK-3131A, AWK-3191, AWK-5232, AWK-3121-SSC-RTG	AWK-4131A, AWK-6232-M12, TAP-6226				AWK-1131A, AWK-3131A, AWK-3191, AWK-5232, AWK-3121-SSC-RTG				AWK-3121-M12-RTG, AWK-3131-RCC, AWK-5232-RCC	

	Termination Resistors	
	A-TRM-50-NM	A-TRM-50-RM
Description	Termination resistor, 50 ohms, N-type (male)	Termination resistor, 50 ohms, RP-SMA (male)
Related Products	AWK-4131A, AWK-6232, TAP-6226	AWK-1131A, AWK-3131A, AWK-3191, AWK-5232, AWK-3121-SSC-RTG

	Arrestors	
	A-SA-NMNF-01	A-SA-NFNF-01
Frequency	0-6 GHz	0-6 GHz
Connector Type	N-type female to N-type male	N-type female to N-type female

	Adaptors	
	A-ADP-RJ458P-DB9F-ABC01	A-ADP-QMAM-RF
Description	RJ45-to-DB9 adaptor for the ABC-01	QMA(male) to RP-SMA (female) adaptor for antenna
Related Products	All AWK series	AWK-3121-M12-RTG, AWK-3131-RCC, AWK-5232-RCC

Note: Actual products may vary in physical appearance but functionality will not be affected.

Industrial Cellular Solutions

7

Industrial Cellular Solutions

Cellular Routers & LTE Cellular Gateway




	Cellular Router			Cellular Advanced IP Gateway
	WDR-3124A	OnCell 5004-HSPA	OnCell 5104-HSPA	OnCell G3470A-LTE
Cellular Interface				
Standards	GSM/GPRS/EDGE/UMTS/HSPA			GSM/GPRS/EDGE/UMTS/HSPA/LTE
4G Band Options	–	–	–	EU model: 2100/1800/2600/900/800 MHz (B1/B3/B7/B8/B20) US model:1900/AWS/850/700/700/1900 MHz (B2/B4/B5/B13/B17/B25)
LTE Data Rate	–	–	–	20 MHz bandwidth: 100 Mbps DL, 50 Mbps UL 10 MHz bandwidth: 50 Mbps DL, 25 Mbps UL
3G Band Options	800/850/900/1900/2100 MHz	800/850/AWS/1900/2100 MHz		EU model: 800/850/900/1900/2100 MHz US model: 850/900/AWS/1900/2100 MHz
HSPA Data Rate	14.4 Mbps DL, 5.76 Mbps UL (Category 6, 7)	14.4 Mbps DL, 5.76 Mbps UL		42 Mbps DL, 5.76 Mbps UL (Category 24, 6)
2G Band Options	850/900/1800/1900 MHz			850/900/1800/1900 MHz
EDGE Data Rate	237 kbps DL, 237 kbps UL (Class 12)	237 kbps DL, 237 kbps UL		237 kbps DL, 237 kbps UL (Class 10, 12)
GPRS Data Rate	85.6 kbps DL, 85.6 kbps UL	85.6 kbps DL, 85.6 kbps UL		85.6 kbps DL, 42.8 kbps UL
Ethernet WAN Interface				
Number of Ports	–	1		–
Ethernet	–	10/100M (RJ45)		–
Wireless Interface				
Standards	802.11a/b/g/n	–	–	–
Number of RF Modules	1	–	–	–
LAN Interface				
Number of Ports	4			4
Ethernet	10/100/1000M (RJ45)	10/100M (RJ45)		10/100/1000M (RJ45)
SIM Interface				
Number of SIMs	2			
SIM Control	3 V			
I/O Interface				
Alarm Contacts	1	–	1	1
Digital Inputs	2	–	2	2
Software				
Protocols	ICMP, DDNS, TCP/IP, UDP, DHCP, Telnet, DNS, SNMP, HTTP, HTTPS, SMTP, SNTP, ARP	ARP, DDNS, DHCP/BOOTP, DNS Relay, HTTP, HTTPS, ICMP, IPSec, PPP, PPPoE, SMTP, SNTP, SSH, SSL, TCP/IP, Telnet, UDP		ICMP, DDNS, TCP/IP, UDP, DHCP, Telnet, DNS, SNMP, HTTP, HTTPS, SMTP, SNTP, ARP
Routing/Firewall	NAT, port forwarding, IP/MAC/Port filtering	NAT, port forwarding, WAN IP filtering, static route		NAT, port forwarding, IP/MAC/Port filtering
Virtual Private Network	• Max. Tunnel Number: 5 (Responder/ Initiator) • IPSec (DES, 3DES, AES, MD5, SHA-1, DH2, DH5), PSK/X.509/RSA	IPSec (DES, 3DES, AES, MD5, SHA-1, SH1, DH2, DH5), PSK		• Max. Tunnel Number: 5 (Responder/ Initiator) • IPSec (DES, 3DES, AES, MD5, SHA-1, DH2, DH5), PSK/X.509/RSA
Cellular Connectivity	GuaranLink			
Utilities	OnCell Central Manager, Wireless Search Utility, SNMP v1/v2/v3, Web/Telnet/Serial Console, SSH, Remote SMS Control, Auto IP Report			
Physical Characteristics				
Housing	Aluminum (IP30)			
Weight	1280 g (2.82 lb)	510 g (1.12 lb)	650 g (1.43 lb)	1300 g (2.87 lb)
Dimensions	66.3 X 124 X 90 mm (2.61 x 4.88 x 3.54 in)	158 x 103 x 35 mm (6.22 x 4.06 x 1.38 in)	51 x 135 x 103 mm (2 x 5.32 x 4.16 in)	66.3 x 124 x 90 mm (2.61 x 4.88 x 3.54 in)
Environmental Limits				
Operating Temperature	Standard Models: 0 to 55°C (0 to 131°F) Wide Temp. Models: -30 to 70°C (-22 to 158°F)	-30 to 55°C (-22 to 131°F)	Standard Models: -30 to 55°C (-22 to 131°F) Wide Temp. Models: -30 to 70°C (-22 to 158°F)	Standard Models: -30 to 55°C (-22 to 131°F) Wide Temp. Models: -30 to 70°C (-22 to 158°F)
Ambient Relative Humidity	5 to 95% (non-condensing)			
Storage Temperature	-40 to 85°C (-40 to 185°F)	-40 to 75°C (-40 to 167°F)		-40 to 85°C (-40 to 185°F)
Power Requirements				
Number of Power Inputs	2 (terminal block), redundant dual inputs	2 (1 terminal block, 1 power jack)	2 (terminal block), redundant dual inputs	2 (terminal block), redundant dual inputs
Input Voltage	12 to 48 VDC			
Input Current	0.7 A @ 12 VDC; 0.2 A @ 48 VDC	0.9 A @ 12 VDC; 0.23 A @ 48 VDC	0.95 A @ 12 VDC; 0.25 A @ 48 VDC	0.7 A @ 12 VDC; 0.2 A @ 48 VDC
Standards and Certifications				
Safety	EN 60950-1, UL 60950-1	UL 60950-1		US model: UL 60950-1
EMC	EN 61000-6-2/6-4	EN 55022/24		EU model: EN 61000-6-2/6-4
Radio	EN 301 489-1, EN 301 489-7, EN 301 511, EN 301 908, EN 300 328, EN 301 893	FCC Part 22H, FCC Part 24E EN 301 489-1, EN 301 489-7, EN 301 489-24 EN 301511, EN 301 908		US model: FCC ID N7NMC7355 EU model: EN 301 489-1, EN 301 489-7, EN 301 511
Reliability				
Warranty	5 years (see www.moxa.com/warranty)			
Page	7-6	7-9	7-9	7-11

Cellular IP Gateways & Modems





	Cellular Advanced IP Gateway		Cellular Compact IP Gateway		Cellular Modem
	OnCell G3110-HSPA OnCell G3150-HSPA	OnCell G3110 OnCell G3150	OnCell G3111-HSPA OnCell G3151-HSPA	OnCell G3111/OnCell G3211 OnCell G3151/OnCell G3251	OnCell G2111 OnCell G2151I
Cellular Interface					
Standards	GSM/GPRS/EDGE/UMTS/HSPA	GSM/GPRS/EDGE	GSM/GPRS/EDGE/UMTS/HSPA	GSM/GPRS	GSM/GPRS
3G band Options	800/850/AWS/1900/2100 MHz	–	800/850/900/1900/2100 MHz	–	–
HSPA Data Rate	14.4 Mbps DL, 5.76 Mbps UL	–	14.4 Mbps DL, 5.76 Mbps UL	–	–
2G band Options	850/900/1800/1900 MHz		850/900/1800/1900 MHz		
EDGE Data Rate	237 kbps DL, 237 kbps UL		237 kbps DL, 237 kbps UL	–	–
GPRS Data Rate	85.6 kbps DL, 85.6 kbps UL		85.6 kbps DL, 85.6 kbps UL	85.6 kbps DL, 42.8 kbps UL	85.6 kbps DL, 42.8 kbps UL
LAN Interface					
Number of Ports	1		1		–
Ethernet	10/100M (RJ45)		10/100 Mbps (RJ45)		–
SIM Interface					
Number of SIMs	1		1		1
SIM Control	3 V		3 V		3 V
Serial Interface					
Number of Ports	1		1	1 for G3111/G3151 2 for G3211/G3251	1
Serial Standards	G3110-HSPA: RS-232 G3150-HSPA: RS-232/422/485	G3110: RS-232 G3150: RS-232/422/485	G3111-HSPA: RS-232 G3151-HSPA: RS-232/422/485	G3111/G3211: RS-232 G3151/G3251: RS-232/422/485	G2111: RS-232 G2151I: RS-232/422/485
Connector	G3110-HSPA: DB9-M G3150-HSPA: DB9-M and TB	G3110: DB9-M G3150: DB9-M and TB	DB9-M		G2111: DB9-F G2151I: DB9-F and 5-pin TB
2.5 kV Optical Isolation	–		–		– ✓
I/O Interface					
Alarm Contacts	1		–		–
Digital Inputs	2		–		–
Software					
Protocols	ARP, DDNS, DHCP/BOOTP, DNS Relay, HTTP, HTTPS, ICMP, IPSec, SMTP, SNTP, SSH, SSL, TCP/IP, Telnet, UDP	ARP, AT Commands (Virtual Modem), DDNS, DHCP/BOOTP, DNS Relay, HTTP, HTTPS, ICMP, IPSec, SMTP, SNTP, SSH, SSL, TCP/IP, Telnet, UDP	ARP, DDNS, DHCP/BOOTP, DNS Relay, HTTP, HTTPS, ICMP, SMTP, SNTP, SSH, SSL, TCP/IP, Telnet, UDP		AT Commands
Routing/Firewall	NAT, port forwarding, WAN IP filtering		NAT, port forwarding, WAN IP filtering		–
Virtual Private Network	IPSec (DES, 3DES, AES, MD5, SHA-1, SH1, DH2, DH5), PSK		–		–
Serial Security	Accessible IP list		Accessible IP list		–
Serial Operation Modes	Real COM, Reverse Real COM, TCP Server, TCP Client, UDP, SMS Tunnel, RFC2217 Secure Real COM, Secure TCP Server, Secure TCP Client, Ethernet Modem		Real COM, Reverse Real COM, TCP Server, TCP Client, UDP, SMS Tunnel, RFC2217, Ethernet Modem		–
Cellular Connectivity	GuaranLink		GuaranLink		–
Utilities	OnCell Central Manager, Wireless Search Utility, SNMP v1/v2/v3, Web/Telnet/Serial Console, SSH, Remote SMS Control, Auto IP Report		OnCell Central Manager, Wireless Search Utility, SNMP v1/v2/v3, Web/Telnet/Serial Console, SSH, Remote SMS Control, Auto IP Report		–
Physical Characteristics					
Housing	Aluminum (IP30)		Aluminum (IP30)		ABS + PC (IP30)
Weight	445 g (0.98 lb)		170 g (0.38 lb)	190 g (0.42 lb)	155 g (0.34 lb)
Dimensions	28 x 126 x 93 mm (1.1 x 4.94 x 3.64 in)		77 x 111 x 26 mm (3.03 x 4.37 x 1.02 in)		27 x 123 x 79 mm (1.06 x 4.84 x 3.11 in)
Environmental Limits					
Operating Temperature	Standard Models: -30 to 55°C (-22 to 131°F) Wide Temp. Models: -30 to 70°C (-22 to 158°F)		-30 to 55°C (-22 to 131°F)		Standard Models: -20 to 55°C (-4 to 131°F) Wide Temp. Models: -25 to 70°C (-22 to 158°F) (OnCell G2111-T only)
Ambient Relative Humidity	5 to 95% (non-condensing)		5 to 95% (non-condensing)		5 to 95% (non-condensing)
Storage Temperature	-40 to 75°C (-40 to 167°F)		-40 to 75°C (-40 to 167°F)		-40 to 75°C (-40 to 167°F)
Power Requirements					
Number of Power Inputs	2 (terminal block), redundant dual inputs		1 (terminal block)	1 (power jack)	1 (terminal block)
Input Voltage	12 to 48 VDC		12 to 48 VDC		12 to 48 VDC
Input Current	0.9 A @ 12 VDC; 0.23 A @ 48 VDC		0.9 A @ 12 VDC; 0.23 A @ 48 VDC		0.625 A @ 12 VDC; 0.16 A @ 48 VDC
Standards and Certifications					
Safety	UL 60950-1		UL 60950-1		UL 60950-1
EMC	EN 55022/24		EN 55022/24 EN 61000-6-2/6- 4	EN 55022/24	EN 55022/24
Radio	FCC Part 22H, FCC Part 24E EN 301 489-1, EN 301 489-7, EN 301 489-24 EN 301 511, EN 301 908	FCC Part 22H, FCC Part 24E EN 301 489-1, EN 301 489-7 EN 301 511	FCC Part 22H, FCC Part 24E EN 301 489-1, EN 301 489-7, EN 301 489-24 EN 301 511, EN 301 908	FCC Part 22H, FCC Part 24E EN 301 489-1, EN 301 489-7 EN 301 511	FCC Part 22H, FCC Part 24E EN 301 489-1, EN 301 489-7 EN 301 511
Mobile Network	–	OnCell G3150: PTCRB	OnCell G3151-HSPA: PTCRB	–	–
Reliability					
Warranty	5 years (see www.moxa.com/warranty)				
Page	7-13	7-15	7-17	7-19	7-21

Introduction to Industrial Cellular

Cellular technology has evolved in the past two decades to offer higher bandwidths for high-speed cellular applications. From 2G to 3G technology, to the current 4G network development, cellular networks are becoming faster and coverage is expanding rapidly. Moxa's advanced OnCell and WDR series are engineered with HSPA and LTE to significantly improve communication speeds and are designed specifically for remote monitoring in industrial applications. A Moxa OnCell device is available for every key role on a cellular network, including as a modem, IP gateway, and router.

Each device is engineered to transmit data as efficiently as possible, and is designed to Moxa's exacting standards of reliability and rugged durability. In addition, our new WDR series features both cellular and Wi-Fi technologies, making it easier to enable seamless wireless connections from LAN to WAN networks. Refer to the following table for a quick overview of which products are most suitable for your application:

	IP-based Cellular Routers / Wireless Routers		IP-based Cellular Gateways	
OnCell/WDR Series	OnCell 5000 Series (3G only)	WDR-3124A (3G/802.11n)	OnCell G3000 Series (2G/3G)	OnCell G3470A-LTE (4G)
Application	Reliable remote area network connectivity: WAN/SIM/Power Redundancy	Wireless LAN to WAN extension/ auto-switchover between WLAN and WWAN networks	Simple remote device connectivity: Ethernet/ serial/cellular connectivity	Reliable video-over-LTE networks
How to connect	Automatic connection to cellular operator (3G only)		Automatic connection to cellular operator	
Serial support	N/A		Virtualized COM port	N/A
LAN support	✓		✓	
WAN support	Cellular WAN / Ethernet WAN** / Backup WAN Route Support		Cellular WAN	
Security	VPN/Firewall/Routing		VPN* (advanced models only) Firewall/Serial Access Control	VPN/Firewall/Routing
Expertise Level	Easy to Use		Easy to Use	

*OnCell G3111/G3151/G3211/G3251/OnCell G3111-HSPA/G3151-HSPA IP gateways do not support VPN.
**WDR-3124A wireless router do not support Ethernet WAN.

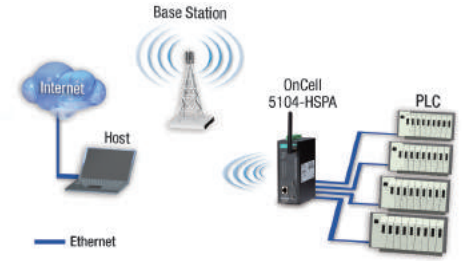
IP-Based Cellular Routers and Gateways

IP-based OnCell products allow you to communicate with your remote devices over a TCP/IP cellular network. As long as your host computer supports the TCP/IP protocol (Internet), your SCADA and data collection system will be able to access all devices connected to a standard TCP/IP network, regardless of whether the devices are deployed locally or at a remote site. Cellular IP routers and gateways are IP-based solutions equipped with a local processor and memory to store cellular profiles and use that information to "intelligently" establish cellular connections automatically. This means that you no longer need to worry about installing an IPC or limit yourself to traditional serial devices that have dial-up capability.

You will not only eliminate the additional cost associated with deploying an IPC, but also save deployment space if your application is bound by tight space constraints. With the easy-to-use web console interface, you can enable industrial wireless communication without the need for complex AT command knowledge.

Ethernet-to-Cellular

OnCell and WDR devices are assigned an IP address by your service provider (your "cellular ISP"), and outgoing TCP/IP connections are handled with Network Address Translation (NAT), allowing any number of local Ethernet devices to act as outgoing TCP/IP clients to access remote servers. However, the OnCell appears as a single IP address to the "public" Internet. This means that incoming connections must be forwarded manually, with port forwarding (or sometimes known as virtual server) based on TCP port number, to the local Ethernet devices.

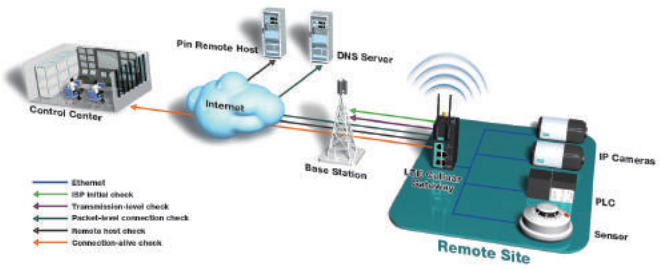


Serial-to-Cellular

The OnCell enables traditional serial (RS-232/422/485) devices to transmit data over the cellular network. The OnCell is a tiny computer equipped with a CPU and TCP/IP protocols that can bi-directionally translate data between the serial and IP formats. With this solution, your computer will be able to access, manage, and configure remote facilities and equipment over the cellular network from anywhere in the world.

GuaranLink

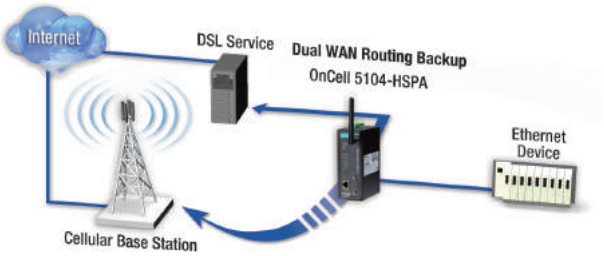
OnCell and WDR IP-based products come with GuaranLink, which enables reliable, consistent connectivity. GuaranLink achieves this in a number of ways: (1) **ISP initial check:** The cellular device first sends a test packet to the base station and waits for a response before establishing a cellular connection, (2) **Transmission-level check:** Resets its cellular module before negotiating a connection to the base station, saving connection time and airtime cost, (3) **Packet-level connection check:** The cellular device sends a DNS lookup request to get the IP address of the intended receiver and pings a known remote host to ensure connection to the Internet, and (4) **Connection-alive check:** The cellular device re-registers with the base station to establish a new cellular connection to keep the connection alive after a period of inactivity.



Dual-SIM and Dual-WAN Routing Backup

OnCell and WDR routers come with several levels of redundancy to enhance cellular connection availability. Dual-SIM service eliminates the risk of an unstable cellular network by offering the ability to insert two SIM cards and automatically switch between two different carriers based on the cellular connection quality.

Dual-WAN routing backup service provides the ability to set up primary and secondary WAN connections. For example, setting Ethernet WAN as the primary WAN route means that the router will primarily communicate with remote sites via the Ethernet WAN. If the path is somehow blocked, the router will automatically switch to the cellular WAN as its outgoing route, and vice versa.



Seamless Wi-Fi to Cellular Switchover

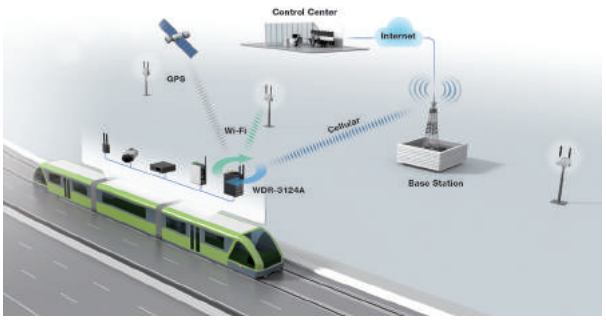
Moxa's WDR-3124A is a 4-in-1 (3G/Wi-Fi/Switch/GPS) smart wireless router that allows users to easily bring Ethernet and wireless traffic to 3G networks.

It features an auto-switchover feature that delivers seamless transmission between 802.11n radio and standard HSPA communications. When you set Wi-Fi as the primary communications link and the 3G connection as a redundant back-up path, the traffic will automatically failover to the cellular backup link within milliseconds if the primary link goes down. Seamless auto-switchover offers wireless networks flexible and always-on signal connections.

The WDR-3124A supports multiple broadband wireless connections and failover redundancy to simplify a wide variety of mobile applications with reduced total cost of ownership (TCO).

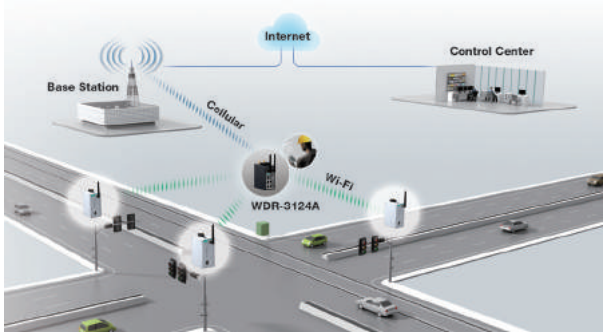
Real-time Surveillance

When installed on a bus, the WDR-3124A can act as a Wi-Fi client to upload video data to existing wayside APs; the device can auto switch to 2G/3G cellular links to connect with a remote operations center whenever the bus moves out of Wi-Fi coverage range.



Intersection Traffic Monitoring

The WDR-3124A is ideal for connecting Ethernet devices and Wi-Fi clients to 3G connections for monitoring intersection traffic. The wireless router also supports several VPN protocols to establish a secure connection between remote and central sites.



Overview of IP-based Cellular Products

OnCell IP-based Products	Ethernet-to-Cellular	Serial-to-Cellular	GuaranLink	Dual-SIM	Dual-WAN Routing	OnCell Central Manager	VPN	Auto Switchover to Wi-Fi/Cellular
OnCell G3111/G3151/G3211/G3251 OnCell G3111/G3151-HSPA	✓	✓	✓	–	–	✓	–	–
OnCell G3110/G3150 OnCell G3110/G3150-HSPA	✓	✓	✓	–	–	✓	✓	–
OnCell G3470A-LTE	✓	–	✓	✓	–	✓	✓	–
OnCell 5004/5104-HSPA	✓	–	✓	✓	✓	✓	✓	–
WDR-3124A	✓	–	✓	✓	✓	✓	✓	✓

WDR-3124A Series

Industrial 802.11n/HSPA wireless router

- Universal GSM/GPRS/HSPA cellular communications
- 2.4-GHz/5-GHz dual-band 300 Mbps Wi-Fi communication
- Built-in 4-port Gigabit Ethernet switch
- Industrial design with dual-power inputs and built-in DI/DO support
- Cellular link redundancy with dual-SIM GuaranLink support
- Antenna and power isolation design to protect against interference

802.11

c UL us LISTED CE FC

Introduction

The WDR-3124A industrial wireless router combines 802.11n and cellular technologies to provide flexible wireless network connectivity. The WDR-3124A comes with a built-in antenna and power isolation suitable for any harsh industrial environment. With DIN-rail mounting, wide operating temperature range models, and IP30 housing, the WDR-3124A is a convenient yet reliable solution for any industrial wireless application.

WLAN and Cellular Connectivity

- High-speed wireless connectivity at up to 300 Mbps
- WLAN AP/Client-Router operation mode support
- Universal cellular band support for GSM/GPRS/HSPA connectivity

Effective Isolation and Redundancy Design

- Dual-power input for power redundancy
- Dual-SIM support for cellular connection redundancy
- Antenna isolation for protection against radio interference
- Power isolation for power source insulation protection

Specifications

Cellular Interface

Standards: GSM/GPRS/EDGE/UMTS/HSPA
Band Options:
• Five-band UMTS/HSPA 800/850/900/1900/2100 MHz
• Quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz
HSPA Data Rate: 14.4 Mbps DL, 5.76 Mbps UL (Category 6, 7)
EDGE Data Rate: 237 kbps DL, 237 kbps UL (Class 12)
GPRS Data Rate: 85.6 kbps DL, 85.6 kbps UL

Wireless Interface

Standards:
IEEE 802.11a/b/g/n for Wireless LAN
IEEE 802.11i for Wireless Security
Spread Spectrum and Modulation (typical):
• DSSS with DBPSK, DQPSK, CCK
• OFDM with BPSK, QPSK, 16QAM, 64QAM
• 802.11b: CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, DBPSK @ 1 Mbps
• 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps
• 802.11n: 64QAM @ 300 Mbps to BPSK @ 6.5 Mbps (multiple rates supported)
Operating Channels (central frequency):
WDR-3124A-EU:
2.412 to 2.472 GHz (13 channels)
5.180 to 5.240 GHz (4 channels)

WDR-3124A-US:
2.412 to 2.462 GHz (11 channels)
5.180 to 5.240 GHz (4 channels)
5.745 to 5.825 GHz (5 channels)
Security:
• SSID broadcast enable/disable
• 64-bit and 128-bit WEP encryption, WPA /WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP and AES)
Transmission Rates:
802.11b: 1, 2, 5.5, 11 Mbps
802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
802.11n: 6.5 to 300 Mbps (multiple rates supported)
TX Transmit Power:
2.4 GHz
802.11b:
Typ. 23±1.5 dBm @ 1 Mbps
Typ. 20±1.5 dBm @ 5 Mbps
Typ. 19±1.5 dBm @ 11 Mbps
802.11g:
Typ. 20±1.5 dBm @ 6 to 24 Mbps
Typ. 19±1.5 dBm @ 36 Mbps
Typ. 18±1.5 dBm @ 48 Mbps
Typ. 17±1.5 dBm @ 54 Mbps

802.11n:
Typ. 20±1.5 dBm @ MCS0/8 20 MHz
Typ. 20±1.5 dBm @ MCS0/8 40 MHz
Typ. 16±1.5 dBm @ MCS7/15 20 MHz
Typ. 16±1.5 dBm @ MCS7/15 40 MHz
5 GHz
802.11a:
Typ. 20±1.5 dBm @ 6 to 24 Mbps
Typ. 19±1.5 dBm @ 36 Mbps
Typ. 16±1.5 dBm @ 48 Mbps
Typ. 15±1.5 dBm @ 54 Mbps
802.11n:
Typ. 19±1.5 dBm @MCS0/8 20 MHz
Typ. 18±1.5 dBm @MCS0/8 40 MHz
Typ. 14±1.5 dBm @MCS7/15 20 MHz
Typ. 14±1.5 dBm @MCS7/15 40 MHz

RX Sensitivity:
2.4 GHz
802.11b:
-90 dBm @ 1 Mbps
-88 dBm @ 2 Mbps
-86 dBm @ 5.5 Mbps
-84 dBm @ 11 Mbps
802.11g:
-85 dBm @ 6 Mbps
-84 dBm @ 9 Mbps
-83 dBm @ 12 Mbps
-82 dBm @ 18 Mbps
-80 dBm @ 24 Mbps
-76 dBm @ 36 Mbps
-70 dBm @ 48 Mbps
-70 dBm @ 54 Mbps
802.11n:
-70 dBm @ MCS7 20 MHz
-68 dBm @ MCS15 20 MHz
-65 dBm @ MCS7 40 MHz
-63 dBm @ MCS15 40 MHz
5 GHz
802.11a:
-92 dBm @ 6 Mbps
-89 dBm @ 9 Mbps
-85 dBm @ 12 Mbps
-82 dBm @ 18 Mbps
-80 dBm @ 24 Mbps
-76 dBm @ 36 Mbps
-74 dBm @ 48 Mbps
-72 dBm @ 54 Mbps
802.11n:
-70 dBm @ MCS7 20 MHz
-67 dBm @ MCS15 20 MHz
-68 dBm @ MCS7 40 MHz
-66 dBm @ MCS15 40 MHz

LAN Interface

Standards:
IEEE 802.3 for 10BaseT
IEEE 802.3u for 100BaseTX
IEEE 802.3ab for 1000BaseT
Number of Ports: 4
Speed: 10/100/1000 Mbps auto negotiation speed, F/H duplex mode and auto MDI/MDI-X connection (RJ45-type)

Interface

Cellular Antenna Connectors: 1 SMA (female) for WCDMA
Wireless Antenna Connectors: 2 RP-SMA (female)
GNSS: 1 SMA (female), GPS (1575.42 MHz), GLONASS (1602 MHz)
Console Port: 1, RS-232 (RJ45)
LED Indicators: PWR1, PWR2, STATUS, FAULT, CELLULAR SIGNAL, WIFI SIGNAL, WLAN, SIM1, SIM2, 2G, 3G, GPS
Ground Screw: M5
Reset Button: Power Reset/Factory Default Reset

I/O Interface

Alarm Contact: 1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Inputs: 2 electrically isolated inputs
• +13 to +30 V for state “1”
• +3 to -30 V for state “0”

Software

Network Protocols: ICMP, DDNS, TCP/IP, UDP, DHCP, Telnet, DNS, SNMP, HTTP, HTTPS, SMTP, SNTP, ARP
Routing/Firewall: NAT, port forwarding, IP/MAC/Port filtering
VPN:
• Max. Tunnel Number: 5 (Responder/Initiator)
• IPSec (DES, 3DES, AES, MD5, SHA-1, DH2, DH5), PSK/X.509/RSA
Cellular Connectivity: GuaranLink
GPS: NMEA

Management Software

Utilities: Wireless Search Utility
Configuration and Management Options: SNMP v1/v2c/v3, Web/Telnet/Serial Console, SSH, Remote SMS Control, Auto IP Report
Private IP Solution: OnCell Central Manager

SIM Interface

Number of SIMs: 2
SIM Control: 3 V

Physical Characteristics

Housing: Aluminum, providing IP30 protection
Weight: 1280 g (2.82 lb)
Dimensions: 66.3 X 124 X 90 mm (2.61 x 4.88 x 3.54 in)

Environmental Limits

Operating Temperature:
Standard Models: 0 to 55°C (0 to 131°F)
Wide Temp. Models:-30 to 70°C (-22 to 158°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Power Requirements

Number of Power Inputs: 2 (terminal block), redundant dual inputs
Input Voltage: 12 to 48 VDC
Input Current: 0.7 A @ 12 VDC; 0.2 A @ 48 VDC
Reverse Polarity Protection: Present

Standards and Certifications

Safety: EN 60950-1, UL 60950-1
EMC: EN 61000-6-2/6-4
EMI: CISPR 22, FCC Part 15B Class A
EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m
IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV
IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV
IEC 61000-4-6 CS: 10 V
IEC 61000-4-8
Radio: EN 301 489-1, EN 301 489-7, EN 301 511, EN 301 908, EN 300 328, EN 301 893, FCC ID SLE-WAPN005

MTBF (mean time between failures)

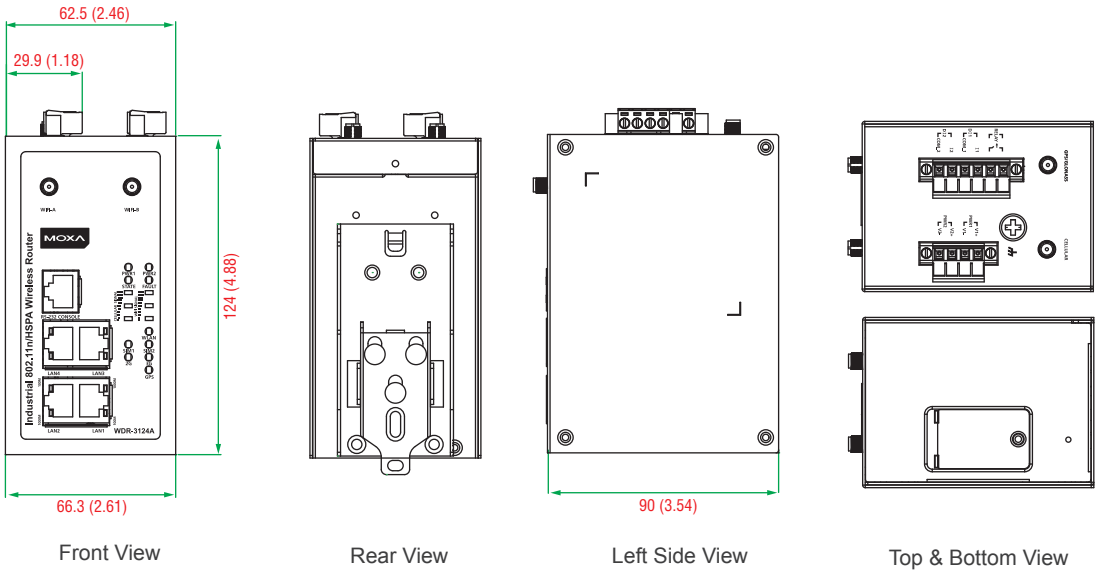
Time: 382,851 hrs
Standard: Telcordia SR332

Warranty

Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)



Front View | Rear View | Left Side View | Top & Bottom View

Ordering Information

Available Models

WDR-3124A-US: Industrial 802.11n/HSPA wireless router, WiFi US band, 0 to 55°C operating temperature
WDR-3124A-US-T: Industrial 802.11n/HSPA wireless router, WiFi US band, -30 to 70°C operating temperature
WDR-3124A-EU: Industrial 802.11n/HSPA wireless router, WiFi EU band, 0 to 55°C operating temperature
WDR-3124A-EU-T: Industrial 802.11n/HSPA wireless router, WiFi EU band, -30 to 70°C operating temperature
Note: Visit Moxa's website for a complete list of optional wireless accessories and antennas available for Moxa's wireless products.

Package Checklist

- WDR-3124A wireless router
- 2 2.4/5 GHz antennas: ANT-WDB-ARM-02
- 1 UMTS/HSPA antenna: ANT-WCDMA-ASM-1.5
- 5 plastic RJ45 protective caps for serial console and Ethernet ports
- DIN-rail kit
- Quick installation guide (printed)
- Warranty card

OnCell 5004/5104-HSPA Series

Industrial five-band GSM/GPRS/EDGE/UMTS/HSPA cellular routers

OnCell 5004-HSPA Series

OnCell 5104-HSPA Series

- Five band UMTS/HSPA 800/850/AWS/1900/2100 MHz
- Quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz
- Cellular WAN and Ethernet WAN backup mechanism for a complete path redundancy
- Primary and secondary power inputs for power source redundancy
- Cellular link redundancy with dual-SIM GuaranLink support
- DIN-rail housing and wall-mountable housing
- Connect to 4 10/100BaseT(X) devices over an integrated VPN
- 2 digital inputs and 1 relay output (OnCell 5104-HSPA only)
- Centralize private IP management with OnCell Central Manager

c UL us LISTED CE FC

Overview

The OnCell 5004/5104-HSPA series are high-performance industrial grade cellular routers that allow up to 4 Ethernet-based devices to simultaneously use a single cellular data account for primary or backup network connectivity to remote sites and devices. Both products provide the functionality of a cellular router, firewall, and switch in one device, and to ensure zero data loss and on-demand cellular communication, the OnCell 5004/5104-HSPA are integrated with the GuaranLink function. The difference between the OnCell 5004-HSPA and OnCell 5104-HSPA is that the OnCell 5104-HSPA comes with a built-in relay output that can be configured to indicate the priority of events when notifying or warning engineers in the field, and the two digital inputs allow you to connect basic I/O devices, such as sensors, to the cellular network. The OnCell 5004-HSPA can be placed on a desktop or mounted on a wall, whereas the OnCell 5104-HSPA has an IA design and can be attached to a DIN-rail. Both products use 12 to 48 VDC power inputs with a screw-on design for greater reliability, and the Ethernet ports come with 1.5 kV magnetic isolation protection to keep your system safe from unexpected electrical discharges.

Specifications

Cellular Interface

Standards: GSM/GPRS/EDGE/UMTS/HSPA
Band Options:
• Five-band UMTS/HSPA 800/850/AWS/1900/2100 MHz
• Quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz
HSPA Data Rate: 14.4 Mbps DL, 5.76 Mbps UL
EDGE Multi-slot Class: Class 12
EDGE Data Rate: 237 kbps DL, 237 kbps UL
EDGE Terminal Device Class: Class B
GPRS Multi-slot Class: Class 12
GPRS Data Rate: 85.6 kbps DL, 85.6 kbps UL
GPRS Terminal Device Class: Class B
GPRS Coding Schemes: CS1 to CS4
Tx Power:
UMTS/HSPA: 0.25 W
EDGE900: 0.5 W
EDGE1800: 0.4 W
GSM1800: 1 W
GSM900: 2 W

WAN Interface

Number of Ports: 1
Ethernet: 10/100 Mbps, RJ45 connector, auto MDI/MDIX

LAN Interface

Number of Ports: 4
Ethernet: 10/100 Mbps, RJ45 connector, auto MDI/MDIX

Interface

Cellular Antenna Connectors: 1, SMA (female)
Console Port: RS-232 (RJ45)

I/O Interface (OnCell 5104-HSPA)

Alarm Contact: 1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Inputs: 2 electrically isolated inputs
• +13 to +30 V for state “1”
• +3 to -30 V for state “0”

Software

Network Protocols: ARP, DDNS, DHCP/BOOTP, DNS Relay, HTTP, HTTPS, ICMP, IPSec, PPP, PPPoE, SMTP, SNTP, SSL, TCP/IP, Telnet, UDP
Routing/Firewall: NAT, port forwarding, WAN IP filtering, static route
Cellular Connectivity: GuaranLink
Authentication: Local username and password

Management Software

Utilities: Wireless Search Utility
Configuration and Management Options: SNMP v1/v2c/v3, Web/Telnet/Serial Console, SSH, Remote SMS Control, Auto IP Report
Private IP Solution: OnCell Central Manager

SIM Interface

Number of SIMs: 2
SIM Control: 3 V

Physical Characteristics

Housing: Aluminum, providing IP30 protection

Weight:
OnCell 5004-HSPA: 510 g (1.12 lb)
OnCell 5104-HSPA: 650 g (1.43 lb)
Dimensions:
OnCell 5004-HSPA: 158 x 103 x 35 mm (6.22 x 4.06 x 1.38 in)
OnCell 5104-HSPA: 51 x 135 x 103 mm (2 x 5.32 x 4.16 in)

Environmental Limits

Operating Temperature:
Standard Models: -30 to 55°C (-22 to 131°F)
Wide Temp. Models: -30 to 70°C (-22 to 158°F)
Storage Temperature: -40 to 75°C (-40 to 167°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Power Requirements

Number of Power Inputs:
OnCell 5004-HSPA: 2 (1 terminal block, 1 power jack)
OnCell 5104-HSPA: 2 (terminal block), redundant dual inputs
Input Voltage: 12 to 48 VDC
Input Current:
OnCell 5004-HSPA: 0.9 A @ 12 VDC; 0.23 A @ 48 VDC
OnCell 5104-HSPA: 0.95 A @ 12 VDC; 0.25 A @ 48 VDC
Reverse Polarity Protection: Present (OnCell 5104-HSPA only)

Standards and Certifications

Safety: UL 60950-1
EMC: EN 55022/24
EMI: CISPR 22, FCC Part 15B Class A
EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m
IEC 61000-4-4 EFT: Power: 4 kV; Signal: 1 kV
IEC 61000-4-5 Surge: Power: 1 kV; Signal: 1 kV
IEC 61000-4-6 CS: 10 V
IEC 61000-4-8
Radio: FCC Part 22H, FCC Part 24E, EN 301 489-1, EN 301 489-7, EN 301 489-24, EN 301 511, EN 301 908

MTBF (mean time between failures)

Time:
OnCell 5004-HSPA: 441,000 hrs
OnCell 5104-HSPA: 411,000 hrs
Standard: Telcordia SR332

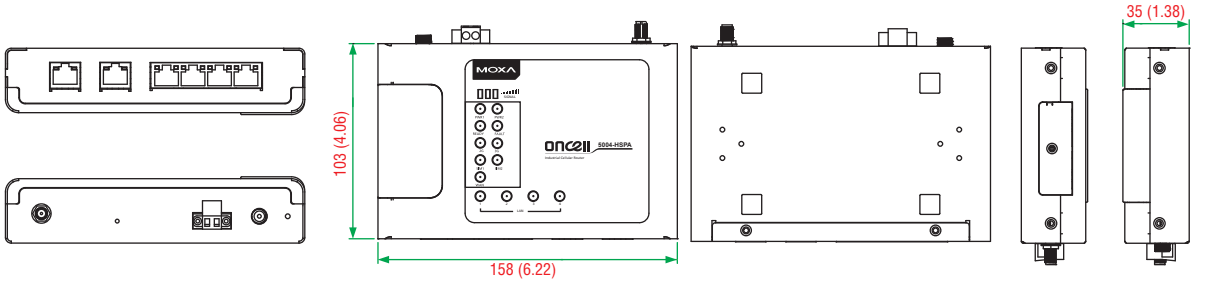
Warranty

Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

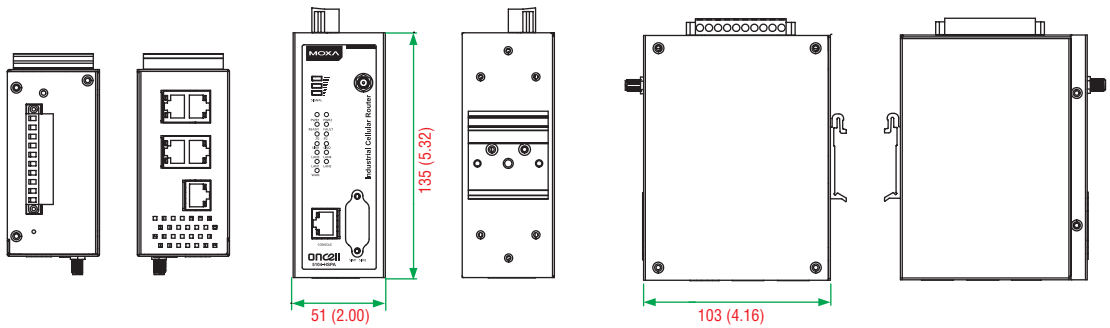
Unit: mm (inch)

OnCell 5004-HSPA



Top & Bottom View | Front & Rear View | Left & Right Side View

OnCell 5104-HSPA



Top & Bottom View | Front & Rear View | Left & Right Side View

Ordering Information

Available Models

OnCell 5004-HSPA: 4-port five-band industrial GSM/GPRS/EDGE/UMTS/HSPA router, -30 to 55°C operating temperature
OnCell 5104-HSPA: 4-port five-band industrial GSM/GPRS/EDGE/UMTS/HSPA router, IA design, -30 to 55°C operating temperature
OnCell 5104-HSPA-T: 4-port five-band industrial GSM/GPRS/EDGE/UMTS/HSPA router, IA design, -30 to 70°C operating temperature
Note: Please visit Moxa's website for a complete list of optional wireless accessories and antennas available for Moxa's wireless products.

Package Checklist

- OnCell 5x04-HSPA cellular router
- 1 UMTS/HSPA antenna: ANT-WCDMA-ASM-1.5
- Rubber stand (OnCell 5004-HSPA only)
- Wallmount kit (OnCell 5004-HSPA only)
- DIN-rail kit (OnCell 5104-HSPA only)
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

Note: An activated SIM card (not included) must be provided by a third party Cellular Service Provider.

OnCell G3470A-LTE Series

Industrial LTE cellular gateway

- LTE Band Support
  - EU Model: 2100/1800/2600/900/800 MHz (B1/B3/B7/B8/B20)
  - US Model: 1900/AWS/850/700/700/1900 MHz (B2/B4/B5/B13/B17/B25)
- Built-in high speed 4-port Ethernet switch
- Industrial design with dual-power input and built-in DI/DO support
- Cellular link redundancy with dual-SIM GuaranLink support
- Antenna and power isolation design to protect against interference

Introduction

Moxa's OnCell G3470A-LTE LTE Ethernet IP gateway provides a higher cellular bandwidth and more reliable connection to your Ethernet network for cellular applications. With an integrated 4-port Gigabit Ethernet switch and LTE support, the OnCell G3470A-LTE offers a faster cellular connection with a lower total cost of ownership. To enhance reliability, a key for industrial users, the OnCell G3470A-LTE provides isolation for both power and antenna inputs. Coupled with high-level EMS and wide-temperature support, the OnCell G3470A-LTE provides the highest level of device stability in any rugged environment. In addition, with dual-SIM and dual-power input features, the OnCell G3470A-LTE offers network redundancy to ensure uninterrupted connectivity for your applications.

Multi-Band Support

- EU Model: 2100/1800/2600/900/800 MHz (B1/B3/B7/B8/B20)
- US Model: 1900/AWS/850/700/700/1900 MHz (B2/B4/B5/B13/B17/B25)

Isolation and Redundancy Design

- Dual-power input for power redundancy
- Dual-SIM support for cellular connection redundancy
- Antenna isolation for protection against radio interference
- Power isolation for power source insulation protection
- GuaranLink for reliable cellular connectivity

Specifications

Cellular Interface

Standards: GSM/GPRS/EDGE/UMTS/HSPA/LTE
Band Options:
OnCell G3470A-LTE-EU:
• LTE 2100/1800/2600/900/800 MHz (B1/B3/B7/B8/B20)
• UMTS/HSPA 2100/1900/850/800/900 MHz
OnCell G3470A-LTE-US:
• LTE 1900/AWS/850/700/1900 MHz (B2/B4/B5/B13/B17/B25)
• UMTS/HSPA 2100/1900/AWS/850/900 MHz
• Universal quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz
LTE Data Rate:
• 20 MHz bandwidth: 100 Mbps DL, 50 Mbps UL
• 10 MHz bandwidth: 50 Mbps DL, 25 Mbps UL
HSPA Data Rate: 42 Mbps DL, 5.76 Mbps UL (Category 24, 6)
EDGE Data Rate: 237 kbps DL, 237 kbps UL (Class 10, 12)
GPRS Data Rate: 85.6 kbps DL, 42.8 kbps UL

LAN Interface

Number of Ports: 4
Ethernet: 10/100/1000 Mbps, RJ45 connector, auto MDI/MDIX

Interface

Cellular Antenna Connectors: 2, SMA (female)
GNSS: 1 SMA (female), GPS (1575.42 MHz), GLONASS (1602 MHz)
Console Port: RS-232 (RJ45)
LED Indicators: PWR1, PWR2, READY, FAULT, CELLULAR SIGNAL, SIM1, SIM2, 2G, 3G, 4G, GPS
Ground Screw: M5
Reset Button: Power Reset/Factory Default Reset

I/O Interface

Alarm Contact: 1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Inputs: 2 electrically isolated inputs
• +13 to +30 V for state "1"
• +3 to -30 V for state "0"

Software

Network Protocols: ICMP, DDNS, TCP/IP, UDP, DHCP, Telnet, DNS, SNMP, HTTP, HTTPS, SMTP, SNTP, ARP
Routing/Firewall: NAT, port forwarding, IP/MAC/Port filtering
VPN:
• Max. Tunnel Number: 5 (Responder/Initiator)
• IPSec (DES, 3DES, AES, MD5, SHA-1, DH2, DH5), PSK/X.509/RSA
Cellular Connectivity: GuaranLink
GPS: NMEA

Management Software

Utilities: Wireless Search Utility
Configuration and Management Options: SNMP v1/v2c/v3, Web / Telnet / Serial Console, SSH, Remote SMS Control
Private IP Solution: OnCell Central Manager

SIM Interface
Number of SIMs: 2
SIM Control: 3 V

Physical Characteristics
Housing: Aluminum, providing IP30 protection
Weight: 1300 g (2.87 lb)
Dimensions: 66.3 x 124 x 90 mm (2.61 x 4.88 x 3.54 in)

Environmental Limits
Operating Temperature:
Standard Models: -30 to 55°C (-22 to 131°F)
Wide Temp. Models:-30 to 70°C (-22 to 158°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Power Requirements
Number of Power Inputs: 2 (terminal block), redundant dual inputs
Input Voltage: 12 to 48 VDC
Input Current: 0.7 A @ 12 VDC; 0.2 A @ 48 VDC
Reverse Polarity Protection: Present

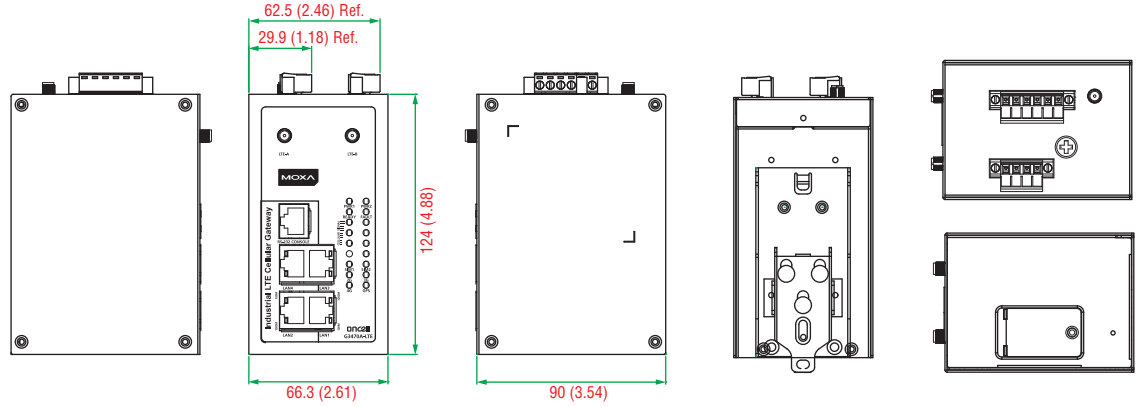
Standards and Certifications
Safety: OnCell G3470A-LTE-US: UL 60950-1
EMC: OnCell G3470A-LTE-EU: EN 61000-6-2/6-4
EMI: OnCell G3470A-LTE-US: CISPR 22, FCC Part 15B Class A
EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m
IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV
IEC 61000-4-5 Surge: Power: 1 kV; Signal: 1 kV
IEC 61000-4-6 CS: 10 V
IEC 61000-4-8
Radio:
OnCell G3470A-LTE-US: FCC ID N7NMC7355
OnCell G3470A-LTE-EU: EN 301 489-1, EN 301 489-7, EN 301 511

MTBF (mean time between failures)
Time: 327,326 hrs
Standard: Telcordia SR332

Warranty
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)



Left Side View | Front View | Right Side View | Rear View | Top & Bottom View

Ordering Information

Available Models
OnCell G3470-LTE-US: Industrial LTE cellular gateway, B2/B4/B5/B13/B17/B25, -30 to 55°C operating temperature
OnCell G3470-LTE-US-T: Industrial LTE cellular gateway, B2/B4/B5/B13/B17/B25, -30 to 70°C operating temperature
OnCell G3470-LTE-EU: Industrial LTE cellular gateway, B1/B3/B7/B8/B20, -30 to 55°C operating temperature
OnCell G3470-LTE-EU-T: Industrial LTE cellular gateway, B1/B3/B7/B8/B20, -30 to 70°C operating temperature
Note: Please visit Moxa's website for a complete list of optional wireless accessories and antennas available for Moxa's wireless products.

Package Checklist
- OnCell G3470A-LTE cellular gateway
- 2 UMTS/LTE antennas: ANT-LTEUS-ASM-01 (US model)
- 2 UMTS/LTE antennas: ANT-LTE-ASM-02 (EU model)
- 5 plastic RJ45 protective caps for serial console and Ethernet ports
- 1 GPS connector terminator
- DIN-rail kit
- Quick installation guide (printed)
- Warranty card

OnCell G3110/G3150-HSPA Series

Advanced five-band GSM/GPRS/EDGE/UMTS/HSPA IP gateways

- Five band UMTS/HSPA 800/850/AWS/1900/2100 MHz
- Quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz
- Redundant DC power inputs
- Connect to Ethernet and serial devices over an integrated VPN
- 2 digital inputs and 1 relay output
- Centralize private IP management software with OnCell Central Manager

Overview

The OnCell G3110/G3150-HSPA series of high-speed industrial-grade IP gateways are intelligent wireless communication platforms that connect your Ethernet and serial devices over a cellular TCP/IP network. The OnCell G3110/G3150-HSPA series offers connectivity to all five HSPA/UMTS frequency bands and quad GSM/GPRS/EDGE frequency bands used in Europe and the United States, allowing the most flexible global deployment on the best available network.

The OnCell G3110/G3150-HSPA products come with private IP management software and support VPN for handling IP addresses on cellular networks, and have a built-in relay output that can be configured to indicate the priority of events when notifying or warning engineers in the field. Two digital inputs also allow you to connect basic I/O devices, and the OnCell G3110/G3150-HSPA series comes with redundant power inputs to assure non-stop operation.

Specifications

Cellular Interface

Standards: GSM/GPRS/EDGE/UMTS/HSPA
Band Options:
• Five-band UMTS/HSPA 800/850/AWS/1900/2100 MHz
• Quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz
HSPA Data Rate: 14.4 Mbps DL, 5.76 Mbps UL
EDGE Multi-slot Class: Class 12
EDGE Data Rate: 237 kbps DL, 237 kbps UL
EDGE Terminal Device Class: Class B
GPRS Multi-slot Class: Class 12
GPRS Data Rate: 85.6 kbps DL, 85.6 kbps UL
GPRS Terminal Device Class: Class B
GPRS Coding Schemes: CS1 to CS4
Tx Power:
UMTS/HSPA: 0.25 W
EDGE900: 0.5 W
EDGE1800: 0.4 W
GSM1800: 1 W
GSM900: 2 W

LAN Interface

Number of Ports: 1
Ethernet: 10/100 Mbps, RJ45 connector, auto MDI/MDIX

Interface

Cellular Antenna Connectors: 1, SMA (female)

I/O Interface

Alarm Contact: 1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Inputs: 2 electrically isolated inputs
• +13 to +30 V for state “1”
• +3 to -30 V for state “0”

Software

Network Protocols: ARP, DDNS, DHCP/BOOTP, DNS Relay, HTTP, HTTPS, ICMP, IPSec, SMTP, SNTP, SSH, SSL, TCP/IP, Telnet, UDP
Routing/Firewall: NAT, port forwarding, WAN IP filtering
Cellular Connectivity: GuaranLink
Serial Security: Accessible IP list
Serial Operation Modes: Real COM, Reverse Real COM, TCP Server, TCP Client, UDP, SMS Tunnel, RFC2217, Secure Real COM, Secure Reverse Real COM, Secure TCP Server, Secure TCP Client, Ethernet Modem
Windows Real COM Drivers: Windows 2000/XP/2003/Vista/7/Server 2008, Windows XP/2003/Vista/7/Server 2008 x64 Edition
Fixed TTY Drivers: SCO Unix, SCO OpenServer 5, SCO OpenServer 6, UnixWare 7, SVR4.2, QNX 4.25, QNX 6, Solaris 10, FreeBSD 5, FreeBSD 6
Linux Real TTY Drivers: Linux kernels 2.2.x, 2.4.x, 2.6.x
Authentication: Local username and password

Management Software

Utilities: Wireless Search Utility
Configuration and Management Options: SNMP v1/v2c/v3, Web/Telnet/Serial Console, SSH, Remote SMS Control, Auto IP Report
Private IP Solution: OnCell Central Manager

SIM Interface

Number of SIMs: 1
SIM Control: 3 V

Serial Interface

Number of Ports: 1
Serial Standards:
OnCell G3110-HSPA: RS-232 (DB9 male connector)
OnCell G3150-HSPA: RS-232 (DB9 male connector), RS-422/485 (5-pin terminal block connector)

Serial Communication Parameters

Data Bits: 5, 6, 7, 8
Stop Bits: 1, 1.5, 2 (when parity = None)
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS, XON/XOFF
Baudrate: 50 bps to 921.6 kbps

Serial Signals

RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422: Tx+, Tx-, Rx+, Rx-, GND
RS-485-4w: Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w: Data+, Data-, GND

Physical Characteristics

Housing: Aluminum, providing IP30 protection
Weight: 445 g (0.98 lb)
Dimensions: 28 x 126 x 93 mm (1.1 x 4.94 x 3.64 in)

Environmental Limits

Operating Temperature:
Standard Models: -30 to 55°C (-22 to 131°F)
Wide Temp. Models: -30 to 70°C (-22 to 158°F)
Storage Temperature: -40 to 75°C (-40 to 167°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Power Requirements

Number of Power Inputs: 2 (terminal block), redundant dual inputs
Input Voltage: 12 to 48 VDC
Input Current: 0.9 A @ 12 VDC; 0.23 A @ 48 VDC
Reverse Polarity Protection: Present

Standards and Certifications

Safety: UL 60950-1
EMC: EN 55022/24
EMI: CISPR 22, FCC Part 15B Class A
EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m
IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV
IEC 61000-4-5 Surge: Power: 1 kV
IEC 61000-4-6 CS: 3 V
IEC 61000-4-8
Radio: FCC Part 22H, FCC Part 24E, EN 301 489-1, EN 301 489-7, EN 301 489-24, EN 301 511, EN 301 908

MTBF (mean time between failures)

Time: 380,000 hrs
Standard: Telcordia SR332

Warranty

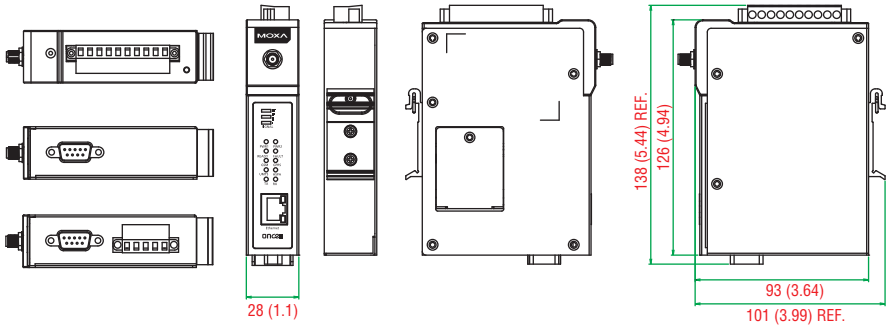
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions & Pin Assignment

Unit: mm (inch)

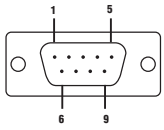
OnCell G3110-HSPA Series

OnCell G3150-HSPA Series



Top & Bottom View Front & Rear View Left & Right Side View

DB9 male connector



PIN	RS-232	RS-422/485-4w	RS-485-2w
1	DCD	TxD-(A)	–
2	RxD	TxD+(B)	–
3	TxD	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	Data-(A)
5	GND	GND	GND
6	DSR	–	–
7	RTS	–	–
8	CTS	–	–
9	–	–	–

Ordering Information

Available Models

OnCell G3110-HSPA: 1-port five-band industrial GSM/GPRS/EDGE/UMTS/HSPA IP gateway, RS-232, -30 to 55°C operating temperature
OnCell G3150-HSPA: 1-port five-band industrial GSM/GPRS/EDGE/UMTS/HSPA IP gateway, RS-232/422/485, -30 to 55°C operating temperature
OnCell G3110-HSPA-T: 1-port five-band industrial GSM/GPRS/EDGE/UMTS/HSPA IP gateway, RS-232, -30 to 70°C operating temperature
OnCell G3150-HSPA-T: 1-port five-band industrial GSM/GPRS/EDGE/UMTS/HSPA IP gateway, RS-232/422/485, -30 to 70°C operating temperature
Note: Please visit Moxa's website for a complete list of optional wireless accessories and antennas available for Moxa's wireless products.

Package Checklist

- OnCell G31x0-HSPA IP gateway
- 1 UMTS/HSPA antenna: ANT-WCDMA-ASM-1.5
- DIN-rail kit
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

Note: An activated SIM card (not included) must be provided by a third party Cellular Service Provider.

OnCell G3110/G3150

Advanced quad-band GSM/GPRS/EDGE IP gateways

- Universal quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz
- Redundant DC power input
- GuaranLink for reliable, consistent connectivity
- DIN-rail mounting
- Connect to Ethernet and serial devices over an integrated VPN
- 2 digital inputs and 1 relay output
- Centralize private IP management software with OnCell Central Manager

Overview

The OnCell G3110 and G3150 industrial RS-232 and RS-232/422/485 GSM/GPRS/EDGE IP gateways are designed to transmit data transparently over GSM/GPRS/EDGE cellular networks. The OnCell G3110 and G3150 can transmit data from both serial devices and Ethernet devices to a WAN interface, and come with private IP management software and VPN support for handling IP addresses on cellular networks. The products also come with a built-in relay output that can be configured to indicate the priority of events when notifying or warning engineers in the field. Two digital inputs also allow you to connect basic I/O devices, and the OnCell's redundant power inputs assure non-stop operation. The OnCell G3110/G3150 series also offers wide temperature models which can withstand extreme temperature conditions.

Specifications

Cellular Interface

Standards: GSM/GPRS/EDGE
Band Options: Quad-band 850/900/1800/1900 MHz
EDGE Multi-slot Class: Class 12
EDGE Data Rate: 237 kbps DL, 237 kbps UL
EDGE Terminal Device Class: Class B
GPRS Multi-slot Class: Class 12
GPRS Data Rate: 85.6 kbps DL, 43 kbps UL
GPRS Terminal Device Class: Class B
GPRS Coding Schemes: CS1 to CS4
Tx Power:
GSM1800/1900: 1 W
EGSM850/900: 2 W

LAN Interface

Number of Ports: 1
Ethernet: 10/100 Mbps, RJ45 connector, auto MDI/MDIX

Interface

Cellular Antenna Connectors: 1, SMA (female)

I/O Interface

Alarm Contact: 1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Inputs: 2 electrically isolated inputs
• +13 to +30 V for state "1"
• +3 to -30 V for state "0"

Software

Network Protocols: ARP, AT Commands (Virtual Modem), DDNS, DHCP/BOOTP, DNS Relay, HTTP, HTTPS, ICMP, IPSec, SMTP, SNTP, SSH, SSL, TCP/IP, Telnet, UDP
Routing/Firewall: NAT, port forwarding, WAN IP filtering
Cellular Connectivity: GuaranLink
Serial Security: Accessible IP list
Serial Operation Modes: Real COM, Reverse Real COM, TCP Server, TCP Client, UDP, SMS Tunnel, RFC2217, Secure Real COM, Secure Reverse Real COM, Secure TCP Server, Secure TCP Client, Virtual Modem, Ethernet Modem
Windows Real COM Drivers: Windows 2000/XP/2003/Vista/Server 2008, Windows XP/2003/Vista/Server 2008 x64 Edition
Fixed TTY Drivers: SCO Unix, SCO OpenServer 5, SCO OpenServer 6, UnixWare 7, SVR4.2, QNX 4.25, QNX 6, Solaris 10, FreeBSD 5, FreeBSD 6
Linux Real TTY Drivers: Linux kernels 2.2.x, 2.4.x, 2.6.x
Authentication: Local username and password

Management Software

Utilities: Wireless Search Utility
Configuration and Management Options: SNMP v1/v2c/v3, Web/Telnet/Serial Console, SSH, Remote SMS Control, Auto IP Report
Private IP Solution: OnCell Central Manager

SIM Interface

Number of SIMs: 1
SIM Control: 3 V

Serial Interface

Number of Ports: 1
Serial Standards:
OnCell G3110: RS-232 (DB9 male connector)
OnCell G3150: RS-232 (DB9 male connector), RS-422/485 (5-pin terminal block connector)

Serial Communication Parameters

Data Bits: 5, 6, 7, 8

Stop Bits: 1, 1.5, 2 (when parity = None)
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS, XON/XOFF
Baudrate: 50 bps to 921.6 kbps

Serial Signals

RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422: Tx+, Tx-, Rx+, Rx-, GND
RS-485-4w: Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w: Data+, Data-, GND

Physical Characteristics

Housing: Aluminum, providing IP30 protection
Weight: 445 g (0.98 lb)
Dimensions: 28 x 126 x 93 mm (1.1 x 4.94 x 3.64 in)

Environmental Limits

Operating Temperature:
Standard Temperature: -30 to 55°C (-22 to 131°F)
Wide Temperature: -30 to 70°C (-22 to 158°F)
Storage Temperature: -40 to 75°C (-40 to 167°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Power Requirements

Number of Power Inputs: 2 (terminal block), redundant dual inputs
Input Voltage: 12 to 48 VDC
Input Current: 0.9 A @ 12 VDC; 0.23 A @ 48 VDC
Reverse Polarity Protection: Present

Standards and Certifications

Safety: UL 60950-1
EMC: EN 55022/24
EMI: CISPR 22, FCC Part 15B Class A
EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m
IEC 61000-4-4 EFT: Power: 4 kV; Signal: 0.5 kV
IEC 61000-4-5 Surge: Power: 1 kV
IEC 61000-4-6 CS: 3 V
IEC 61000-4-8
Radio: FCC Part 22H, FCC Part 24E, EN 301 489-1, EN 301 489-7, EN 301 511, PTCRB (OnCell G3150 only)

MTBF (mean time between failures)

Time: 339,000 hrs
Standard: Telcordia SR332

Warranty

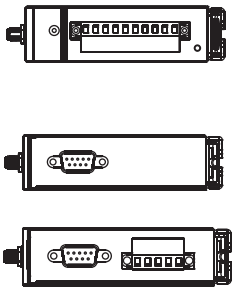
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions & Pin Assignment

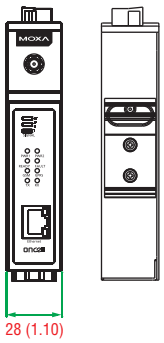
Unit: mm (inch)

OnCell G3110

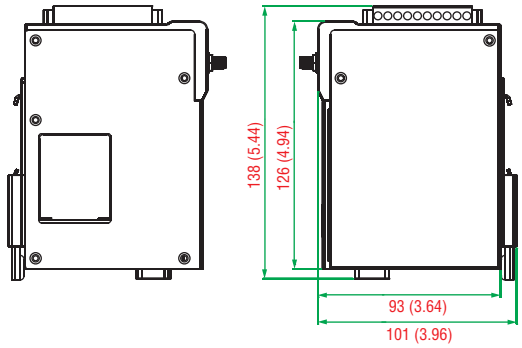
OnCell G3150



Top & Bottom View

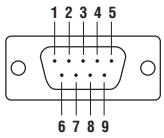


Front & Rear View



Left & Right Side View

DB9 male connector



PIN	RS-232	RS-422/485-4w	RS-485-2w
1	DCD	TxD-(A)	–
2	RxD	TxD+(B)	–
3	TxD	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	Data-(A)
5	GND	GND	GND
6	DSR	–	–
7	RTS	–	–
8	CTS	–	–
9	–	–	–

Ordering Information

Available Models

OnCell G3110: 1-port quad-band industrial GSM/GPRS/EDGE IP gateway, RS-232, -30 to 55°C operating temperature
OnCell G3150: 1-port quad-band industrial GSM/GPRS/EDGE IP gateway, RS-232/422/485, -30 to 55°C operating temperature
OnCell G3110-T: 1-port quad-band industrial GSM/GPRS/EDGE IP gateway, RS-232, -30 to 70°C operating temperature
OnCell G3150-T: 1-port quad-band industrial GSM/GPRS/EDGE IP gateway, RS-232/422/485, -30 to 70°C operating temperature
Note: Please visit Moxa's website for a complete list of optional wireless accessories and antennas available for Moxa's wireless products.

Package Checklist

- OnCell G31x0 IP gateway
- 1 GSM/GPRS antenna: ANT-CQB-ASM-01
- DIN-rail kit
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

Note: An activated SIM card (not included) must be provided by a third party Cellular Service Provider.

OnCell G3111/G3151-HSPA Series

Compact five-band GSM/GPRS/EDGE/UMTS/HSPA IP gateways

- Five-band UMTS/HSPA 800/850/900/1900/2100 MHz
- Quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz
- GuaranLink support for a reliable cellular connectivity
- Ethernet, serial, and cellular communication
- Centralize private IP management software with OnCell Central Manager
- Industrial-grade design for high device reliability

Introduction

The OnCell G3111/G3151-HSPA are cellular IP gateways that can conveniently and transparently connect your existing Ethernet and serial devices to a 3G cellular network. With the integrated GuaranLink feature, you can be confident that your device will always stay connected or recovered from any unexpected interference. With Moxa's industrial design, higher EMS level are tested to ensure the highest reliability for any harsh environment. The G3111/G3151-HSPA cellular IP gateways are the most compact, simple and robust industrial 3G solution.

Universal Band Support

- Five-band UMTS/HSPA 850/800, 900, 1900, 2100 MHz
- Quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz

Simple, Flexible, and Reliable

- Ethernet/serial/cellular co-existance for simple and flexible communication
- OnCell Central Management for private IP communication and centralized management
- Industrial-grade design for high device realibility
- GuaranLink for reliable cellular connnectivity

Specifications

Cellular Interface

Standards: GSM/GPRS/EDGE/UMTS/HSPA
Band Options:
• Five-band UMTS/HSPA 800/850/900/1900/2100 MHz
• Quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz
HSPA Data Rate: 14.4 Mbps DL, 5.76 Mbps UL
EDGE Multi-slot Class: Class 12
EDGE Data Rate: 237 kbps DL, 237 kbps UL
EDGE Terminal Device Class: Class B
GPRS Multi-slot Class: Class 12
GPRS Data Rate: 85.6 kbps DL, 85.6 kbps UL
GPRS Terminal Device Class: Class B
GPRS Coding Schemes: CS1 to CS4

LAN Interface

Number of Ports: 1
Ethernet: 10/100 Mbps, RJ45 connector, auto MDI/MDIX

Interface

Cellular Antenna Connectors: 1, SMA (female)

Software

Network Protocols: ARP, DDNS, DHCP/BOOTP, DNS Relay, HTTP, HTTPS, ICMP, SMTP, SNTP, SSH, SSL, TCP/IP, Telnet, UDP
Routing/Firewall: NAT, port forwarding, WAN IP filtering
Cellular Connectivity: Guaranlink
Serial Security: Accessible IP list
Serial Operation Modes: Real COM, Reverse Real COM, TCP Server, TCP Client, UDP, SMS Tunnel, RFC2217, Ethernet Modem
Windows Real COM Drivers: Windows 2000/XP/2003/Vista/7/Server 2008, Windows XP/2003/Vista/7/Server 2008 x64
Fixed TTY Drivers: SCO Unix, SCO OpenServer 5, SCO OpenServer 6, UnixWare 7, SVR 4.2, QNX 4.25, QNX 6, Solaris 10, FreeBSD 5, FreeBSD 6
Linux Real TTY Drivers: Linux kernels 2.2.x, 2.4.x, 2.6.x
Authentication: Local user-name and password

Management Software

Utilities: Wireless Search Utility
Configuration and Management Options: SNMP v1/v2c/v3, Web/Telnet/Serial Console, SSH, Remote SMS Control, Auto IP Report
Private IP Solution: OnCell Central Manager

SIM Interface

Number of SIMs: 1
SIM Control: 3 V

Serial Interface

Number of Ports: 1
Serial Standards:
OnCell G3111-HSPA: 1 RS-232 port, DB9 male
OnCell G3151-HSPA: 1 RS-232/422/485 port, DB9 male

Serial Communication Parameters

Data Bits: 5, 6, 7, 8
Stop Bits: 1, 1.5, 2 (when parity = None)
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS, XON/XOFF
Baudrate: 50 bps to 921.6 kbps

Serial Signals

RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422: Tx+, Tx-, Rx+, Rx-, GND
RS-485-4w: Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w: Data+, Data-, GND

Physical Characteristics

Housing: Aluminum, providing IP30 protection
Weight: 170 g (0.38 lb)
Dimensions: 77 x 111 x 26 mm (3.03 x 4.37 x 1.02 in)

Environmental Limits

Operating Temperature: -30 to 55°C (-22 to 131°F)
Storage Temperature: -40 to 75°C (-40 to 167°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Power Requirements

Number of Power Inputs: 1 (terminal block)
Input Voltage: 12 to 48 VDC
Input Current: 0.9 A @ 12 VDC; 0.23 A @ 48 VDC
Reverse Polarity Protection: Present

Standards and Certifications

Safety: UL 60950-1
EMC: EN 55022/24, EN 61000-6-2/6-4
EMI: CISPR 22, FCC Part 15B Class A
EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m
IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV
IEC 61000-4-5 Surge: Power: 1 kV; Signal: 1 kV
IEC 61000-4-6 CS: 3 V
IEC 61000-4-8
Radio: FCC Part 22H, FCC Part 24E, EN 301 489-1, EN 301 489-7, EN 301 489-24, EN 301 511, EN 301 908

MTBF (mean time between failures)

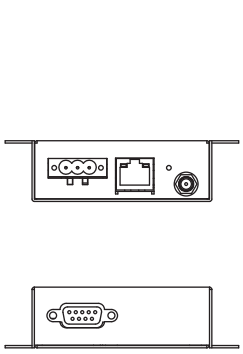
Time: 1,815,281 hrs
Standard: Telcordia SR332

Warranty

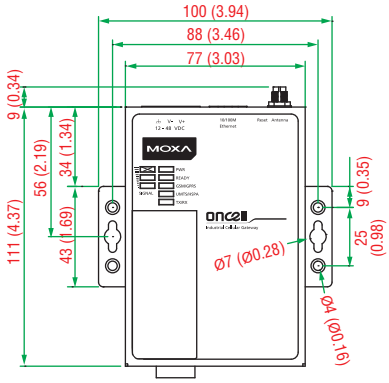
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

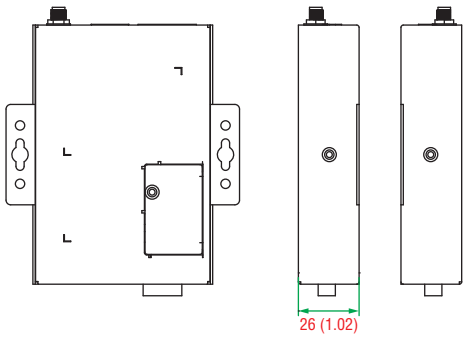
Unit: mm (inch)



Top & Bottom View

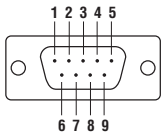


Front & Rear View



Left & Right Side View

DB9 male connector



PIN	RS-232	RS-422/485-4w	RS-485-2w
1	DCD	TxD-(A)	–
2	RxD	TxD+(B)	–
3	TxD	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	Data-(A)
5	GND	GND	GND
6	DSR	–	–
7	RTS	–	–
8	CTS	–	–
9	–	–	–

Ordering Information

Available Models

OnCell G3111-HSPA: 1-port five-band industrial GSM/GPRS/EDGE/UMTS/HSPA IP gateway, RS-232, -30 to 55°C operating temperature
OnCell G3151-HSPA: 1-port five-band industrial GSM/GPRS/EDGE/UMTS/HSPA IP gateway, RS-232/422/485, -30 to 55°C operating temperature

Optional Accessories (can be purchased separately)

ANT-WCDMA-AHSM-04-2.5m: Five-band GSM/GPRS/EDGE/UMTS/HSPA, 4 dBi, omnidirectional magnetic-based antenna
Note: Please visit Moxa's website for a complete list of optional wireless accessories and antennas available for Moxa's wireless products

Package Checklist

- OnCell G31x1-HSPA IP gateway
- 1 UMTS/HSPA antenna: ANT-WCDMA-ASM-1.5
- Rubber stand
- 3-pin terminal block
- DIN-rail kit
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

OnCell G3111/G3151/G3211/G3251

Compact quad-band GSM/GPRS IP gateways

- Universal quad-band GSM/GPRS 850/900/1800/1900 MHz
- Desktop or DIN-rail installation
- Connect Ethernet and serial devices
- Centralize private IP management software with OnCell Central Manager
- Choice of configuration methods, including web console, serial console, and Telnet

Overview

The OnCell G3111/G3151/G3211/G3251 are cellular IP gateways that can conveniently and transparently connect up to two devices to a cellular network, allowing you to connect serial devices to your existing Ethernet with only basic configuration. To ensure zero data loss and on-demand cellular communication, OnCell devices are integrated with the GuaranLink function. The G3111/G3151/G3211/G3251 cellular IP gateways are compact, and can be used on a desktop or mounted on a DIN rail. The products come with a 12 to 48 VDC power input and have 2 kV EFT/Surge protection to allow the use of different types of field power sources. The serial ports are also protected by 15 kV ESD line protection to keep your system safe from unexpected electrical discharges.

Specifications

Cellular Interface

Standards: GSM/GPRS
Band Options: Quad-band 850/900/1800/1900 MHz
GPRS Multi-slot Class: Class 10
GPRS Data Rate: 85.6 kbps DL, 43 kbps UL
GPRS Terminal Device Class: Class B
GPRS Coding Schemes: CS1 to CS4
Tx Power:
GSM1800/1900: 1 W
EGSM850/900: 2 W

LAN Interface

Number of Ports: 1
Ethernet: 10/100 Mbps, RJ45 connector, auto MDI/MDIX

Interface

Cellular Antenna Connectors: 1, SMA (female)

Software

Network Protocols: ARP, DDNS, DHCP/BOOTP, DNS Relay, HTTP, HTTPS, ICMP, SMTP, SNTP, SSH, SSL, TCP/IP, Telnet, UDP
Routing/Firewall: NAT, port forwarding, WAN IP filtering
Cellular Connectivity: GuaranLink
Serial Security: Accessible IP list
Serial Operation Modes: Real COM, Reverse Real COM, TCP Server, TCP Client, UDP, SMS Tunnel, RFC2217, Ethernet Modem
Windows Real COM Drivers: Windows 2000/XP/2003/Vista/Server 2008, Windows XP/2003/Vista/Server 2008 x64
Fixed TTY Drivers: SCO Unix, SCO OpenServer 5, SCO OpenServer 6, UnixWare 7, SVR 4.2, QNX 4.25, QNX 6, Solaris 10, FreeBSD 5, FreeBSD 6
Linux Real TTY Drivers: Linux kernels 2.2.x, 2.4.x, 2.6.x
Authentication: Local user-name and password

Management Software

Utilities: OnCell Search Utility
Configuration and Management Options: SNMP v1/v2c/v3, Web/Telnet/Serial Console, SSH, Remote SMS Control, Auto IP Report
Private IP Solution: OnCell Central Manager

SIM Interface

Number of SIMs: 1
SIM Control: 3 V

Serial Interface

Number of Ports: 1 or 2
Serial Standards:
OnCell G3111: 1 RS-232 port, DB9 male
OnCell G3151: 1 RS-232/422/485 port, DB9 male
OnCell G3211: 2 RS-232 port, DB9 male
OnCell G3251: 2 RS-232/422/485 port, DB9 male

Serial Communication Parameters

Data Bits: 5, 6, 7, 8
Stop Bits: 1, 1.5, 2 (when parity = None)
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS, XON/XOFF
Baudrate: 50 bps to 921.6 kbps

Serial Signals

RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422: Tx+, Tx-, Rx+, Rx-, GND
RS-485-4w: Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w: Data+, Data-, GND

Physical Characteristics

Housing: Aluminum, providing IP30 protection

Weight:
OnCell G3111/G3151: 170 g (0.38 lb)
OnCell G3211/G3251: 190 g (0.42 lb)
Dimensions: 77 x 111 x 26 mm (3.03 x 4.37 x 1.02 in)

Environmental Limits

Operating Temperature: -30 to 55°C (-22 to 131°F)
Storage Temperature: -40 to 75°C (-40 to 167°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Power Requirements

Number of Power Inputs: 1 power jack
Input Voltage: 12 to 48 VDC
Input Current: 0.9 A @ 12 VDC; 0.23 A @ 48 VDC

Standards and Certifications

Safety: UL 60950-1
EMC: EN 55022/24
EMI: CISPR 22, FCC Part 15B Class A

EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m
IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV
IEC 61000-4-5 Surge: Power 1 kV; Signal: 1 kV
IEC 61000-4-6 CS: 10 V
IEC 61000-4-8
Radio: FCC Part 22H, FCC Part 24E, EN 301 489-1, EN 301 489-7, EN 301 511, PTCRB (OnCell G3151 only)

MTBF (mean time between failures)

Time:
OnCell G3111: 664,000 hrs
OnCell G3151: 661,000 hrs
OnCell G3211: 647,000 hrs
OnCell G3251: 642,000 hrs
Standard: Telcordia SR332

Warranty

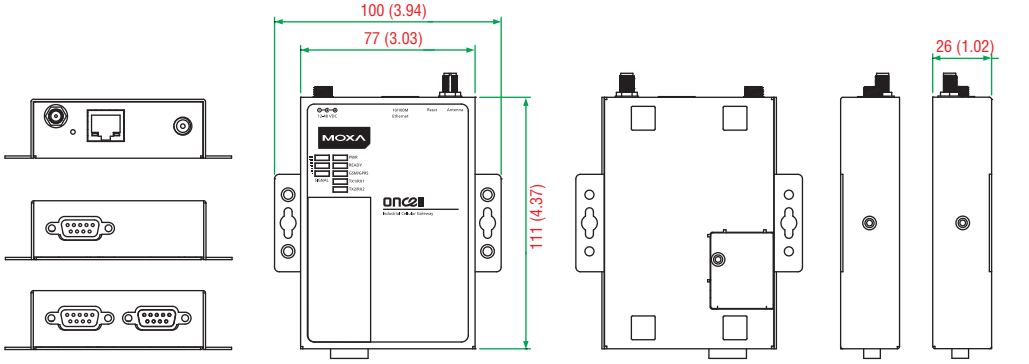
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)

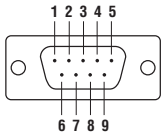
OnCell G3111, OnCell G3151

OnCell G3211, OnCell G3251



Top & Bottom View | Front & Rear View | Left & Right Side View

DB9 male connector



PIN	RS-232	RS-422/485-4w	RS-485-2w
1	DCD	TxD-(A)	–
2	RxD	TxD+(B)	–
3	TxD	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	Data-(A)
5	GND	GND	GND
6	DSR	–	–
7	RTS	–	–
8	CTS	–	–
9	–	–	–

Ordering Information

Available Models

OnCell G3111: 1-port quad-band industrial GSM/GPRS IP gateway, RS-232, -30 to 55°C operating temperature
OnCell G3151: 1-port quad-band industrial GSM/GPRS IP gateway, RS-232/422/485, -30 to 55°C operating temperature
OnCell G3211: 2-port quad-band industrial GSM/GPRS IP gateway, RS-232, -30 to 55°C operating temperature
OnCell G3251: 2-port quad-band industrial GSM/GPRS IP gateway, RS-232/422/485, -30 to 55°C operating temperature
Note: Please visit Moxa's website for a complete list of optional wireless accessories and antennas available for Moxa's wireless products.

Package Checklist

- OnCell G3xx1 IP gateway
- 1 GSM/GPRS antenna: ANT-CQB-ASM-01
- Rubber stand
- DC power supply (screw-on type)
- DIN-rail kit
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

Note: An activated SIM card (not included) must be provided by a third party Cellular Service Provider.

OnCell G2111/G2151I

Industrial quad-band GSM/GPRS modems

- Quad-band GSM/GPRS 850/900/1800/1900 MHz
- DIN-rail housing and wall-mounting housing
- 2.5 kV RMS isolation for 1 min. for all serial signals (G2151I only)
- LED indicators for GSM/GPRS and data transmission status
- Extended operating temperature from -25 to 70°C (G2111-T only)

Overview

The OnCell G2111/G2151I series of industrial quad-band GSM/GPRS modems are designed to transmit data and short messages (SMS) over GSM/GPRS mobile networks. The modems can be used to increase the efficiency of maintenance and communication, but do not require extensive training. In addition, the modems can be mounted on a DIN rail or wall. The OnCell G2111/G2151I series modems accept a 12 to 48 VDC power input, making them suitable for use with a variety of field power sources. The serial ports feature 15 kV ESD line protection to protect the products from harmful electrical discharge, and separate RS-232 and RS-422/485 interfaces are built into the OnCell G2151I, each with 2.5 kV RMS isolation protection for one minute. The two serial interfaces on the OnCell G2151I make it ideal for attaching all kinds of devices, such as stand-alone controllers, PC COM ports, and multi-dropped electric meters. In addition, the OnCell G2111-T has an extended operating temperature (-25 to 70°C) design that makes it suitable for heavy industrial use.

Specifications

Cellular Interface

Standards: GSM/GPRS
Band Options: Quad-band 850/900/1800/1900 MHz
GPRS Multi-slot Class: Class 10
GPRS Terminal Device Class: Class B
GPRS Coding Schemes: CS1 to CS4
CSD Data Transmission Rate: Up to 14,400 bps
Tx Power:
GSM 1800/1900: 1 W
EGSM 900/GSM 850: 2 W

Interface

Cellular Antenna Connectors: 1, SMA (female)

SIM Interface

Number of SIMs: 1
SIM Control: 3 V

Serial Interface

Number of Ports: 1
Serial Standards:
OnCell G2111: RS-232 (DB9 female connector)
OnCell G2111-T: RS-232 (DB9 female connector)
OnCell G2151I: RS-232 (DB9 female connector), RS-422/485 (5-pin terminal block connector)
ESD Protection: 15 kV (G2111 only)
Optical Isolation: 2.5 kV (G2151I only)

Serial Communication Parameters

Data Bits: 8
Stop Bits: 1
Parity: None
Flow Control: RTS/CTS
Baudrate: 300 bps to 230.4 kbps

Serial Signals

RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND
RS-422: Tx+, Tx-, Rx+, Rx-, GND
RS-485-4w: Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w: Data+, Data-, GND

Physical Characteristics

Housing: ABS + PC, providing IP30 protection
Weight: 155 g (0.34 lb)
Dimensions: 27 x 123 x 79 mm (1.06 x 4.84 x 3.11 in)

Environmental Limits

Operating Temperature:
OnCell G2111/G2151I: -20 to 55°C (-4 to 131°F)
OnCell G2111-T: -25 to 70°C (-22 to 158°F)
Storage Temperature: -40 to 75°C (-40 to 167°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Power Requirements

Number of Power Inputs: 1 (terminal block)
Input Voltage: 12 to 48 VDC
Input Current: 0.625 A @ 12 VDC; 0.16 A @ 48 VDC

Standards and Certifications

Safety: UL 60950-1
EMC: EN 55022/24
EMI: CISPR 22, FCC Part 15B Class A
EMS:
IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m
IEC 61000-4-4 EFT: Power: 0.5 kV
IEC 61000-4-5 Surge: Power: 1 kV
IEC 61000-4-6 CS: 3 V
IEC 61000-4-8
Radio: FCC Part 22H, FCC Part 24E, EN 301 489-1, EN 301 489-7, EN 301 511

MTBF (mean time between failures)

Time:
OnCell G2111/G2111-T: 925,000 hrs
OnCell G2151I: 864,000 hrs
Standard: Telcordia SR332

Warranty

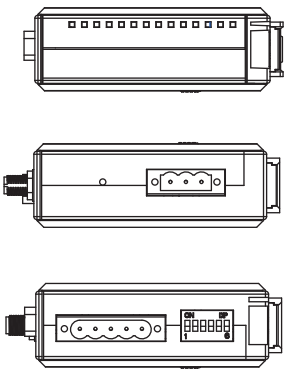
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

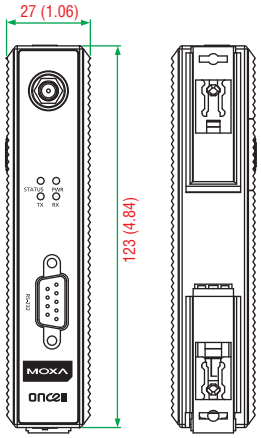
Unit: mm (inch)

OnCell G2111

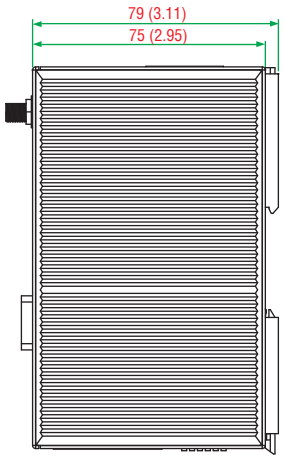
OnCell G2151I



Top & Bottom View

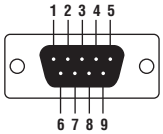


Front & Rear View



Side View

DB9 female RS-232 port



PIN	RS-232
1	DCD
2	TxD
3	RxD
4	DSR
5	GND
6	DTR
7	CTS
8	RTS

Ordering Information

Available Models

OnCell G2111: 1-port RS-232 GSM/GPRS IP modem, -20 to 55°C operating temperature
OnCell G2151I: 1-port RS-232/422/485 GSM/GPRS IP modem, isolation, -20 to 55°C operating temperature
OnCell G2111-T: 1-port RS-232 GSM/GPRS IP modem, -25 to 70°C operating temperature
Note: Please visit Moxa's website for a complete list of optional wireless accessories and antennas available for Moxa's wireless products.

Package Checklist

- OnCell G21x1 cellular modem
- 1 GSM/GPRS antenna: ANT-CQB-AHSM-00-3m
- Terminal block adapter for power jack connector
- Documentation CD
- Quick installation guide (printed)
- Warranty card

Note: An activated SIM card (not included) must be provided by a third party Cellular Service Provider.

Cellular Accessories

	UMTS/LTE Cellular Antennas		GSM/GPRS Cellular Antennas			
	ANT-LTE-ASM-02	ANT-LTEUS-ASM-01	ANT-CQB-ASM-01	ANT-CQB-AHSM-00-3m	ANT-CQB-AHSM-03-3m	ANT-CQB-AHSM-05-3m
Frequency Range	850/900/1700/2100/2300/2600 MHz	700/850/900/1700/2100/2300/2600 MHz	850/900/1800/1900 MHz	850/900/1800/1900 MHz	850/900/1800/1900 MHz	850/900/1800/1900 MHz
Description	GSM/GPRS/UMTS/LTE band, Omni-direction, 2 dBi, rubber SMA	GSM/GPRS/UMTS/LTE band, omnidirectional, 2 dBi, rubber SMA	Quad-band GSM/GPRS, omnidirectional, 1 dBi, rubber SMA	Quad-band GSM/GPRS, omnidirectional, 0 dBi, 10 cm high, magnetic SMA, 3 m	Quad-band GSM/GPRS, omnidirectional, 3 dBi, 25 cm high, magnetic SMA, 3 m	Quad-band GSM/GPRS, omnidirectional, 5 dBi, 37 cm high, magnetic SMA, 3 m
Antenna Type	Omnidirectional	Omnidirectional	Omnidirectional	Omnidirectional	Omnidirectional	Omnidirectional
Cable Type	–	–	–	RG174/U	RG174/U	RG174/U
Typical Antenna Gain	2 dBi	1 dBi	1 dBi (Max.)	0 dBi	3 dBi	5 dBi
Impedance	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms
Polarization Type	Linear	Linear	Linear	Linear	Linear	Linear
HPBW/horizontal	360°	360°	360°	360°	360°	360°
V.S.W.R.	<1.5	<1.5	< 3.5	< 2	< 2	< 2
Connector(s)	SMA (male)	SMA (male)	SMA (male)	SMA (male)	SMA (male)	SMA (male)
Antenna Length	161 mm (6.34 in)	205 mm (8.07 in)	83 mm (3.27 in)	100 mm (3.94 in)	250 mm (9.84 in)	370 mm (14.57 in)
Weight	29 g (0.06 lb)	26 g (0.06 lb)	10 g (0.02 lb)	58 g (0.13 lb)	60 g (0.13 lb)	62 g (0.14 lb)
Cable Length	–	–	–	3 m (118.11 in)	3 m (118.11 in)	3 m (118.11 in)
Related Products	WDR-3124A, OnCell 5004-HSPA/5104-HSPA, OnCell G3470A-LTE, OnCell G3110-HSPA/3150-HSPA, OnCell G3110/G3150, OnCell G3111-HSPA/G3151-HSPA, OnCell G3111/G3151/G3211/G3251, OnCell G2111/2511I		OnCell G2111/G2151I, OnCell G3111/G3151, OnCell G3211/G3251, OnCell G3110/G3150, OnCell 5000 series, ioLogik W5340/5312			

	UMTS/HSPA Cellular Antennas			Cellular Cables
	ANT-WCDMA-ASM-1.5	ANT-WCDMA-AHSM-04-2.5m	ANT-WCDMA-ANF-00	CRF-SMA(M)/N(M)-300
Frequency Range	850/900/1800/1900/2100 MHz	850/900/1800/1900/2100 MHz	850/900/1800/1900/2100 MHz	–
Description	Five-band GSM/GPRS/UMTS/HSDPA/HSPA, omnidirectional, 1.5 dBi, rubber SMA	Five-band GSM/GPRS/UMTS/HSDPA/HSPA, omnidirectional, 4 dBi, 11 cm high, magnetic SMA, 2.5 m	Five-band GSM/GPRS/UMTS/HSDPA/HSPA+, omnidirectional, 0 dBi, glass fiber, N-type (female)	CFD200 cable, SMA male to N-type (male), 3 m
Antenna Type	Omnidirectional	Omnidirectional	Omnidirectional	–
Cable Type	–	RG174/U	–	CFD200
Typical Antenna Gain	1.5 dBi	4 dBi	0 dBi	–
Impedance	50 ohms	50 ohms	50±5 ohms	–
Polarization Type	Vertical	Vertical	Vertical	–
HPBW/horizontal	360°	360°	360°	–
HPBW/vertical	–	–	40°	–
V.S.W.R.	< 2	< 2	1 : 1.5 Max.	–
Connector(s)	SMA (male)	SMA (male)	N-type Female	SMA male to N-type male
Antenna Length	104 mm (4.09 in)	110 mm (4.33 in)	420 mm (16.54 in)	–
Weight	10 g (0.02 lb)	60 g (0.13 lb)	430 g (0.95 lb)	–
Cable Length	–	2.5 m (98.43 in)	–	3 m (118.11 in)
Outer Dimension	–	–	–	4.14 mm (0.16 in)
Min. Bend Radius	–	–	–	12.7 mm (0.5 in)
Attenuation (dB/100m)	–	–	–	32.6 @ 900 MHz 49.3 @ 2000 MHz
Related Accessory	–	–	–	Cellular 5-band N-type antenna
Related Products	WDR-3124A, OnCell G3100-HSPA series, OnCell G3111-HSPA/G3151-HSPA, OnCell G3110-HSPA/G3150-HSPA, OnCell 5004-HSPA/5104-HSPA, ioLogik W5340-HSDPA			

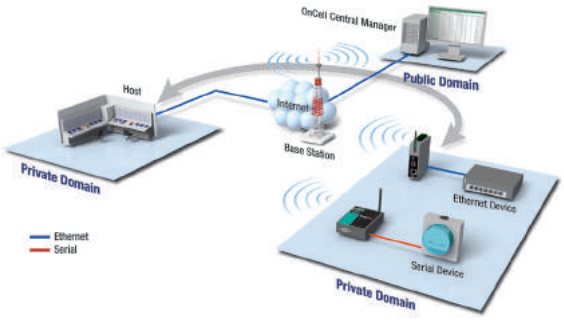
OnCell Central Manager Software

Centralized private IP management software

> **Looking for an easy way to access network devices with private IP addresses over the Internet? Moxa's OnCell Central Manager offers an industrial-grade centralized solution that allows you to configure, manage, and monitor remote devices on a private network, over the web.**

Introduction

Due to the limited number of public IP addresses, most cellular service providers only offer private IP addresses for mobile devices to connect to the Internet. However, the nature of private IP addresses can make it extremely difficult to access your cellular devices from a public network. This is where OnCell Central Manager comes in. OnCell Central Manager stands between you and your cellular devices and allows you to access your devices from anywhere on the Internet. Installation is easy:



Step 1: Install OnCell Central Manager on your server
Step 2: Configure the OnCell device
Step 3: Manage and monitor your devices

By providing a central point of access to remote devices, OnCell Central Manager makes it easy for you to manage multiple devices. Using a standard Web browser, you can securely make configuration changes to a device, manage devices, and monitor device status. OnCell Central Manager helps you reduce maintenance costs; since you can diagnose and solve problems from a central site you won't need to make as many trips to remote locations. OnCell Central Manager can be hosted at a customer's central data center or through a Moxa partner's server, and can be accessed securely from anywhere across a wired or wireless IP network, including the Internet.

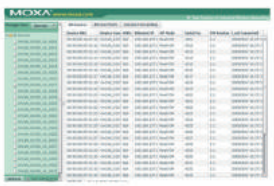
Features

Device Maintenance

Manage and perform administrative tasks such as importing and exporting device configurations, and resetting device settings.

Device Monitoring

With the device and connection monitoring features, you can get up-to-date information about a device's network activity, connection status, and more.



Telnet

OnCell Central Manager allows you to open or close a Telnet connection for remote monitoring and configuration.

System Requirements

Hardward Requirements

Your host hardware must meet the following minimum requirements:

- Intel® Core™ i3 Processor or above (2 GHz)
- 2 GB RAM and 2 or more GB of disk space

Software Requirements

OnCell Manager supports the following operating systems: Microsoft Windows Server 2003/2008

Note: Adobe Flash Player Software is required for the installation of OnCell Central Manager

Supported Products

OnCell Central Manager can be used with the following Moxa products: OnCell G3470A-LTE, WDR-3124A, OnCell 5004-HSPA/5104-HSPA, OnCell G3110-HSPA/G3150-HSPA, OnCell G3111-HSPA/G3151-HSPA, OnCell G3110/G3150, OnCell G3111/G3211/G3151/G3251

Note: OnCell Central Manager can be downloaded for free from Moxa's website.

Railway Wireless LAN Solutions

8

Railway Wireless LAN Solutions

Railway Wireless LAN Solutions

	Rail Train-to-Ground Series				Rail Carriage-to-Carriage Series	
	TAP-6226	AWK-3121-M12-RTG	AWK-3121-M12-HP-RTG	AWK-3121-SSC-RTG	AWK-3131-M12-RCC	AWK-5232-M12-RCC
WLAN						
IEEE 802.11 Standards	a/b/g	a/b/g			a/b/g/n	
Number of RF Modules	2	1	1	1	1	2
High Power RF Modules	✓	–	✓	–	–	–
Interfaces						
Number of Antenna Connectors	2	2	2	2	2	4
Antenna Connector Type	N-type (female)	QMA (female)	QMA (female)	RP-SMA (female)	QMA (female)	QMA (female)
Number of LAN Ports	6	1	1	1	1	2
LAN Port Type	4, M12; 2, SFP	1, M12	1, M12	1, SC connector	1, M12	2, M12
LAN Port Speed	10/100BaseT(X); 100BaseFX	10/100BaseT(X)	10/100BaseT(X)	100BaseFX	10/100/1000BaseT(X)	10/100/1000BaseT(X)
RS-232 Console Port	1, M12	1, RJ45	1, RJ45	1, RJ45	1, RJ45	1, RJ45
DI/DO	–	✓	✓	✓	✓	✓
DI/DO Connector Type	–	10-pin terminal block	10-pin terminal block	10-pin terminal block	10-pin terminal block	10-pin terminal block
Hosuing Protection						
IP-rating	IP68	IP30	IP30	IP30	IP30	IP30
Installation Options						
DIN-Rail Mounting	–	✓	✓	✓	✓	✓
Wall Mounting	✓	✓ (optional)	✓ (optional)	✓ (optional)	✓ (optional)	✓ (optional)
Power Requirements						
Input Voltage	110/220 VDC/VAC	12 to 48 VDC	12 to 48 VDC	12 to 48 VDC	12 to 48 VDC	12 to 48 VDC
Connector	M23	10-pin terminal block	10-pin terminal block	10-pin terminal block	10-pin terminal block	10-pin terminal block
PoE Support	✓	✓	✓	✓	✓	✓
Reserve Polarity Protection	✓	✓	✓	✓	✓	✓
Page	8-4	8-6	8-6	8-6	8-13	8-16

	Wireless Access Controller	
	WAC-1001	WAC-2004
Controller Features		
WLAN Security Support	WPA/WAP2-Personal and Enterprise	WPA/WAP2-Personal and Enterprise
Turbo Roaming for Layer 2 Network	✓	✓
Turbo Roaming for Layer 3 Network	–	✓
Mobile IP	–	✓
Interfaces		
Number of LAN Ports	1	4
LAN Port Type	1, RJ45	4, RJ45
LAN Port Speed	10/100BaseT(X)	10/100/1000BaseT(X)
RS-232 Console Port	1, RJ45	1, DB9 (male)
DI/DO	✓	–
DI/DO Connector Type	10-pin terminal block	–
Hosuing Protection		
IP-rating	IP30	–
Installation Options		
DIN-Rail Mounting	✓	–
Wall Mounting	✓ (optional)	–
Rack Mounting	–	Standard 19-inch rack mounting
Power Requirements		
Input Voltage	12 to 48 VDC	100 to 240 VAC
Connector	10-pin terminal block	AC power socket
PoE Support	✓	–
Reserve Polarity Protection	✓	–
Page	8-9	8-11

Introduction to Railway Wireless LAN

Recent advancements in wireless technologies have made mission-critical mobile networks, such as railway train-to-ground applications, a reality. In addition, increasing passenger expectations to be able to use various personal mobile devices while in transit have also prompted railways to invest in onboard Wi-Fi technologies.

However, electrical equipment used in railway applications are also subject to strict industry standards. In particular, wireless equipment used aboard rolling stock need to comply with the EN 50155 standard, which requires an extremely rugged design to resist power input voltage fluctuations, power surges, ESD, and continuous vibrations.

Rail Signaling

In order to create train control systems that are more efficient than traditional track circuit systems, CBTC signaling systems need continuous bi-directional track-to-train data links that use radio communications. These requirements are especially important in high-speed applications, for which roaming occurs very often, but moving block signaling systems still need sustained communications between fixed and mobile equipment. However, WLAN handoffs may affect latency and cause disruptions in communications that is unacceptable for safety-critical applications.

Onboard Infotainment

Today, rail operators can improve passenger experience by offering onboard multimedia content, free Internet connectivity, and complete network security throughout the entire train. The infotainment network must be flexible enough to adapt to train consist changes during daily operations, while communicating to the ground-based backbone network through radio links, or to the control center through a satellite connection.

Besides, with the increasing demand on onboard Wi-Fi access, wireless APs need tailor-made features to ensure that every passenger is able to access multimedia stations or the Internet. This kind of service requires greater bandwidth, and secure network access, especially when connecting with backbone systems.

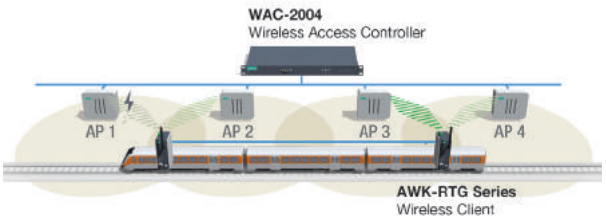
Moxa EN 50155-Compliant WLAN Solutions

Moxa provides three EN 50155-compliant product series for various railway applications:

- Rail Train-to-Ground (RTG) series and TAP series for train-to-ground communications
- Wireless Access Controller (WAC) series to work with the RTG series
- Rail Carriage-to-Carriage (RCC) series for onboard wireless communications

Train-to-Ground Communications: Turbo Roaming and AeroLink Protection Technology

Moxa's train-to-ground solution includes wayside access points and onboard wireless client products. Working with a wireless access controller from the WAC series, the innovative Moxa controller-based Turbo Roaming technology ensures millisecond level handoff times to meet the demanding requirements of mission-critical railway applications, such as CBTC. Moreover, the AeroLink Protection technology offers wireless redundancy by creating multiple redundant paths from the train to the ground for a highly reliable connection.



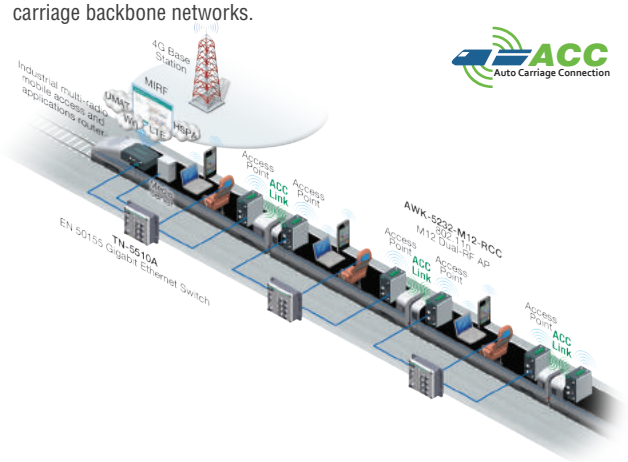
Turbo Roaming

AeroLink Protection

Onboard Communications: ACC Technology and Passenger Wi-Fi

The RCC series includes onboard wireless products for passenger Wi-Fi networks and carriage-to-carriage wireless communication. For Wi-Fi networks onboard, our bandwidth usage optimization features provide a smoother Wi-Fi experience for passengers, even in crowded carriages, and client isolation for a secure network connection. For carriage-to-carriage communications, the innovative Moxa ACC (Auto Carriage Connection) technology supported by the RCC series provides simple wireless deployment and increases the reliability of wireless carriage backbone networks.

ACC Auto Carriage Connection



TAP-6226 Series

Railway trackside 802.1 a/b/g IP68 wireless unit

- 2 dual-band radios, IEEE 802.11a/b/g compliant
- Railway approved IP68 housing
- Controller-based Turbo Roaming
- 2 fiber SFP ports and 4 PoE ports with M12 LAN connectors
- High transmission power for extended reach
- Complies with a portion of EN 50155 specifications
- -40 to 75°C operating temperature range

Introduction

The TAP-6226 trackside wireless unit is designed for train-to-ground wireless communication. It is a highly compact and rugged wireless unit that integrates two access points, a managed fiber switch, and a wide-range AC/DC power supply, all in one box. The IP68 housing can withstand the harshest weather, and M12 connectors make the unit shock and vibration resistant. The TAP-6226 supports advanced controller-based Turbo Roaming technology for applications such as Communication-Based Train Control (CBTC). The unit can supply power to up to 4 PoE devices while providing reliable LAN communication with Moxa's Turbo Chain technology.

Advanced Mobility and Reliability

- Controller-based L3 Turbo Roaming
- Mobile IP support
- 2 dual-band radios: 2.4 GHz and 5.1 to 5.9 GHz
- Turbo Chain support (100 ms recovery time)
- WPA/WPA2 and 802.11i support
- IEEE 802.1X/RADIUS support

Built for Transportation Applications

- Isolated 110 to 220 VDC/VAC power input
- High transmission power, 400 mW
- Supplies power through 4 PoE ports (PSE)
- 2 fiber SFP ports for backbone installation
- Wide temperature (-40 to 75°C) and IP68 housing

Specifications

WLAN Interface

Standards:
IEEE 802.11a/b/g for Wireless LAN
IEEE 802.11i for Wireless Security
IEEE 802.3 for 10BaseT
IEEE 802.3u for 100BaseTX
IEEE 802.3af for Power-over-Ethernet
IEEE 802.1D for Spanning Tree Protocol
IEEE 802.1w for Rapid STP
IEEE 802.1p for Class of Service
IEEE 802.1Q for VLAN
Spread Spectrum and Modulation (typical):
• DSSS with DBPSK, DQPSK, CCK
• OFDM with BPSK, QPSK, 16QAM, 64QAM
• 802.11b: CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, DBPSK @ 1 Mbps
• 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps
Operating Channels (central frequency):
US:
2.412 to 2.462 GHz (802.11a/b/g, 11 channels)
5.18 to 5.24 GHz (802.11a, 4 channels)
5.26 to 5.825 GHz (optional)
EU:
2.412 to 2.472 GHz (802.11abg, 13 channels)
5.18 to 5.24 GHz (802.11a, 4 channels)
5.26 to 5.825 GHz (optional)
*Special frequency bands (such as 5.9 GHz) is available for customization.

Security:
• SSID broadcast enable/disable
• Firewall for MAC/IP/Protocol/Port-based filtering
• 64-bit and 128-bit WEP encryption, WPA/WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP, and AES)
Transmission Rates:
802.11b: 1, 2, 5.5, 11 Mbps
802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
TX Transmit Power:
802.11b:
Typ. 26±1.5 dBm @ 1 to 11 Mbps
802.11g:
Typ. 26±1.5 dBm @ 6 to 24 Mbps, Typ. 25±1.5 dBm @ 36 Mbps, Typ. 24±1.5 dBm @ 48 Mbps, Typ. 23±1.5 dBm @ 54 Mbps
802.11a:
Typ. 26±1.5 dBm @ 6 to Mbps, Typ. 25±1.5 dBm @ 36Mbps, Typ. 24±1.5 dBm @ 48 Mbps, Typ. 23±1.5 dBm @ 54 Mbps
RX Sensitivity:
802.11b:
-97 dBm @ 1 Mbps, -94 dBm @ 2 Mbps, -92 dBm @ 5.5 Mbps, -90 dBm @ 11 Mbps
802.11g:
-93 dBm @ 6 Mbps, -91 dBm @ 9 Mbps, -90 dBm @ 12 Mbps, -88 dBm @ 18 Mbps, -84 dBm @ 24 Mbps, -80 dBm @ 36 Mbps, -76 dBm @ 48 Mbps, -74 dBm @ 54 Mbps
802.11a:
-90 dBm @ 6 Mbps, -89 dBm @ 9 Mbps, -89 dBm @ 12 Mbps, -85 dBm @ 18 Mbps, -83 dBm @ 24 Mbps, -79 dBm @ 36 Mbps, -75 dBm @ 48 Mbps, -74 dBm @ 54 Mbps

Protocol Support

General Protocols: Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP v1/v2/v3, PPPoE, DHCP, STP/RSTP

Interface

Connector for External Antennas: N-type (female)
Fiber Ports: 2, 100BaseSFP slot
Console Port: M12 A-coded 5-pin male connector
LED Indicators: PWR1, PWR2, PoE1-4, FAULT, STATE, HEAD, TAIL, LAN1-6, WLAN1, WLAN2
Fast Ethernet ports: 4, side cabling, M12 D-coded 4-pin female connector, 10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection, 802.1af PoE power budget
Fiber Module: 100Base multi-mode 1300 nm wavelength with LC connector for 4 km transmission (50/125 µm or 62.5/125 µm 800 MHz-km @ 1300 nm wavelength)

Physical Characteristics

Housing: Metal, IP68 protection
Weight: 9.7 kg (21.38 lb)
Dimensions: 324 x 279 x 156 mm (12.76 x 10.98 x 6.14 in)
Installation: Wall mounting

Environmental Limits

Operating Temperature: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5% to 95% (non-condensing)

Power Requirements

Input Voltage: 110/220 VDC/VAC
Input Current: 0.68 A @ 110 VDC/VAC
Connector: M23
Power Consumption: 74.8 W (max., with PoE ports fully loaded), 15 W (without PoE)
Reverse Polarity Protection: Present
Overload Current Protection: Present

Standards and Certifications

Safety: UL 60950-1, EN 60950-1 (CB)
EMC: EN 55022/24, EN 61000-6-2/6-4
EMI: CISPR 22, FCC Part 15B Class A
EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m
IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV
IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV
IEC 61000-4-6 CS: 10 V
IEC 61000-4-8
Radio: EN 301 489-1/17, EN 300 328, EN 301 893, FCC ID SLE-WAPA004
Rail Traffic: EN 50155*, EN45545-2, EN 50121-4
*Complies with a portion of EN 50155 specifications.
Note: Please check Moxa's website for the most up-to-date certification status.

MTBF (mean time between failures)

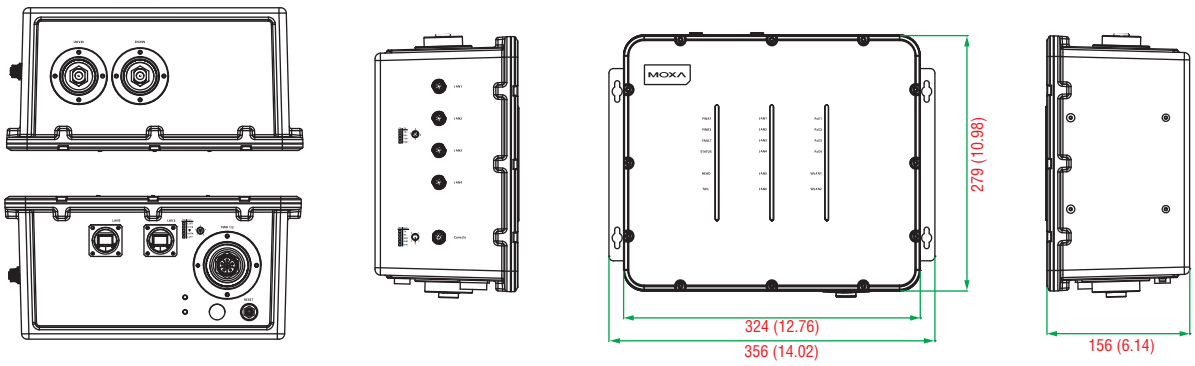
Time: 382,735 hrs
Standard: Telcordia SR332

Warranty

Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)



Ordering Information

Available Models

TAP-6226-TC-US-T: Rugged trackside wireless access point, US band
TAP-6226-TC-EU-T: Rugged trackside wireless access point, EU band

Optional Accessories (can be purchased separately)

SFP-1FESLC-T: Small form factor pluggable transceiver with 100Base single-mode, LC connector, 40 km, -40 to 85°C operating temperature
SFP-1FELLC-T: Small form factor pluggable transceiver with 100Base single-mode, LC connector, 80 km, -40 to 85°C operating temperature
CBL-M23 (FF 6P)/OPEN-BK-100 IP67: 1-meter M23 to 6-pin power cable with IP67-rated female 6-pin M23 connector

Package Checklist

- TAP-6226 trackside wireless unit
- 5 protective caps for console port and LAN ports
- Fiber panel-mounting kit
- Wall-mounting kit
- Warranty card

AWK-3121-RTG Series

Industrial IEEE 802.11a/b/g wireless AP/client

- IEEE 802.11a/b/g compliant
- M12 anti-vibration connectors (AWK-3121-M12-RTG and AWK-3121-M12-HP-RTG)
- QoS (WMM) and VLAN for efficient network traffic
- Controller-based Turbo Roaming (handover time < 50 ms @ 3 channels, WPA2); available only when used with the WAC-1001 or WAC-2004
- Supports long-distance data transfer (AWK-3121-M12-HP-RTG)
- Complies with a portion of EN 50155 specifications
- -40 to 75°C operating temperature range (T models)

Turbo Roaming

EN 50121 c UL us LISTED CE FC

Introduction

The AWK-3121-RTG 3-in-1 industrial AP/client devices are designed specifically for train-to-ground communication while moving at speeds of up to 120 km/h. The AWK-3121-RTG complies with a portion of EN 50155 specifications, covering operating temperature, power input voltage, surge, ESD, and vibration, making the products suitable for a variety of industrial applications. Installation is easy, with either DIN-rail mounting or distribution boxes, and the DIN-rail mounting capability, wide operating temperature range, and IP30 housing with LED indicators make the AWK-3121-RTG a convenient yet reliable solution for any rolling stock application.

Advanced Security

- 64-bit and 128-bit WEP (Wired Equivalent Privacy)
- Enable/disable SSID broadcasts
- WPA/WPA2 (Wi-Fi Protected Access) and 802.11i support
- IEEE802.1X/RADIUS support
- Powerful filters for access control

Specifications for Train-to-Ground Applications

- Client-based Turbo Roaming handover time
  < 150 ms @ 1 channel with WPA2
  < 350 ms @ 3 channels with WPA2
- Controller-based Turbo Roaming handover time (available only when used with the WAC-1001 or WAC-2004)
  < 50 ms @ 3 channels with WPA2
- Multiple roaming parameters for different installation structures and antenna types

Specifications

WLAN Interface

Standards:
IEEE 802.11a/b/g for Wireless LAN
IEEE 802.11i for Wireless Security
IEEE 802.3 for 10BaseT
IEEE 802.3u for 100BaseTX
IEEE 802.3af for Power-over-Ethernet
Spread Spectrum and Modulation (typical):
• DSSS with DBPSK, DQPSK, CCK
• OFDM with BPSK, QPSK, 16QAM, 64QAM
• 802.11b: CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, DBPSK @ 1 Mbps
• 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps
Operating Channels (central frequency):
US:
2.412 to 2.462 GHz (11 channels)
5.18 to 5.24 GHz (4 channels)
5.26 to 5.825 GHz (optional)
EU:
2.412 to 2.472 GHz (13 channels)
5.18 to 5.24 GHz (4 channels)
5.26 to 5.825 GHz (optional)
*Special bands, such as 5.9 GHz, are customizable.

Security:
• SSID broadcast enable/disable
• Firewall for MAC/IP/Protocol/Port-based filtering
• 64-bit and 128-bit WEP encryption, WPA/WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP, and AES)
Transmission Rates:
802.11b: 1, 2, 5.5, 11 Mbps
802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
TX Transmit Power:
AWK-3121-M12-RTG and AWK-3121-SSC-RTG:
802.11b:
Typ. 23±1.5 dBm @ 1 to 11 Mbps
802.11g:
Typ. 20±1.5 dBm @ 6 to 24 Mbps, Typ. 19±1.5 dBm @ 36 Mbps, Typ. 18±1.5 dBm @ 48 Mbps, Typ. 17±1.5 dBm @ 54 Mbps
802.11a:
Typ. 18±1.5 dBm @ 6 to 24 Mbps, Typ. 16±1.5 dBm @ 36 to 48 Mbps, Typ. 15±1.5 dBm @ 54 Mbps
AWK-3121-M12-HP-RTG:
802.11b:
Typ. 26±1.5 dBm @ 1 to 11 Mbps
802.11g:
Typ. 26±1.5 dBm @ 6 to 24 Mbps, Typ. 25±1.5 dBm @ 36 Mbps, Typ. 24±1.5 dBm @ 48 Mbps, Typ. 23±1.5 dBm @ 54 Mbps

802.11a:
Typ. 26±1.5 dBm @ 6 to 24 Mbps, Typ. 25±1.5 dBm @ 36 Mbps, Typ. 24±1.5 dBm @ 48 Mbps, Typ. 23±1.5 dBm @ 54 Mbps
RX Sensitivity:
802.11b:
-97 dBm @ 1 Mbps, -94 dBm @ 2 Mbps, -92 dBm @ 5.5 Mbps, -90 dBm @ 11 Mbps
802.11g:
-93 dBm @ 6 Mbps, -91 dBm @ 9 Mbps, -90 dBm @ 12 Mbps, -88 dBm @ 18 Mbps, -84 dBm @ 24 Mbps, -80 dBm @ 36 Mbps, -76 dBm @ 48 Mbps, -74 dBm @ 54 Mbps
802.11a:
-90 dBm @ 6 Mbps, -89 dBm @ 9 Mbps, -89 dBm @ 12 Mbps, -85 dBm @ 18 Mbps, -83 dBm @ 24 Mbps, -79 dBm @ 36 Mbps, -75 dBm @ 48 Mbps, -74 dBm @ 54 Mbps

Protocol Support

General Protocols: Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE, DHCP

Interface

Connector for External Antennas:
AWK-3121-SSC-RTG: RP-SMA (female)
AWK-3121-M12-RTG and AWK-3121-M12-HP-RTG: QMA (female)
Fiber Ports: 1, 100BaseFX port (SC connector, AWK-3121-SSC-RTG only)
M12 Ports: 1, 10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X female connection (AWK-3121-M12-RTG and AWK-3121-M12-HP-RTG only)
Console Port: RS-232 (RJ45-type)
LED Indicators: PWR1, PWR2, PoE*, FAULT, STATE, signal strength, CLIENT MODE, WLAN, 10/100 (M12 port), 100M (fiber port)
*PoE is only available for the AWK-3121-M12-RTG and AWK-3121-M12-HP-RTG
Alarm Contact: 1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Inputs: 2 electrically isolated inputs
• +13 to +30 V for state "1"
• +3 to -30 V for state "0"
• Max. input current: 8 mA
Default Antennas*:
2 dual-band omni-directional antennas, 2 dBi, RP-SMA (male)
*Only available with the AWK-3121-SSC-RTG models.

Optical Fiber*

	100BaseFX
	Single Mode
Wavelength	1310 nm
Max. TX	0 dBm
Min. TX	-5 dBm
RX Sensitivity	-34 dBm
Link Budget	29 dB
Typical Distance	40 km[a]
Saturation	-3 dBm

* Only available for AWK-3121-SSC models

Physical Characteristics

Housing: Metal, IP30 protection
Weight: 850 g (1.87 lb)
Dimensions: 53 x 135 x 105 mm (2.08 x 5.31 x 4.13 in)
Installation: DIN-rail mounting, wall mounting (optional)

Environmental Limits

Operating Temperature:
Standard Models: -25 to 60°C (-13 to 140°F)
Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5% to 95% (non-condensing)

Power Requirements

Input Voltage: 12 to 48 VDC, redundant dual DC power inputs or 48 VDC Power-over-Ethernet (IEEE 802.3af compliant)
Input Current: 0.5 A @ 12 VDC; 0.2 A @ 48 VDC
Connector: 10-pin removable terminal block
Reverse Polarity Protection: Present

Standards and Certifications

Safety: UL 60950-1, IEC 60950-1(CB)
EMC: EN 55022/24
EMI: CISPR 22, FCC Part 15B Class B
EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m
IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV
IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV
IEC 61000-4-6 CS: 10 V
IEC 61000-4-8
Radio: EN 301 489-1/17, EN 300 328, EN 301 893, FCC ID SLE-WAPA003 (AWK-3121-M12-RTG), FCC ID SLE-WAPA004 (AWK-3121-M12-HP-RTG)
Rail Traffic: EN 50155*, EN45545-2, EN 50121-4
*Complies with a portion of EN 50155 specifications.

MTBF (mean time between failures)

Time:
AWK-3121-M12-RTG: 480,831 hrs
AWK-3121-M12-HP-RTG: 447,861 hrs
AWK-3121-SSC-RTG: 445,913 hrs
Standard: Telcordia SR332

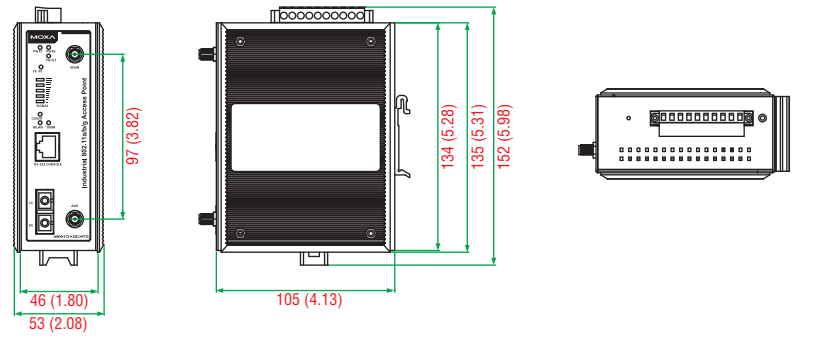
Warranty

Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)

AWK-3121-SSC-RTG

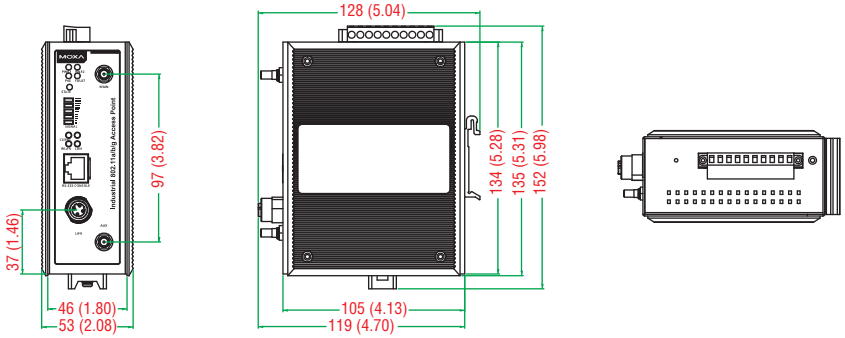


Front View Side View Top View

Dimensions

AWK-3121-M12-RTG and AWK-3121-M12-HP-RTG

Unit: mm (inch)



Front View | Side View | Top View

Ordering Information

Available Models			Port Interface		Antenna Interface			
Model Name	Standard Temperature (-25 to 60°C)	Wide Temperature (-40 to 75°C)	PoE, 10/100 BaseT(X) M12 Connector	100BaseFX Single-Mode SC Connector	RP-SMA	QMA	Conformal Coating	High Power
AWK-3121-M12-RTG								
AWK-3121-M12-RTG-US	✓	–	✓	–	–	✓	–	–
AWK-3121-M12-RTG-EU	✓	–	✓	–	–	✓	–	–
AWK-3121-M12-RTG-US-T	–	✓	✓	–	–	✓	–	–
AWK-3121-M12-RTG-EU-T	–	✓	✓	–	–	✓	–	–
AWK-3121-M12-RTG-US-CT	✓	–	✓	–	–	✓	✓	–
AWK-3121-M12-RTG-EU-CT	✓	–	✓	–	–	✓	✓	–
AWK-3121-M12-RTG-US-CT-T	–	✓	✓	–	–	✓	✓	–
AWK-3121-M12-RTG-EU-CT-T	–	✓	✓	–	–	✓	✓	–
AWK-3121-M12-HP-RTG								
AWK-3121-M12-HP-RTG-US	✓	–	✓	–	–	✓	–	✓
AWK-3121-M12-HP-RTG-EU	✓	–	✓	–	–	✓	–	✓
AWK-3121-M12-HP-RTG-US-T	–	✓	✓	–	–	✓	–	✓
AWK-3121-M12-HP-RTG-EU-T	–	✓	✓	–	–	✓	–	✓
AWK-3121-M12-HP-RTG-US-CT	✓	–	✓	–	–	✓	✓	✓
AWK-3121-M12-HP-RTG-EU-CT	✓	–	✓	–	–	✓	✓	✓
AWK-3121-M12-HP-RTG-US-CT-T	–	✓	✓	–	–	✓	✓	✓
AWK-3121-M12-HP-RTG-EU-CT-T	–	✓	✓	–	–	✓	✓	✓
AWK-3121-SSC-RTG								
AWK-3121-SSC-RTG-US	✓	–	–	✓	✓	–	–	–
AWK-3121-SSC-RTG-EU	✓	–	–	✓	✓	–	–	–
AWK-3121-SSC-RTG-US-T	–	✓	–	✓	✓	–	–	–
AWK-3121-SSC-RTG-EU-T	–	✓	–	✓	✓	–	–	–

Note:
US: USA band
EU: Europe band
HP: high power
CT: conformal coating

Note: Please visit Moxa's website for a complete list of optional wireless accessories and antennas available for Moxa's wireless products.

Package Checklist

- AWK-3121-RTG wireless AP/bridge/client
- DIN-rail kit
- 1 plastic RJ45 protective cap for console port
- 1 plastic protective cap for fiber port (AWK-3121-SSC-RTG only)
- 2 2.4/5 GHz antennas: ANT-WDB-ARM-02 (AWK-3121-SSC-RTG only)
- Cable holder with 1 screw
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

WAC-1001 Series

Industrial wireless access controller

- Redundant 12 to 48 VDC power inputs
- Controller-based Turbo Roaming (less than 50 ms)
- Supported models: AWK-RTG series
- IEEE 802.11i-compliant wireless security
- DIN-rail or wall mounting (optional) for onsite installation
- -40 to 75°C operating temperature range (T model)

Introduction

The goal of zero-latency-roaming is to create networks that maintain seamless communications as clients switch from one access point to another. As part of its AWK-RTG series, Moxa has introduced the WAC-1001 wireless access controller that uses controller-based Turbo Roaming to achieve less than 50 ms roaming on three channels. This advanced roaming capability securely hands off clients at speeds so high that wireless clients can enjoy seamless roaming between APs, with virtually no interruption in connectivity.

Maximum Availability

- Enables millisecond level Turbo Roaming
- Configuration back-up
- Dual redundant DC power inputs

Advanced Security

- IEEE802.1X/RADIUS supported
- WPA/WPA2/802.11i supported
- Integrated DI/DO for on-site monitoring and warnings

Specifications

WLAN Interface

Standards:
IEEE 802.11i for Wireless Security
IEEE 802.3u for 10/100/1000BaseT(X)
IEEE 802.3af for Power-over-Ethernet
Security: WPA/WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP, and AES)

LAN Interface

Standards:
IEEE 802.1x (Radius client)
IEEE 802.3u for 10/100/1000BaseT(X)
IEEE 802.3af for Power-over-Ethernet

Interface

LAN Port: 10/100/1000BaseT(X), auto negotiation speed (RJ45-type)
Console Port: RS-232 (RJ45-type)
LED Indicators: PWR1, PWR2, PoE, FAULT, STATE, LAN
Alarm Contact: 1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Inputs: 2 electrically isolated inputs
• +13 to +30 V for state “1”
• +3 to -30 V for state “0”
• Max. input current: 8 mA

Physical Characteristics

Housing: Metal, IP30 protection
Weight: 1060 g (2.34 lb)
Dimensions: 52.85 x 135 x 105 mm (2.08 x 5.32 x 4.13 in)
Installation: DIN-rail mounting, wall mounting (optional)

Environmental Limits

Operating Temperature:
Standard Models: 0 to 60°C (32 to 140°F)
Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Power Requirements

Input Voltage: 12 to 48 VDC, redundant dual DC power inputs or 48 VDC Power-over-Ethernet (IEEE 802.3af compliant)
Input Current: 0.6 A @ 12 VDC; 0.15 A @ 48 VDC
Connector: 10-pin removable terminal block
Reverse Polarity Protection: Present

Standards and Certifications

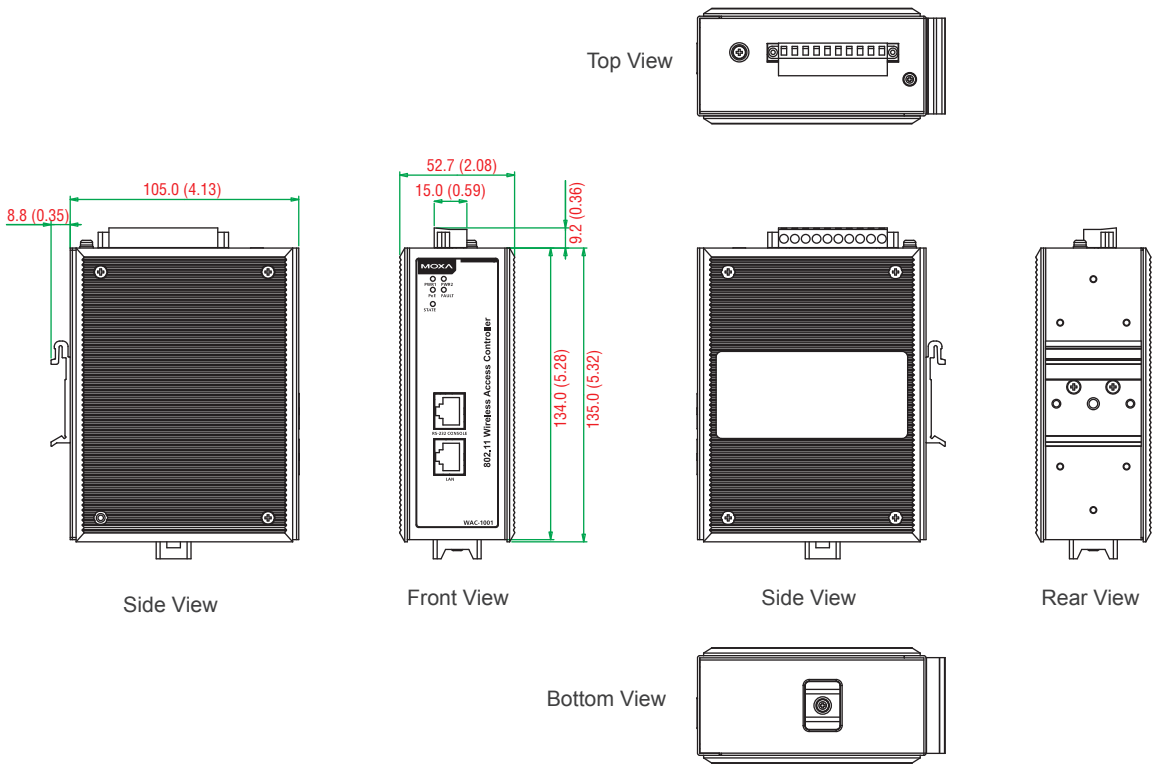
Safety: EN 60950-1(LVD), UL 60950-1, IEC 60950-1(CB)
EMC: EN 55022/24
EMI: CISPR 22, FCC Part 15B, Class A
EMS:
IEC 61000-4-2 ESD: Contact 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m
IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV
IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV
EN 61000-4-6 CS: 10 V
EN 61000-4-8
Note: Please check Moxa’s website for the most up-to-date certification status.

MTBF (mean time between failures)
Time: 477,425 hrs
Standard: Telcordia SR332

Warranty
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)



Ordering Information

Available Models
WAC-1001: Industrial wireless access controller, 0 to 60°C operating temperature
WAC-1001-T: Industrial wireless access controller, -40 to 75°C operating temperature

Optional Accessories (can be purchased separately)
WK-51-01: DIN-rail/wall-mounting kit, 2 plates with 6 screws
DK-DC50131: Din-rail mounting kit, 50 x 131 mm

Package Checklist
- WAC-1001 wireless controller
- Cable holder with 1 screw
- 2 protective caps
- DIN-rail kit
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

WAC-2004 Series

Industrial wireless access controller

- 2-in-1 AP controller and mobile IP home agent
- Millisecond-level controller-based Turbo Roaming
- IEEE 802.11i-compliant wireless security
- Layer-3 mobile IP technology
- Up to 450 Mbps throughput for tunneling
- Scalable tunneling capacity

Introduction

The goal of zero-latency-roaming is to create networks that maintain seamless communications as clients switch from one access point to another. Moxa's advanced WAC-2004 wireless access controller uses controller-based Turbo Roaming technology to achieve millisecond-level roaming over different IP subnets. The combination of an advanced roaming algorithm and mobile IP technology allows wireless clients to roam between different IP subnets within milliseconds, while maintaining stringent security in extremely demanding environments. The WAC-2004 is rated to operate at temperatures ranging from 0 to 50°C, and is rugged enough for installation in any harsh industrial environment.

Maximum Availability

- Device-level redundancy via hot standby controller

Minimum Handover Time

- Millisecond-level Turbo Roaming
- Inter-controller roaming

Maximum Mobility in L3 Networks

- Mobile IP tunneling
- Care-of-Address (CoA) assignment
- Cross layer 3 subnet roaming

Specifications

WLAN Interface

Standards:
IEEE 802.11i for Wireless Security
IEEE 802.3 for 10Base5
IEEE 802.3u for 10/100BaseT(X)
IEEE 802.3ab for 1000BaseT
Security: WPA/WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP, and AES)
Supported Models:
• AWK-RTG series
• Customized AWK series products
• TAP-6226

Interface

LAN Port: 10/100/1000BaseT(X), auto negotiation speed (RJ45-type)
• P1: communication port for WAC/HA
• P2-4: reserved
Console Port: RS-232 (DB9-type, male)
• Serial signals: TxD, RxD, DTR, DSR, RTS, CTS, DCD, GND
LED Indicators: PWR1, PWR2, FAULT, STATE, 100M x 4, 1000M x 4

Wireless Access Control

AP Support: AWK-RTG series, TAP-6226, WAC-1001
WAC Failover: 1-on-1 hot backup
Roaming Support: single/multi-channel roaming (up to 3 channels), inter-controller roaming
Handover Time: millisecond-level with wireless security

Mobile IP Tunneling

Tunneling: home agent to mobile node
Tunneling Capacity: up to 450 Mbps
CoA Assignment: WAC-based management
HA failover: 1-to-1 hot backup

Management

Device Management: Web console, Telnet, and SSH access
Remote Management: External management utility and SNMP support
Network Monitoring: AP/Client connection status monitoring

Physical Characteristics

Housing: SECC sheet metal (1 mm)
Weight: 5480 g (12.08 lb)
Dimensions: 440 x 44 x 325 mm (17.32 x 1.73 x 12.80 in) (without rackmount ears)
Installation: Standard 19-inch rackmount

Environmental Limits

Operating Temperature: 0 to 50°C (32 to 122°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Power Requirements

Input Voltage: 100 to 240 VAC
Input Current: 1.2 A @ 100 VAC

Standards and Certifications

Safety: UL 60950-1
EMC: EN 55022/24, EN 61000-6-2/6-4, EN 61000-3-2/3-3
EMI: CISPR 22, FCC Part 15B Class A
EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m
IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV
IEC 61000-4-5 Surge: Power 2 kV; Signal: 1 kV
IEC 61000-4-6 CS: 10 V
IEC 61000-4-8
Green Product: RoHS, CRoHS, WEEE

MTBF (mean time between failures)

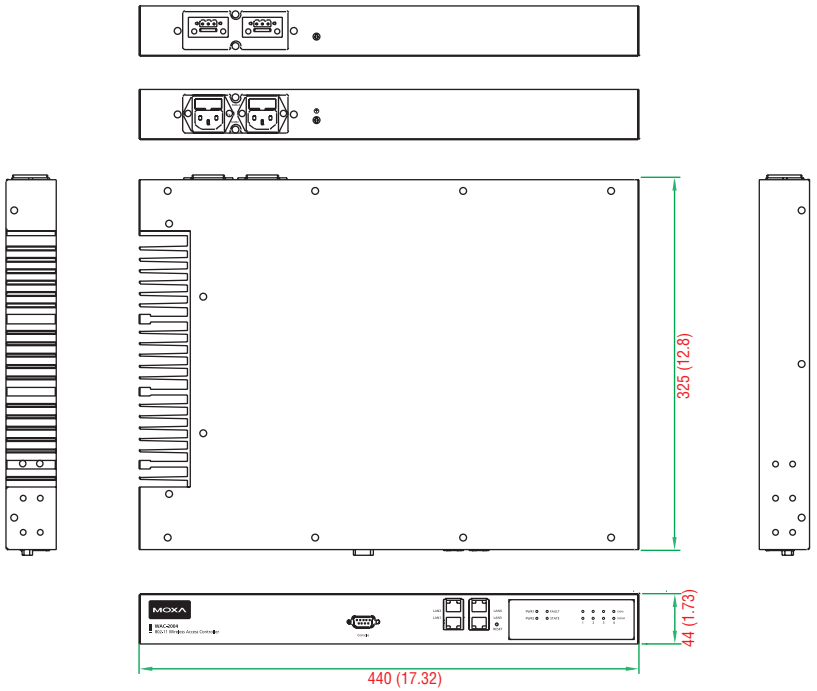
Time: 383,478 hrs
Standard: Telcordia SR332

Warranty

Warranty Period: 3 years
Details: www.moxa.com/warranty

Dimensions

Unit: mm (inch)



Ordering Information

Available Models

WAC-2004: Industrial wireless access controller, 0 to 50°C operating temperature

Package Checklist

- WAC-2004 wireless controller
- 1 AC power cord (C13-type, US or EU)
- 1 serial console cable (DB9-type, female-to-female)
- 4 RJ45 connector protective caps
- 2 rackmount ears
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

AWK-3131-RCC Series

Industrial IEEE 802.11a/b/g/n wireless AP/bridge/client

- Designed specifically for rail carriage-to-carriage communication
- IEEE 802.11a/b/g/n compliant
- Up to 300 Mbps data rate
- M12 anti-vibration connectors
- MIMO technology increases data throughput and range
- Complies with a portion of EN 50155 specifications
- -40 to 75°C operating temperature range (T models)

802.11

EN 50121

Introduction

The AWK-3131-RCC series industrial 802.11n wireless AP/bridge/client is an ideal wireless solution for applications such as onboard passenger infotainment systems and inter-carriage wireless backbone networks. The AWK-3131-RCC series provides a faster data rate than the 802.11g model and is ideal for a great variety of wireless configurations and applications. The auto carriage connection (ACC) feature provides simple deployment and increases the reliability of wireless carriage backbone networks. The AWK-3131-RCC series is also optimized for passenger Wi-Fi services and complies with a portion of EN 50155 specifications, covering operating temperature, power input voltage, surge, ESD, and vibration, making the products suitable for a variety of industrial applications. The AWK-3131-RCC series can also be powered via PoE for easier deployment.

Improved Higher Data Rate and Bandwidth

- High-speed wireless connectivity with up to 300 Mbps data rate
- MIMO technology to improve the capability of transmitting and receiving multiple data streams
- Increased channel width with channel bonding technology

Specifications for Industrial-Grade Applications

- Industrial-grade QoS and VLAN for efficient data traffic management
- Integrated DI/DO for on-site monitoring and warnings
- Signal strength LEDs for easy deployment and antenna alignment

Specifications

WLAN Interface

Standards:
IEEE 802.11a/b/g/n for Wireless LAN
IEEE 802.11i for Wireless Security
IEEE 802.3 for 10BaseT
IEEE 802.3u for 100BaseT(X)
IEEE 802.3ab for 1000BaseT
IEEE 802.3af for Power-over-Ethernet
IEEE 802.1D for Spanning Tree Protocol
IEEE 802.1w for Rapid STP
IEEE 802.1Q for VLAN

Spread Spectrum and Modulation (typical):
- DSSS with DBPSK, DQPSK, CCK
- OFDM with BPSK, QPSK, 16QAM, 64QAM
- 802.11b: CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, DBPSK @ 1 Mbps
- 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps
- 802.11n: 64QAM @ 300 Mbps to BPSK @ 6.5 Mbps (multiple rates supported)

Operating Channels (central frequency):
US:
2.412 to 2.462 GHz (11 channels)
5.18 to 5.24 GHz (4 channels)
EU:
2.412 to 2.472 GHz (13 channels)
5.18 to 5.24 GHz (4 channels)
JP:
2.412 to 2.472 GHz (13 channels, OFDM)
2.412 to 2.484 GHz (14 channels, DSSS)
5.18 to 5.24 GHz (4 channels for W52)

Security:
- SSID broadcast enable/disable
- Firewall for MAC/IP/Protocol/Port-based filtering
- 64-bit and 128-bit WEP encryption, WPA/WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP, and AES)

Transmission Rates:
802.11b: 1, 2, 5.5, 11 Mbps
802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
802.11n: 6.5 to 300 Mbps (multiple rates supported)

TX Transmit Power:
802.11b:
1 to 11 Mbps: Typ. 18 dBm (± 1.5 dBm)
802.11g:
6 to 24 Mbps: Typ. 18 dBm (± 1.5 dBm)
36 to 48 Mbps: Typ. 17 dBm (± 1.5 dBm)
54 Mbps: Typ. 15 dBm (± 1.5 dBm)

802.11a:
6 to 24 Mbps: Typ. 17 dBm (± 1.5 dBm)
36 to 48 Mbps: Typ. 16 dBm (± 1.5 dBm)
54 Mbps: Typ. 14 dBm (± 1.5 dBm)
TX Transmit Power MIMO (per connector):
802.11a/n (20/40 MHz):
MCS15 20 MHz: Typ. 13 dBm (±1.5 dBm)
MCS15 40 MHz: Typ. 12 dBm (±1.5 dBm)
802.11g/n (20 MHz):
MCS15 20 MHz: Typ. 14 dBm (±1.5 dBm)
RX Sensitivity:
802.11b:
-92 dBm @ 1 Mbps, -90 dBm @ 2 Mbps, -88 dBm @ 5.5 Mbps, -84 dBm @ 11 Mbps
802.11g:
-87 dBm @ 6 Mbps, -86 dBm @ 9 Mbps, -85 dBm @ 12 Mbps, -82 dBm @ 18 Mbps, -80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps, -72 dBm @ 48 Mbps, -70 dBm @ 54 Mbps
802.11a:
-87 dBm @ 6 Mbps, -86 dBm @ 9 Mbps, -85 dBm @ 12 Mbps, -82 dBm @ 18 Mbps,
-80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps, -72 dBm @ 48 Mbps, -70 dBm @ 54 Mbps
RX Sensitivity MIMO:
802.11a/n:
-68 dBm @ MCS15 40 MHz,
-69 dBm @ MCS15 20 MHz,
-70 dBm @ MCS7 40 MHz,
-71 dBm @ MCS7 20 MHz
802.11g/n:
-69 dBm @ MCS15 20 MHz,
-71 dBm @ MCS7 20 MHz

Protocol Support

General Protocols: Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE, DHCP
AP-only Protocols: ARP, BOOTP, DHCP, STP/RSTP (IEEE 802.1D/w)

Interface

Connector for External Antennas: QMA (female)
M12 Ports: 1, 10/100/1000BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X female connection
Console Port: RS-232 (RJ45-type)
Reset: Present
LED Indicators: PWR1, PWR2, PoE, FAULT, STATE, signal strength, WLAN, LAN
Alarm Contact (digital output): 1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Inputs: 2 electrically isolated inputs
• +13 to +30 V for state "1"
• +3 to -30 V for state "0"
• Max. input current: 8 mA

Physical Characteristics

Housing: Metal, IP30 protection
Weight: 970 g (2.14 lb)
Dimensions: 53 x 135 x 105 mm (2.08 x 5.31 x 4.13 in)
Installation: DIN-rail mounting (standard), wall mounting (optional)

Environmental Limits

Operating Temperature:
Standard Models: -25 to 60°C (-13 to 140°F)
Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5% to 95% (non-condensing)

Power Requirements

Input Voltage: 12 to 48 VDC, redundant dual DC power inputs or 48 VDC Power-over-Ethernet (IEEE 802.3af compliant)
Input Current: 0.7 A @ 12 VDC
Connector: 10-pin removable terminal block
Reverse Polarity Protection: Present

Standards and Certifications

Safety: EN 60950-1(LVD), UL 60950-1, IEC 60950-1(CB)
EMC: EN 55022/24
EMI: CISPR 22, FCC Part 15B Class B
EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m
IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV
IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV
IEC 61000-4-6 CS: 10 V
IEC 61000-4-8
Radio:
EU: EN 300 328, EN 301 893
US: FCC ID SLE-WAPN001
JP: TELEC
Rail Traffic: EN 50155*, EN 50121-4, EN 45545-2
*Complies with a portion of EN 50155 specifications.
Note: Please check Moxa's website for the most up-to-date certification status.

MTBF (mean time between failures)

Time: 407,416 hrs
Standard: Telcordia SR332

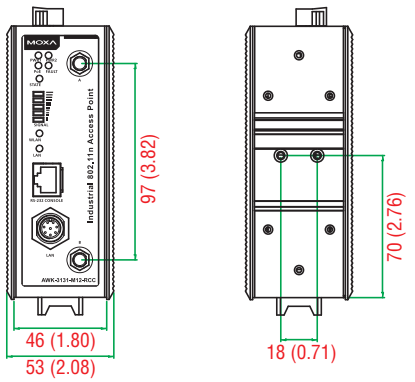
Warranty

Warranty Period: 5 years
Details: See www.moxa.com/warranty

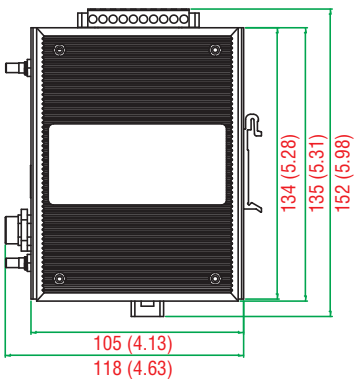
Dimensions

Unit: mm (inch)

AWK-3131-M12-RCC



Front and Rear Views



Side View

Ordering Information

Available Models				Port Interface	Antenna Interface	
Model Name	Standard Temperature (-25 to 60°C)	Wide Temperature (-40 to 75°C)	Conformal Coating	M12 10/100/1000BaseT(X)	RP-SMA	QMA
AWK-3131-M12-RCC						
AWK-3131-M12-RCC-US	✓	–	–	✓	–	✓
AWK-3131-M12-RCC-EU	✓	–	–	✓	–	✓
AWK-3131-M12-RCC-JP	✓	–	–	✓	–	✓
AWK-3131-M12-RCC-US-T	–	✓	–	✓	–	✓
AWK-3131-M12-RCC-EU-T	–	✓	–	✓	–	✓
AWK-3131-M12-RCC-JP-T	–	✓	–	✓	–	✓
AWK-3131-M12-RCC-US-CT	✓	–	✓	✓	–	✓
AWK-3131-M12-RCC-EU-CT	✓	–	✓	✓	–	✓
AWK-3131-M12-RCC-JP-CT	✓	–	✓	✓	–	✓
AWK-3131-M12-RCC-US-CT-T	–	✓	✓	✓	–	✓
AWK-3131-M12-RCC-EU-CT-T	–	✓	✓	✓	–	✓
AWK-3131-M12-RCC-JP-CT-T	–	✓	✓	✓	–	✓

Note:
US: USA band
EU: Europe band
JP: Japan band
CT: conformal coating

Optional Accessories (can be purchased separately)

WK-51-01: DIN-rail/wall-mounting kit, 2 plates with 6 screws
DK-DC50131: Din-rail mounting kit, 50 x 131 mm

Package Checklist

- AWK-3131-RCC wireless AP/bridge/client
- DIN-rail kit
- 2 plastic RJ45 protective caps for console ports
- Cable holder with 1 screw
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

AWK-5232-RCC Series

Industrial IEEE 802.11a/b/g/n dual-radio wireless AP/bridge/client

- Designed specifically for rail carriage-to-carriage communication
- IEEE 802.11a/b/g/n compliant
- Dual-radio design: 2.4 GHz and/or 5 GHz RF bands
- Redundant power inputs and PoE+
- Up to 300 Mbps data rate
- M12 anti-vibration connectors
- MIMO technology increases data throughput and range
- Complies with a portion of EN 50155 specifications
- -40 to 75°C operating temperature range (T models)

802.11 Dual RF

EN 50121 cULus LISTED CE FC

Introduction

The AWK-5232-RCC series industrial 802.11n wireless AP/bridge/client is an ideal wireless solution for applications such as onboard passenger infotainment systems and inter-carriage wireless backbone networks. It provides a faster data rate, wider range, and a noticeably stronger signal than the 802.11g model. With two independent RF modules, the AWK-5232-RCC series supports a great variety of wireless configurations and applications. The auto carriage connection (ACC) feature provides simple deployment and increases the reliability of wireless carriage backbone networks. The AWK-5232-RCC series is also optimized for passenger Wi-Fi services and complies with a portion of EN 50155 specifications covering operating temperature, power input voltage, surge, ESD, and vibration, making the switches suitable for a variety of industrial applications. The AWK-5232-RCC's two DC power inputs increase the reliability of the power supply, and it can also be powered via PoE+ for easier deployment.

Higher Data Rate and Greater Bandwidth

- High-speed wireless connectivity with up to 300 Mbps data rate
- MIMO technology improves data throughput via mulitplexed, smart antenna transmissions and receptions
- Channel bonding technology for increased throughput or channel redundancy

Redundancy to Increase System Reliability

- Dual DC power inputs and PoE+
- Immunity against disconnection caused by radio interference

Specifications for Rail Onboard Applications

- Auto Carriage Connection (ACC)
- Maximum WPA2/802.11i security
- Client isolation
- Multicast traffic rate control

Specifications

WLAN Interface

Standards:
IEEE 802.11a/b/g/n for Wireless LAN
IEEE 802.11i for Wireless Security
IEEE 802.3 for 10BaseT
IEEE 802.3u for 100BaseT(X)
IEEE 802.3ab for 1000BaseT
IEEE 802.3at for Power-over-Ethernet Plus
IEEE 802.1D for Spanning Tree Protocol
IEEE 802.1w for Rapid STP
IEEE 802.1Q for VLAN
Spread Spectrum and Modulation (typical):
• DSSS with DBPSK, DQPSK, CCK
• OFDM with BPSK, QPSK, 16QAM, 64QAM
• 802.11b: CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, DBPSK @ 1 Mbps
• 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps
• 802.11n: 64QAM @ 300 Mbps to BPSK @ 6.5 Mbps (multiple rates supported)

Operating Channels (central frequency):
US:
2.412 to 2.462 GHz (11 channels)
5.18 to 5.24 GHz (4 channels)
EU:
2.412 to 2.472 GHz (13 channels)
5.18 to 5.24 GHz (4 channels)
JP:
2.412 to 2.472 GHz (13 channels, OFDM)
2.412 to 2.484 GHz (14 channels, DSSS)
5.18 to 5.24 GHz (4 channels for W52)
Security:
• SSID broadcast enable/disable
• Firewall for MAC/IP/Protocol/Port-based filtering
• 64-bit and 128-bit WEP encryption, WPA/WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP, and AES)
Transmission Rates:
802.11b: 1, 2, 5.5, 11 Mbps
802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
802.11n: 6.5 to 300 Mbps (multiple rates supported)

TX Transmit Power:
802.11b:
1 to 11 Mbps: Typ. 18 dBm (± 1.5 dBm)
802.11g:
6 to 24 Mbps: Typ. 18 dBm (± 1.5 dBm)
36 to 48 Mbps: Typ. 17 dBm (± 1.5 dBm)
54 Mbps: Typ. 15 dBm (± 1.5 dBm)
802.11a:
6 to 24 Mbps: Typ. 17 dBm (± 1.5 dBm)
36 to 48 Mbps: Typ. 16 dBm (± 1.5 dBm)
54 Mbps: Typ. 14 dBm (± 1.5 dBm)
TX Transmit Power MIMO (per connector):
802.11a/n (20/40 MHz):
MCS15 20 MHz: Typ. 13 dBm (±1.5 dBm)
MCS15 40 MHz: Typ. 12 dBm (±1.5 dBm)
802.11g/n (20 MHz):
MCS15 20 MHz: Typ. 14 dBm (±1.5 dBm)
RX Sensitivity:
802.11b:
-92 dBm @ 1 Mbps, -90 dBm @ 2 Mbps, -88 dBm @ 5.5 Mbps, -84 dBm @ 11 Mbps
802.11g:
-87 dBm @ 6 Mbps, -86 dBm @ 9 Mbps, -85 dBm @ 12 Mbps, -82 dBm @ 18 Mbps, -80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps, -72 dBm @ 48 Mbps, -70 dBm @ 54 Mbps
802.11a:
-87 dBm @ 6 Mbps, -86 dBm @ 9 Mbps, -85 dBm @ 12 Mbps, -82 dBm @ 18 Mbps, -80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps, -72 dBm @ 48 Mbps, -70 dBm @ 54 Mbps
RX Sensitivity MIMO:
802.11a/n:
-68 dBm @ MCS15 40 MHz,
-69 dBm @ MCS15 20 MHz,
-70 dBm @ MCS7 40 MHz,
-71 dBm @ MCS7 20 MHz
802.11g/n:
-69 dBm @ MCS15 20 MHz,
-71 dBm @ MCS7 20 MHz

Protocol Support

General Protocols: Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE, DHCP
AP-only Protocols: ARP, BOOTP, DHCP, STP/RSTP (IEEE 802.1D/w)

Interface

Connector for External Antennas: QMA (female)
M12 Ports: 2, 10/100/1000BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X female connection
Console Port: RS-232 (RJ45-type)
Reset: Present
LED Indicators: PWR1, PWR2, PoE+, FAULT, STATE, WLAN1, WLAN2, LAN1, LAN2
Alarm Contact (digital output): 1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Inputs: 2 electrically isolated inputs
• +13 to +30 V for state “1”
• +3 to -30 V for state “0”
• Max. input current: 8 mA

Physical Characteristics

Housing: Metal, IP30 protection
Weight: 1200 g (2.65 lb)
Dimensions: 75 x 135 x 104 mm (2.94 x 5.31 x 4.10 in)
Installation: DIN-rail mounting (standard), wall mounting (optional)

Environmental Limits

Operating Temperature:
Standard Models: -25 to 60°C (-13 to 140°F)
Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5% to 95% (non-condensing)

Power Requirements

Input Voltage: 12 to 48 VDC, redundant dual DC power inputs or 48 VDC Power-over-Ethernet (IEEE 802.3af compliant)
Input Current: 1.5 A @ 12 VDC
Connector: 10-pin removable terminal block
Reverse Polarity Protection: Present

Standards and Certifications

Safety: EN 60950-1(LVD), UL 60950-1, IEC 60950-1(CB)
EMC: EN 55022/24
EMI: CISPR 22, FCC Part 15B Class A
EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m
IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV
IEC 61000-4-5 Surge: Power 2 kV; Signal: 2 kV
IEC 61000-4-6 CS: 10 V
IEC 61000-4-8
Radio:
EU: EN 300 328, EN 301 893
US: FCC ID SLE-WAPN001
JP: TELEC
Rail Traffic: EN 50155*, EN 50121-4, EN 45545-2
*Complies with a portion of EN 50155 specifications.
Note: Please check Moxa’s website for the most up-to-date certification status.

MTBF (mean time between failures)

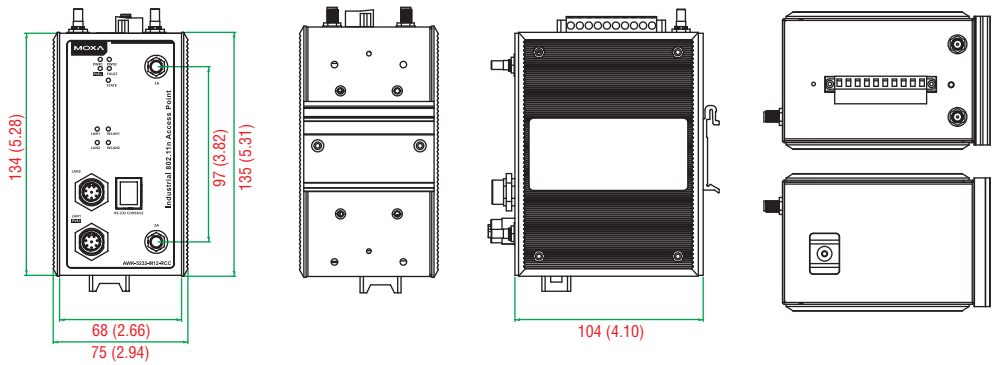
Time: 350,643 hrs
Standard: Telcordia SR332

Warranty

Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)



Front View | Rear View | Side View | Top & Bottom Views

Ordering Information

Available Models				Port Interface		Antenna Interface	
Model Name	Standard Temperature (-25 to 60°C)	Wide Temperature (-40 to 75°C)	Conformal Coating	2, 10/100/1000BaseT(X)		RP-SMA	QMA
				RJ45	M12		
AWK-5232-M12-RCC							
AWK-5232-M12-RCC-US-CT	✓	–	✓	–	✓	–	✓
AWK-5232-M12-RCC-EU-CT	✓	–	✓	–	✓	–	✓
AWK-5232-M12-RCC-US-CT-T	–	✓	✓	–	✓	–	✓
AWK-5232-M12-RCC-EU-CT-T	–	✓	✓	–	✓	–	✓
AWK-5232-M12-RCC-US	✓	–	–	–	✓	–	✓
AWK-5232-M12-RCC-EU	✓	–	–	–	✓	–	✓
AWK-5232-M12-RCC-US-T	–	✓	–	–	✓	–	✓
AWK-5222-M12-RCC-EU-T	–	✓	–	–	✓	–	✓

Note:
US: USA band
EU: Europe band
CT: conformal coating

Optional Accessories (can be purchased separately)

WK-51-01: DIN-rail/wall-mounting kit, 2 plates with 6 screws
DK-DC50131: Din-rail mounting kit, 50 x 131 mm

Package Checklist

- AWK-5232-RCC wireless AP/bridge/client
- DIN-rail kit
- 2 plastic RJ45 protective caps for console ports
- 1 plastic M12-female protective cap
- Cable holder with 1 screw
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

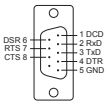
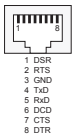
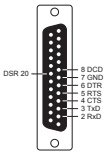
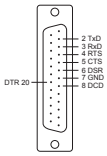
Accessories

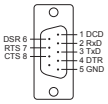
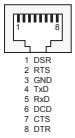
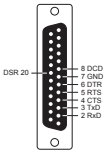
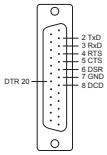
Serial Connection Options

Serial Board Connection Box/Cable Usage Chart

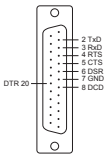
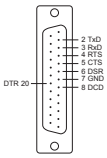
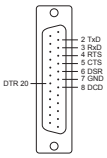
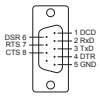
Serial Board Model Name	Connection Boxes						Connection Cables													
	8-port						8-port						4-port						2-port	
	OPT8-M9	OPT8-RJ45	OPT8A/B/S	OPT8-M9+	OPT8A+/B+/S+	OPT8-RJ45+	CBL-M68M25x8-100 (OPT8C+)	CBL-M68M9x8-100 (OPT8D+)	CBL-M62M25x8-100 (OPT8C)	CBL-M62M9x8-100 (OPT8D)	CBL-M78M25x8-100	CBL-M78M9x8-100	CBL-M44M9x4-50	CBL-M44M9x4-50(POS)	CBL-M44M25x4-50	CBL-M37M9x4-30 (OPT4C)	CBL-M37M9x4-30 (OPT4D)	CBL-F40M25x4-50	CBL-M25M9x2-50	CBL-F20M25x2-50
C218Turbo Series	✓	✓	✓	–	–	–	–	–	✓	✓	–	–	–	–	–	–	–	–	–	–
C104H Series	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	✓	–	–	–
CI-134 Series	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	✓	–	–	–
CP-118U	✓	✓	✓	–	–	–	–	–	✓	✓	–	–	–	–	–	–	–	–	–	–
CP-138U	✓	✓	✓	–	–	–	–	–	✓	✓	–	–	–	–	–	–	–	–	–	–
CP-168U	✓	✓	✓	–	–	–	–	–	✓	✓	–	–	–	–	–	–	–	–	–	–
C168H Series	✓	✓	✓	–	–	–	–	–	✓	✓	–	–	–	–	–	–	–	–	–	–
CP-104UL	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	✓	–	–	–	–	–
CP-134U Series	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	✓	–	–	–	–	–
CP-114UL	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	✓	–	–	–	–	–
CP-114UL-I	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	✓	–	–	–	–	–
CP-104EL-A	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	✓	–	–	–	–	–
CP-114EL	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	✓	–	–	–	–	–
CP-114EL-I	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	✓	–	–	–	–	–
CP-112UL	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–
CP-112UL-I	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–
CP-132UL Series	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–
CP-102UL	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–
CP-102EL	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–
CP-132EL	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–
CP-132EL-I	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–
CP-118EL-A	–	–	–	✓	✓	✓	✓	✓	–	–	–	–	–	–	–	–	–	–	–	–
CP-168EL-A	–	–	–	✓	✓	✓	✓	✓	–	–	–	–	–	–	–	–	–	–	–	–
CP-118U-I	–	–	–	–	–	–	–	–	–	–	✓	✓	–	–	–	–	–	–	–	–
CP-138U-I	–	–	–	–	–	–	–	–	–	–	✓	✓	–	–	–	–	–	–	–	–
POS-104UL	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–	–	–	–	–
CA-108	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–
CB-108	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–
CA-114	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–
CB-114	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–
CA-134I	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–
CB-134I	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–
CA-104	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓	–	–
CA-132	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓
CA-132I	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	✓

8-port RS-232 Connection Boxes

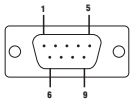
Model Name	OPT8-M9	OPT8-RJ45	OPT8A/S	OPT8B
Accessories Image				
Pin Assignment				
Board-Side Connector	DB62 male x 1			
Device-Side Connector	DB9 male x 8	8-pin RJ45 x 8	DB25 female x 8	DB25 male x 8
LEDs	TxD, RxD indicators for each device-side port	–	TxD, RxD indicators for each device-side port	
Baudrate	–	–	50 bps to 921.6 kbps	
Dimensions	90 x 111 x 27.5 mm (3.5 x 4.3 x 1 in)	152.8 x 32.8 x 32 mm (6 x 1.29 x 1.25 in)	247 x 108 x 35 mm (9.7 x 4.3 x 1.4 in)	
Protection	–	–	25 kV ESD, 2 kV EFT surge protection (OPT8S only)	–
Connnection Cable	DB62 male to DB62 female 150 cm connection cable for connecting to the serial board	–	DB62 male to DB62 male 150 cm connection cable for connecting to the serial board	
Related Products	See page A-2 for details			

Model Name	OPT8-M9+	OPT8-RJ45+	OPT8A+/S+	OPT8B+
Accessories Image				
Pin Assignment				
Board-Side Connector	VHDCI 68 x 1			
Device-Side Connector	DB9 male x 8	8-pin RJ45 x 8	DB25 female x 8	DB25 male x 8
LEDs	TxD, RxD indicators for each device-side port	–	TxD, RxD indicators for each device-side port	
Baudrate	–	–	50 bps to 921.6 kbps	
Dimensions	90 x 111 x 27.5 mm (3.5 x 4.3 x 1 in)	152.8 x 32.8 x 32 mm (6 x 1.29 x 1.25 in)	247 x 108 x 35 mm (9.7 x 4.3 x 1.4 in)	
Protection	–	–	25 kV ESD, 2 kV EFT surge protection (OPT8S only)	–
Connnection Cable	DB68 male to DB62 female 150 cm connection cable for connecting to the serial board	–	DB68 male to DB62 male 150 cm connection cable for the connecting to the serial board	
Related Products	See page A-2 for details			

8-port RS-232 Connection Cables

Model Name	CBL-M62M25x8-100 (OPT8C)	CBL-M62M9x8-100 (OPT8D)	CBL-M68M25x8-100 (OPT8C+)	CBL-M68M9x8-100 (OPT8D+)	CBL-M78M25x8-100	CBL-M78M9x8-100
Accessories Image						
Pin Assignment						
Board-Side Connector	DB62 male x 1		VHDCI 68 x 1		DB78 male x 1	
Device-Side Connector	DB25 male x 8	DB9 male x 8	DB25 male x 8	DB9 male x 8	DB25 male x 8	DB9 male x 8
Cable Length	100 cm (39.37 in)					
Related Products	See page A-2 for details					

2-port Connection Cables

Model Name	CBL-M25M9x2-50
Accessories Image	
Pin Assignment	
Description	DB25 male to DB9 male x 2
Cable Length	50 cm (19.69 in)
Related Products	See page A-2 for details

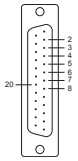
PIN	RS-232
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS

4-port Connection Cables

Model Name	CBL-M44M9x4-50	CBL-M44M25x4-50
Accessories Image		
Description	DB44 male to DB9 male x4	DB44 male to DB25 male x4
Cable Length	50 cm (19.69 in)	
Related Products	See page A-2 for details	

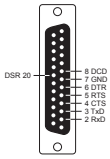
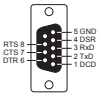
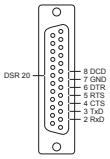
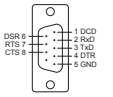
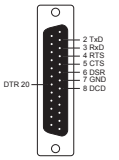
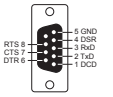
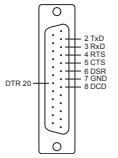
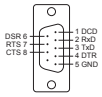
Pin Assignment

PIN	RS-232	RS-422	RS-485-4w	RS-485-2w
1	DCD	TxD-(A)	TxD-(A)	–
2	RxD	TxD+(B)	TxD+(B)	–
3	TxD	RxD+(B)	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	RxD-(A)	Data-(A)
5	GND	GND	GND	GND
6	DSR	–	–	–
7	RTS	–	–	–
8	CTS	–	–	–
9	–	–	–	–

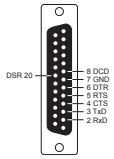
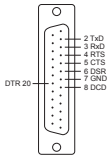
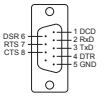
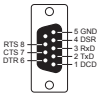


PIN	RS-232	RS-422	RS-485-4w	RS-485-2w
2	TxD	RxD+(B)	RxD+(B)	Data+(B)
3	RxD	TxD+(B)	TxD+(B)	–
4	RTS	–	–	–
5	CTS	–	–	–
6	DSR	–	–	–
7	GND	GND	GND	GND
8	DCD	TxD-(A)	TxD-(A)	–
20	DTR	RxD-(A)	RxD-(A)	Data-(A)
22	–	–	–	–

8-pin RJ45 to DB9/DB25 Connection Cables

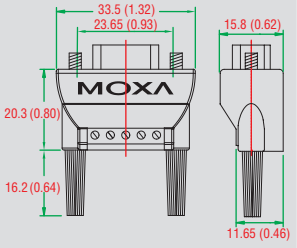
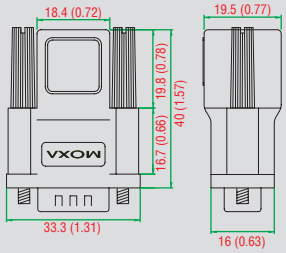
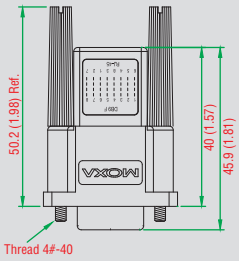
Model Name	CBL-RJ45F25-150	CBL-RJ45F9-150	CBL-RJ45M25-150	CBL-RJ45M9-150	CBL-RJ45SF25-150	CBL-RJ45SF9-150	CBL-RJ45SM25-150	CBL-RJ45SM9-150
Accessories Image								
Pin Assignment								
Cable Type	-	-	-	-	Shielded			
Board-Side Connector	8-pin RJ45 x 1							
Device-Side Connector	DB25 female x 1	DB9 female x 1	DB25 male x 1	DB9 male x 1	DB25 female x 1	DB9 female x 1	DB25 male x 1	DB9 male x 1
Cable Length	150 cm (59.06 in)							
Related Products	CP-104JU, OPT8-RJ45, NPort 5210, NPort 5600, NPort 6600, CN2510/2600							

10-pin RJ45 to DB9/DB25 Connection Cables

Model Name	CN20030	CN20040	CN20060	CN20070
Accessories Image				
Pin Assignment				
Board-Side Connector	10-pin RJ45 x 1			
Device-Side Connector	DB25 female x 1	DB25 male x 1	DB9 male x 1	DB9 female x 1
Cable Length	150 cm (59.06 in)			
Related Products	C320Turbo Series, A52, A53			

Wiring Kits

Model Name	TB-M9	TB-F9	TB-M25	TB-F25
Accessories Image				
Type	DB9 male DIN-rail wiring terminal	DB9 female DIN-rail wiring terminal	DM25 male DIN-rail wiring terminal	DB25 female DIN-rail wiring terminal
Connector	DB9 male	DB9 female	DB25 male	DB25 female
Rating	300 V, 20 A (IEC250V 10A)			
Operating Temperature	-40 to 105°C (-40 to 221°F)			
Suitable Wiring	24-12 AWG (IEC 0.5-2.5 mm²)			
Dimensions	77.5 x 45 x 51 mm (3.05 x 1.77 x 2.01 in)		77.5 x 90 x 51 mm (3.05 x 3.54 x 2.01 in)	

Model Name	Mini DB9F-to-TB	ADP-RJ458P-DB9M	ADP-RJ458P-DB9F	A-ADP-RJ458P-DB9F-ABC01
Accessories Image				
Pin Assignment	DB9-F / TB 1 / 2 2 / 1 3 / 3 4 / 4 5 / 5	DB9-M / RJ45 1 / 6 2 / 5 3 / 4 4 / 8 5 / 3 6 / 1 7 / 2 8 / 7	DB9-F / RJ45 1 / 6 2 / 4 3 / 5 4 / 1 5 / 3 6 / 8 7 / 7 8 / 2	DB9 / RJ45 1 / 6 2 / 5 3 / 4 4 / 8 5 / 7 6 / 1 7 / 2 8 / 7
Description	DB9 female to terminal block adapter for RS- 422/485 applications	RJ45-toDB9 male adapter	RJ45-toDB9 female adapter	RJ45-toDB9 female adapter
Operating Temperature	0 to 70°C (32 to 158°F)	-15 to 70°C (5 to 158°F)	-15 to 70°C (5 to 158°F)	0 to 70°C (32 to 158°F)
Dimensions				

Power Accessories

AC Power Supplies

Locking barrel plugs, 12 VDC 0.5 A, 100-240 VAC (Switch-Mode)

Model Name	PWR-12050-WPUSJP-S1	PWR-12050-WPEU-S1	PWR-12050-WPUK-S1	PWR-12050-WPAU-S1	PWR-12050-WPCN-S1
					
Input Rating					
I/P	100 to 240 VAC 50 to 60 Hz	100 to 240 VAC 50 to 60 Hz	100 to 240 VAC 50 to 60 Hz	100 to 240 VAC 50 to 60 Hz	100 to 240 VAC 50 to 60 Hz
Input Plug					
Plug Type	US/JP	EU	UK	AU	CN
Output Rating					
O/P	0.5 A @ 12 VDC	0.5 A @ 12 VDC	0.5 A @ 12 VDC	0.5 A @ 12 VDC	0.5 A @ 12 VDC
Output Plug					
Connector Type	S-Type 5.5/2.1/7.5	S-Type 5.5/2.1/7.5	S-Type 5.5/2.1/7.5	S-Type 5.5/2.1/7.5	S-Type 5.5/2.1/7.5
Outer Diameter	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)
Inner Diameter	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)
Physical Characteristics					
Dimensions (L x W x H)	64 x 40.5 x 47.5 mm (2.52 x 1.59 x 1.87 in)	64 x 40.5 x 68.7 mm (2.52 x 1.59 x 2.71 in)	64 x 40.5 x 56.2 mm (2.52 x 1.59 x 2.21 in)	64 x 40.5 x 58.5 mm (2.52 x 1.59 x 2.30 in)	64 x 40.5 x 46.5 mm (2.52 x 1.59 x 1.83 in)
Packaged Dimensions (L x W x H)	83 x 50 x 70 mm (3.27 x 1.97 x 2.76 in)	83 x 50 x 70 mm (3.27 x 1.97 x 2.76 in)	83 x 50 x 70 mm (3.27 x 1.97 x 2.76 in)	83 x 50 x 70 mm (3.27 x 1.97 x 2.76 in)	83 x 50 x 70 mm (3.27 x 1.97 x 2.76 in)
Weight	70 g (0.15 lb)	70 g (0.15 lb)	70 g (0.15 lb)	70 g (0.15 lb)	70 g (0.15 lb)
Cord Length	1530±100 mm (60.24±3.94 in)	1530±100 mm (60.24±3.94 in)	1530±100 mm (60.24±3.94 in)	1530±100 mm (60.24±3.94 in)	1530±100 mm (60.24±3.94 in)
Environmental Limits					
Operating Temperature	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)
Storage Temperature	-10 to 70°C (14 to 158°F)	-10 to 70°C (14 to 158°F)	-10 to 70°C (14 to 158°F)	-10 to 70°C (14 to 158°F)	-10 to 70°C (14 to 158°F)
Regulatory Approvals					
Safety	CE/FCC/UL/GS/PSE/RCM/CCC	CE/FCC/UL/GS/PSE/RCM/CCC	CE/FCC/UL/GS/PSE/RCM/CCC	CE/FCC/UL/GS/PSE/RCM/CCC	CE/FCC/UL/GS/PSE/RCM/CCC
Related Products					
Related Products	NPort 5110A, NPort 5130A, NPort 5150A, NPort 5210A, NPort 5230A, NPort 5250A, NPort Z2150/Z3150, NPort W2150A/W2250A, NPort P5110A				

DC Power Cord

Locking barrel plug to bare wires

CBL-PJ21NOPEN-BK-30

Cable Length: 300±20 mm (11.81±0.79 in)

AC Power Supplies

Locking barrel plugs, 12 VDC, 3 A 100-240 VAC (Switch-Mode)

Model Name	PWR-12300-WPUSJP-S1	PWR-12300-WPEU-S1	PWR-12300-WPUK-S1	PWR-12300-WPAU-S1	PWR-12300-WPCN-S1
					
Input Rating					
I/P	100-240 VAC 50-60 Hz	100-240 VAC 50-60 Hz	100-240 VAC 50-60 Hz	100-240 VAC 50-60 Hz	100-240 VAC 50-60 Hz
Input Plug					
Plug Type	US/JP	EU	UK	AU	CN
Output Rating					
O/P	3 A @ 12 VDC	3 A @ 12 VDC	3 A @ 12 VDC	3 A @ 12 VDC	3 A @ 12 VDC
Output Plug					
Connector Type	S-Type 5.5/2.1/7.5	S-Type 5.5/2.1/7.5	S-Type 5.5/2.1/7.5	S-Type 5.5/2.1/7.5	S-Type 5.5/2.1/7.5
Outer Diameter	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)
Inner Diameter	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)
Physical Characteristics					
Dimensions (L x W x H)	74 x 43.5 x 52.3 mm (2.91 x 1.71 x 2.06 in)	74 x 43.5 x 73.5 mm (2.91 x 1.71 x 2.89 in)	74 x 43.5 x 61 mm (2.91 x 1.71 x 2.40 in)	74 x 43.5 x 63.3 mm (2.91 x 1.71 x 2.49 in)	74 x 43.5 x 51.3 mm (2.91 x 1.71 x 2.02 in)
Packaged Dimensions (L x W x H)	100 x 60 x 90 mm (3.94 x 2.36 x 3.54 in)	100 x 60 x 90 mm (3.94 x 2.36 x 3.54 in)	100 x 60 x 90 mm (3.94 x 2.36 x 3.54 in)	100 x 60 x 90 mm (3.94 x 2.36 x 3.54 in)	100 x 60 x 90 mm (3.94 x 2.36 x 3.54 in)
Weight	163 g (0.36 lb)	163 g (0.36 lb)	163 g (0.36 lb)	163 g (0.36 lb)	163 g (0.36 lb)
Cord Length	1530±200 mm (60.24±7.87 in)	1530±200 mm (60.24±7.87 in)	1530±200 mm (60.24±7.87 in)	1530±200 mm (60.24±7.87 in)	1530±200 mm (60.24±7.87 in)
Environmental Limits					
Operating Temperature	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)
Storage Temperature	-20 to 70°C (-4 to 158°F)	-20 to 70°C (-4 to 158°F)	-20 to 70°C (-4 to 158°F)	-20 to 70°C (-4 to 158°F)	-20 to 70°C (-4 to 158°F)
Regulatory Approvals					
Safety	FCC/CE/UL/GS/CCC/RCM/PSE	FCC/CE/UL/GS/CCC/RCM/PSE	FCC/CE/UL/GS/CCC/RCM/PSE	FCC/CE/UL/GS/CCC/RCM/PSE	FCC/CE/UL/GS/CCC/RCM/PSE
Related Products					
Related Products	UPort 204, UPort 207, UPort 404, UPort 407				

DC Power Cord

Locking barrel plug to bare wires

CBL-PJ21NOPEN-BK-30

Cable Length: 300±20 mm (11.81±0.79 in)

AC Power Supplies

Non-locking barrel plugs, 12 VDC 0.5 A, 100-240 VAC (Switch-Mode)

Model Name	PWR-12050-WPUSJP-S2	PWR-12050-WPEU-S2	PWR-12050-WPUK-S2	PWR-12050-WPAU-S2	PWR-12050-WPCN-S2
					
Input Rating					
I/P	100 to 240 VAC 50 to 60 Hz	100 to 240 VAC 50 to 60 Hz	100 to 240 VAC 50 to 60 Hz	100 to 240 VAC 50 to 60 Hz	100 to 240 VAC 50 to 60 Hz
Input Plug					
Plug Type	US/JP	EU	UK	AU	CN
Output Rating					
O/P	0.5 A @ 12 VDC	0.5 A @ 12 VDC	0.5 A @ 12 VDC	0.5 A @ 12 VDC	0.5 A @ 12 VDC
Output Plug					
Connector Type	L-Type 5.5/2.1/9.0	L-Type 5.5/2.1/9.0	L-Type 5.5/2.1/9.0	L-Type 5.5/2.1/9.0	L-Type 5.5/2.1/9.0
Outer Diameter	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)
Inner Diameter	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)
Physical Chracteristics					
Dimensions (L x W x H)	64 x 40.5 x 30 mm (2.52 x 1.59 x 1.18 in)	64 x 40.5 x 68.7 mm (2.52 x 1.59 x 2.71 in)	64 x 40.5 x 56.2 mm (2.52 x 1.59 x 2.21 in)	64 x 40.5 x 58.5 mm (2.52 x 1.59 x 2.30 in)	64 x 40.5 x 46.5 mm (2.52 x 1.59 x 1.83 in)
Packaged Dimensions (L x W x H)	83 x 50 x 70 mm (3.27 x 1.97 x 2.76 in)	83 x 50 x 70 mm (3.27 x 1.97 x 2.76 in)	83 x 50 x 70 mm (3.27 x 1.97 x 2.76 in)	83 x 50 x 70 mm (3.27 x 1.97 x 2.76 in)	83 x 50 x 70 mm (3.27 x 1.97 x 2.76 in)
Weight	70 g (0.15 lb)	70 g (0.15 lb)	70 g (0.15 lb)	70 g (0.15 lb)	70 g (0.15 lb)
Cord Length	1830±100 mm (72.05±3.94 in)	1830±100 mm (72.05±3.94 in)	1830±100 mm (72.05±3.94 in)	1830±100 mm (72.05±3.94 in)	1830±100 mm (72.05±3.94 in)
Environmental Limits					
Operating Temperature	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)
Storage Temperature	-10 to 70°C (14 to 158°F)	-10 to 70°C (14 to 158°F)	-10 to 70°C (14 to 158°F)	-10 to 70°C (14 to 158°F)	-10 to 70°C (14 to 158°F)
Regulatory Approvals					
Safety	CE/FCC/UL/RMC/PSE/CCC	CE/FCC/UL/RMC/PSE/CCC	CE/FCC/UL/RMC/PSE/CCC	CE/FCC/UL/RMC/PSE/CCC	CE/FCC/UL/RMC/PSE/CCC
Regulatory Products					
Related Products	NPort 5110, NPort 5130, NPort 5150, NPort 5210, NPort 5230, NPort 5232, NPort 5232I, MGate MB3180, MGate MB3280, DE-211, DE-311, A52, A53, MiiNePort E1-ST				

DC Power Cord

Non-locking barrel plug to bare wires

CBL-PJTB-10

Cable Length: 100±20 mm (3.94±0.79 in)

AC Power Supplies

Non-locking barrel plugs, 12 VDC 1.25/1.5 A, 100-240 VAC

Model Name	PWR-12125-USJP-S1	PWR-12150-EU-S2	PWR-12150-UK-S2	PWR-12150-AU-S2	PWR-12150-CN-S1
					
Input Rating					
I/P	100 to 240 VAC 50 to 60 Hz	100 to 240 VAC 50 to 60 Hz	100 to 240 VAC 50 to 60 Hz	100 to 240 VAC 50 to 60 Hz	100 to 240 VAC 50 to 60 Hz
Input Plug					
Plug Type	US/JP	EU	UK	AU	CN
Output Rating					
O/P	1.25 A @ 12 VDC	1.5 A @ 12 VDC	1.5 A @ 12 VDC	1.5 A @ 12 VDC	1.5 A @ 12 VDC
Output Plug					
Connector Type	L-Type 5.5/2.1/9.5	L-Type 5.5/2.1/9.0	S-Type 5.5/2.1/9.0	L-Type 5.5/2.1/9.0	L-Type 5.5/2.1/9.0
Outer Diameter	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)
Inner Diameter	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)
Physical Characteristics					
Dimensions (L x W x H)	74 x 43.5 x 52.5 mm (2.91 x 1.71 x 2.07 in)	70 x 45 x 66.5 mm (2.76 x 1.77 x 2.62 in)	70 x 48 x 60 mm (2.76 x 1.89 x 2.36 in)	70 x 55 x 56 mm (2.76 x 2.17 x 2.21 in)	70 x 45 x 54 mm (2.76 x 1.77 x 2.13 in)
Packaged Dimensions (L x W x H)	100 x 60 x 90 mm (3.94 x 2.36 x 3.54 in)	100 x 60 x 90 mm (3.94 x 2.36 x 3.54 in)	100 x 60 x 90 mm (3.94 x 2.36 x 3.54 in)	100 x 60 x 90 mm (3.94 x 2.36 x 3.54 in)	100 x 60 x 90 mm (3.94 x 2.36 x 3.54 in)
Weight	108 g (0.24 lb)	200 g (0.44 lb)	200 g (0.44 lb)	200 g (0.44 lb)	200 g (0.44 lb)
Cord Length	1530±100 mm (60.24±3.84 in)	1800±200 mm (70.87±7.87 in)	1800±200 mm (70.87±7.87 in)	1800±200 mm (70.87±7.87 in)	1800±200 mm (70.87±7.87 in)
Environmental Limits					
Operating Temperature	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)
Storage Temperature	-20 to 70°C (-4 to 158°F)	-20 to 70°C (-4 to 158°F)	-20 to 70°C (-4 to 158°F)	-20 to 70°C (-4 to 158°F)	-20 to 70°C (-4 to 158°F)
Regulatory Approvals					
Safety	CE/FCC/UL/RMC/PSE/GS	CE/GS	CE	RMC	CCC
Related Products					
Related Products	NPort 5410, NPort 5430, NPort 5430I, NPort 5450, NPort 5450I, MGate MB3480				

DC Power Cord

Non-locking barrel plug to bare wires

CBL-PJTB-10

Cable Length: 100±20 mm (3.94±0.79 in)

AC Power Supplies

Desktop type power adapters

Model Name	PWR-12200-DT-S1	PWR-12125-DT-S2
		
Input Rating		
I/P	100 to 240 VAC 50 to 60 Hz	100 to 240 VAC 50 to 60 Hz
Input Plug		
Plug Type	Desktop	Desktop
Output Rating		
O/P	2 A @ 12 VDC	1.25 A @ 12 VDC
Output Plug		
Connector Type	S-Type 5.5/2.1/7.5	S-Type 5.5/2.1/7.5
Outer Diameter	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)
Inner Diameter	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)
Physical Characteristics		
Dimensions (L x W x H)	110.8 x 51.8 x 32 mm (4.36 x 2.04 x 1.26 in)	75 x 47.5 x 27.3 mm (2.95 x 1.87 x 1.07 in)
Packaged Dimensions (L x W x H)	135 x 75 x 35 mm (5.31 x 2.95 x 1.38 in)	100 x 70 x 51.5 mm (3.94 x 2.76 x 2.03 in)
Weight	200 g (0.44 lb)	200 g (0.44 lb)
Cord Length	1800±200 mm (70.87±7.87 in)	1530±100 mm (60.24±3.84 in)
Environmental Limits		
Operating Temperature	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)
Storage Temperature	-20 to 70°C (-4 to 158°F)	-10 to 70°C (14 to 158°F)
Regulatory Approvals		
Safety	Efficiency Level 5: CE/FCC/UL/PSE/RCM/CCC Efficiency Level 6: CE/FCC/UL/PSE	CE/FCC/UL/PSE/GS
Related Products		
Related Products	NPort 5610-8-DT, NPort 5610-8-DT-J, NPort 5650-8-DT, NPort 5650-8-DT-J, NPort 5650I-8-DT, NPort 5610-8-DTL, NPort 5650-8-DTL, NPort 5650I-DTL	NPort 6150, NPort 6250-M-SC, NPort 6250, NPort 6250-S-SC, NPort 6450, UPort 1250I, UPort 1450, UPort 1450I, UPort 1610-8, UPort 1650-8

Note: PWR-12200-DT-S1and PWR-12125-DT-S2 not included with power cord

Model Name	PWC-C13US-3B-183	PWC-C-13EU-3B-183 (CEE 7/7 to IEC C13)	PWC-C13UK-3B-183	PWC-C13JP-3B-183	PWC-C13AU-3B-183	PWC-C13CN-3B-183
						
Region	US	EU	UK	JP	AU	CN
Voltage	125 V	250 V	250 V	125 V	250 V	250 V
Thickness	6.3±0.2 mm (0.25±0.01 in)	6.7±0.2 mm (0.26±0.01 in)	6.7±0.2 mm (0.26±0.01 in)	7.0±0.2 mm (0.28±0.01 in)	6.7±0.2 mm (0.26±0.01 in)	6.7±0.2 mm (0.26±0.01 in)
Max. Current	10 A	10 A	10 A	7 A	10 A	10 A
Length	1830±30 mm (72.05±1.18 in)	1830±30 mm (72.05±1.18 in)	1830±30 mm (72.05±1.18 in)	1830±30 mm (72.05±1.18 in)	1830±30 mm (72.05±1.18 in)	1830±30 mm (72.05±1.18 in)
Related Products	CN2500 Series, NPort 6600 Series, NPort 5600 Series, PWR-12200-DT-S1					

Model Name	PWC-C7US-2B-183	PWC-C7EU-2B-183	PWC-C7UK-2B-183	PWC-C7JP-2B-183	PWC-C7AU-2B-183	PWC-C7CN-2B-183
						
Region	US	EU	UK	JP	AU	CN
Length	1830±200 mm (72.05±7.87 in)	1830±200 mm (72.05±7.87 in)	1830±200 mm (72.05±7.87 in)	1830±200 mm (72.05±7.87 in)	1830±200 mm (72.05±7.87 in)	1830±200 mm (72.05±7.87 in)
Related Products	PWR-12125-DT-S2	PWR-12125-DT-S2	PWR-12125-DT-S2	PWR-12125-DT-S2	PWR-12125-DT-S2	PWR-12125-DT-S2

Locking barrel plug to bare wires

CBL-PJ21NOPEN-BK-30

Cable Length: 300±20 mm (11.81±0.79 in)

Wide Temperature AC Power Supplies

Locking barrel plug, 12VDC 1.5A, 100-240VAC (Switch-Mode)

Model Name	PWR-12150-USJP-SA-T	PWR-12150-EU-SA-T	PWR-12150-UK-SA-T	PWR-12150-AU-SA-T	PWR-12150-CN-SA-T
Accessories Image					
Input Rating					
I/P	100 to 240 VAC, 50 to 60 Hz	100 to 240 VAC, 50 to 60 Hz	100 to 240 VAC, 50 to 60 Hz	100 to 240 VAC, 50 to 60 Hz	100 to 240 VAC, 50 to 60 Hz
Input Plug					
Plug Type	US/JP	EU	UK	AU	CN
Output Rating					
O/P	1.5A @ 12VDC	1.5A @ 12VDC	1.5A @ 12VDC	1.5A @ 12VDC	1.5A @ 12VDC
Protection Requirements					
Protection	Over current protection/ Over voltage protecction				
Output Plug					
Connector Type	L-Type 5.5/2.1/7.5	L-Type 5.5/2.1/7.5	L-Type 5.5/2.1/7.5	L-Type 5.5/2.1/7.5	L-Type 5.5/2.1/7.5
Outer Diameter	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)	5.5±0.1 mm (0.22±0.004 in)
Inner Diameter	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)	2.1±0.1 mm (0.08±0.004 in)
Physical Characteristics					
Dimensions (L x W x H)	32 x 70.3 x 88 mm (1.26 x 2.77 x 3.46 in)	32 x 85.3 x 88 mm (1.26 x 3.36 x 3.46 in)	50 x 91 x 82.5 mm (1.97 x 3.58 x 2.25 in)	41 x 73.9 x 89.5 mm (1.61 x 2.91 x 3.52 in)	32 x 60 x 88 mm (1.26 x 2.36 x 3.46 in)
Weight	200 g (0.44 lb)	200 g (0.44 lb)	200 g (0.44 lb)	200 g (0.44 lb)	200 g (0.44 lb)
Cord Length	1500±200 mm (59.06±7.87 in)	1500±200 mm (59.06±7.87 in)	1500±200 mm (59.06±7.87 in)	1500±200 mm (59.06±7.87 in)	1500±200 mm (59.06±7.87 in)
Environmental Limits					
Operating Temperature	-40 to 75°C (-40 to 167°F)	-40 to 75°C (-40 to 167°F)	-40 to 75°C (-40 to 167°F)	-40 to 75°C (-40 to 167°F)	-40 to 75°C (-40 to 167°F)
Regulatory Approvals					
Safty	FCC/UL/PSE	TUV/CE/GS	CE	RCM	CCC
Related Products					
Related Products	NPort 5110-T, NPort 5450-T,NPort 5450I-T, NPort 5110A-T, NPort 5610-8-DTL-T, NPort 5650-8-DTL-T, NPort 5650I-8-DTL-T, NPort 5130A-T, NPort 5150A-T, NPort 5210A-T, NPort 5230A-T, NPort 5250A-T, NPort 6100-T, NPort 6200-T, NPort 6400-T				

Power Supplies

24/48 VDC power supplies for installation on a DIN rail

	24 VDC DIN-Rail Power Supplies					48 VDC DIN-Rail Power Supplies			
Model Name	DR-4524	DR-75-24	DR-120-24	MDR-40-24	MDR-60-24	DR-75-48	DR-120-48	DRP-240-48	SDR-480P-48
Accessories Image									
Physical Characteristics and Temperature Limits									
Dimensions	78 x 67 x 93 mm (3.07 x 2.64 x 3.66 in)	55.5 x 100 x 125.2 mm (2.19 x 3.94 x 4.93 in)	65.5 x 100 x 125.2 mm (2.58 x 3.94 x 4.93 in)	40 x 90 x 100 mm (1.57 x 3.54 x 3.94 in)	40 x 90 x 100 mm (1.57 x 3.54 x 3.94 in)	55.5 x 100 x 125.2 mm (2.19 x 3.94 x 4.93 in)	65.5 x 100 x 125.2 mm (2.58 x 3.94 x 4.93 in)	125.5 x 125.5 x 100 mm (4.94 x 4.94 x 3.94 in)	85.5 x 125.2 x 128.5 mm (3.37 x 4.93 x 5.06 in)
Weight	400 g (0.88 lb)	550 g (1.21 lb)	650 g (1.43 lb)	260 g (0.57 lb)	280 g (0.62 lb)	550 g (1.21 lb)	650 g (1.43 lb)	1.2 kg (2.65 lb)	1.6 kg (3.53 lb)
Operating Temperature	-10 to 50°C (14 to 122°F)	-10 to 60°C (14 to 140°F)		-20 to 70°C (-4 to 158°F)		-10 to 60°C (14 to 140°F)		-10 to 70°C (14 to 158°F)	-25 to 70°C (-13 to 158°F)
Relative Humidity	20 to 90% RH	20 to 90% RH		20 to 90% RH		20 to 90% RH			10 to 95% RH
Power Requirements									
Wattage	45 W	75 W	120 W	40 W	60 W	75 W	120 W	240 W	480 W (current sharing up to 3840 W)
Input Voltage	85-264 VAC (47-63 Hz), or 120-370 VDC		88-132 VAC, or 176-264 VAC (47-63 Hz) by switch, or 248-370 VDC	85-264 VAC (47-63 Hz) or 120-370 VDC		85-264 VAC (27-63 Hz) or 120-370 VDC	88-132 VAC, or 176-264 VAC (47-63 Hz) by switch, or 248-370 VDC	85-264 VAC (47-63 Hz) or 120-370 VDC	90 to 264 VAC or 127 to 370 VDC
Output Power	48 W (24 VDC @ 0-2 A)	76.8 W (24 VDC @ 0-3.2 A)	120 W (24 VDC @ 0-5 A)	40 W (24 VDC @ 0-1.7 A)	60 W (24 VDC @ 0-2.5 A)	76.8 W (48 VDC @ 0-1.6 A)	120 W (48 VDC @ 0-2.5 A)	240 W (48 VDC @ 0-5 A)	480 W (48 VDC @ 0-10 A)
Over-voltage Protection	27.6 to 32.4 V	29 to 33 V		31.2 to 36 V		58 to 65 V		54 to 60 V	56-65 V
Overload Protection	105-150%								110-150%
Type	Constant Current Limiting								
Reset	Auto Recovery								
Inrush Current	30 A and 115 V, or 60 A and 230 V								40 A/115 VAC or 80 A/230 VAC
Reliability									
Safety Standards	EN 60950-1, UL 508 approved								
EMC Standards	EN 55022 Class B, EN 61000-4-2/3/4/5/6/8/11, ENV 50204, EN 61000-3-2, EN 50082-2								
Warranty	3 years (see www.moxa.com/warranty)								

Fiber Accessories

Fiber Optic Adapters

SC male to ST female duplex adapters

These SC male to ST female duplex adapters are provided as an optional accessory to give users of Moxa industrial Ethernet switches more fiber optic connection options. Simply plug the adapters directly into the SC connector of any Moxa industrial Ethernet switch to convert the original SC connector into an ST connector. This allows you to use an ST connector with any MOXA industrial Ethernet switch, but without the need for an extra patchcord.

ADP-SCm-STf-S

SC male to ST female duplex adapter for single-mode fiber

Single-mode: 9/125 µm
Ferrules and Sleeves: Zirconia Ceramic
Body Color: Blue
Insertion Loss: 0.5/1.1 (TYP/MAX)
SC-side Connector: SC male
ST-side Connector: ST female

ADP-SCm-STf-M

SC male to ST female duplex adapter for multi-mode fiber

Multi-mode: 62.5/125 µm
Ferrules and Sleeves: Zirconia Ceramic
Body Color: Gray
Insertion Loss: 0.1/0.3 (TYP/MAX)
SC-side Connector: SC male
ST-side Connector: ST female

Caps

Model Name	A-CAP-M12M-M	A-CAP-M12F-M	A-CAP-N-M	A-CAP-M30M-MIP67	A-CAP-WPRJ45-MC
Accessories Image					
Description	Metal cap to cover M12-male connector	Metal cap to cover M12-female connector	Metal cap to cover N-type connector	Metal cap to cover M30 connector	Metal cap with chain for RJ45 connector
Related Products	Power cap for the AWK-4121 AWK-4131-M12 AWK-6222 AWK-6232-M12 DI/O cap for the AWK-4131-M12 AWK-6232-M12 PM-7200-4M12 TN Series	DI/O cap for the AWK-4121 AWK-6222 LAN cap for the AWK-3121-M12-RTG AWK-3131-M12-RCC AWK-5232-M12-RCC AWK-4131-M12 AWK-6232-M12 TN Series	Antenna cap for the AWK-4121 AWK-4131-M12 AWK-6222 AWK-6232-M12	SFP cap for the AWK-4131-M12	Console & LAN caps for the AWK-4121 AWK-6222 Console cap for the AWK-4131-M12 AWK-6232-M12

Connectors

Model Name	CBL-M12(FF5P)/ OPEN-100 IP67	CBL-M12D(MM4P)/ RJ45-100 IP67	CBL-M23(FF6P)/ OPEN-BK-100 IP67	M12A-5P-IP68	M12A-8PMM-IP68	CBL-M12DFF4PRJ45-BK-10-IP67	CBL-M12MM8PRJ45-BK-100-IP67	M12A-8PFF-IP67
Accessories Image								
Description	1-meter M12-to-5-pin power cable with IP67-rated 5-pin female A-coded M12 connector	1-meter M12-to-RJ45 Cat-5C UTP Ethernet cable with IP67-rated 4-pin male D-coded M12 connector	1-meter M23-to-6-pin power cable with IP-67-rated female 6-pin M23 connector	Field-installation A-coded M12 screw-in 5-pin connector, female connector female pins	Field-installation A-coded M12 screw-in 8-pin connector, male connector male PIN	M12-to-RJ45 Cat-5E UTP Ethernet cable with IP67-rated female 4-pin D-coded M12 connector	M12-to-RJ45 Cat-5E UTP Ethernet cable with IP67-rated male 8-pin A-coded M12 connector	Field-installation A-coded M12 screw-in 8-pin connector, female connector female PIN
Cable Length	1 m (39.37 in)	–	–	–	–	10 m (393.70 in)	1 m (39.37 in)	–
Related Products	AWK-4121 AWK-4131-M12 AWK-6222 AWK-6232-M12	TN Series ioPAC 8000 Series	TN Series TAP-6226-TC	Power connector for the AWK-4121 AWK-4131-M12 AWK-6222 AWK-6232-M12	DI/O connector for the AWK-4121 AWK-6222 LAN connector for the AWK-4131-M12 AWK-6232-M12	AWK-4121 AWK-6222	AWK-4131-M12 AWK-6232-M12	DI/DO connector for the AWK-4131-M12 AWK-6232-M12

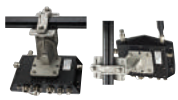
	Field-Installation Connectors	
Model Name	A-PLG-WPM30IP67-01	A-PLG-WPRJ
Accessories Image		
Description	Field-Installation for M30 plug	Field-installation RJ-type plug
Related Products	SFP LAN connector for the AWK-4131-M12	LAN connector for the AWK-4121 AWK-6222

Mounting Kits

	Wall-Mounting Kits							
Model Name	WK-30	WK-32	WK-35-01	WK-35-02	WK-36-02	WK-44-01	WK-45-01	WK-46
Accessories Image								
Dimensions	40 x 30 x 1 mm (1.57 x 1.18 x 0.04 in)	30.3 x 140 x 12.3 mm (1.19 x 5.51 x 0.48 in)	35 x 44 x 2.5 mm (1.38 x 1.73 x 0.10 in)	35 x 24 x 1.2 mm (1.38 x 0.94 x 0.05 in)	36 x 67 x 2 mm (1.42 x 2.64 x 0.08 in)	44 x 57.5 x 1.6 mm (1.73 x 2.26 x 0.06 in)	45 x 57 x 2.5 mm (1.77 x 2.24 x 0.10 in)	51.6 x 66.8 x 1 mm (2.03 x 2.63 x 0.04 in)
Related Products	EDS-205A Series EDS-G205 Series EDS-G205A-4PoE Series ICF-1170I Series	EDS-828 Series EDS-728 Series	NPort 6450, UPort 1410, UPort 1450, UPort 1450I	NPort 6150/6250 Series UPort 404 UPort 407	NPort IA5150A Series NPort IA5250A Series MGate 4101-MB-PBS MGate 4101I-MB-PBS	NPort 6600-8 Series NPort 6600-16 Series NPort 6600-32 Series UPort 1600-16 Series	NPort 5600-8 Series NPort 5600-16 Series NPort 5650-8-HV-T NPort 5650-16-HV-T CN2600-8 Series CN2600-16 Series CN2600-8-2AC Series CN2600-16-2AC Series	EDS-208A Series EDS-300 Series EDS-400A Series EDS-500A Series EDS-G308 Series EDS-G509 Series EDS-P206A-4PoE Series EDS-P308 Series EDS-P510 Series OBU-102 Series IMC-101G/101 Series PT-500 Series VPort 354 Series VPort 364A Series VPort 461A Series NPort S8455I-MM-SC NPort S8455I-MM-SC-T NPort S8455I-SS-SC NPort S8455I-SS-SC-T NPort S8458-4S-SC-T

	Wall-Mounting Kits				
Model Name	WK-51-01	WK-55	WK-75	WK-90	WK-195
Accessories Image					
Dimensions	55 x 67 x 1 mm (2.17 x 2.64 x 0.04 in)	55 x 34.5 x 2.5 mm (2.17 x 1.36 x 0.10 in)	75 x 90 x 2.5 mm (2.95 x 3.54 x 0.10 in)	99 x 62 x 2.5 mm (3.90 x 2.44 x 0.10 in)	195 x 17.5 x 52.5 mm (7.68 x 0.69 x 2.07 in)
Related Products	AWK-1000 Series AWK-3000 Series AWK-5222 Series AWK-1000A Series AWK-3000A Series OnCell 5104-HSPA OnCell G3470A-LTE WDR-3124A WAC-1001 EDR-G902 Series EDR-G903 Series EDS-P506A-4PoE Series EDS-316 Series IMC-101/IMC-P101 Series PTC-101 Series NPort IA5450A Series ioPAC 5500 Series	AWK-4121 AWK-4131-M12 AWK-6222 AWK-6232-M12	EDS-600 Series ioPAC 8000 Series	ioLogik E1500 Series	PT-7710 Series

Mounting Kits

	DIN-Rail Mounting Kits					Pole-Mounting Kit
Model Name	DK-DC50131	DK-TN-5308	DK-M12-305	DK-25-01	DK-35A	PK-DC2DOF
Accessories Image						
Dimensions	50 x 131 x 1 mm (1.97 x 5.16 x 0.05 in)	66 x 174 x 12.8 mm (2.60 x 6.85 x 0.50 in)	60 x 125 x 12.8 mm (2.36 x 4.92 x 0.50 in)	25 x 48.3 mm (0.98 x 1.90 in)	42.5 x 10 x 19.34 mm (1.67 x 0.39 x 0.76 in)	–
Related Products	TN-5500 Series AWK-4121 AWK-4131-M12 AWK-6222 AWK-6232-M12 ioPAC 5500 Series ioPAC 8000 Series ioLogik E1500 Series MxNVR-MO4 Series	TN-5308 Series	TN-5305 Series	UPort 404 UPort 407	MGate™ 3x80 Series NPort Express DE-211 NPort Express DE-311 NPort 5100 Series NPort 5100A Series NPort 5200 Series NPort 5200A Series NPort 5400 Series NPort 6150/6250/6450 NPort W2x50A UPort 1150I UPort 404/407 UPort 1250/1250I TCF-142 Series TCC-100/100I TCC-120/120I	AWK-4121 AWK-4131-M12 AWK-6222 AWK-6232-M12

Your Trusted Partner in Automation

Moxa is a leading provider of edge connectivity, industrial computing, and network infrastructure solutions for enabling connectivity for the Industrial Internet of Things. With over 25 years of industry experience, Moxa has connected more than 40 million devices worldwide and has a distribution and service network that reaches customers in more than 70 countries. Moxa delivers lasting business value by empowering industry with reliable networks and sincere service for industrial communications infrastructures.

Moxa Sales and Marketing Headquarters

Moxa Corporate Plaza
601 Valencia Ave., Suite 200
Brea, CA 92823, U.S.A.
Toll Free: 1-888-669-2872
Tel: +1-714-528-6777
Fax: +1-714-528-6778
usa@moxa.com

Moxa Design and Engineering Headquarters

Fl. 4, No. 135, Lane 235, Baoqiao Rd.
Xindian Dist., New Taipei City,
Taiwan, R.O.C.
Tel: +886-2-8919-1230
Fax: +886-2-8919-1231

The Americas

Moxa Americas

Toll Free: 1-888-MOXA-USA
Tel: +1-714-528-6777
Fax: +1-714-528-6778
usa@moxa.com

Moxa Brazil

Tel: +55-11-2495-3555
Fax: +55-11-2495-6555
brazil@moxa.com

Europe

Moxa Germany

Tel: +49-89-37003-99-0
Fax: +49-89-37003-99-99
europe@moxa.com

Moxa France

Tel: +33-1-30-85-41-80
Fax: +33-1-30-47-35-91
france@moxa.com

Moxa UK

Tel: +44-1844-355-601
Fax: +44-1844-353-553
uk@moxa.com

Asia-Pacific

Moxa Asia-Pacific and Taiwan

Tel: +886-2-8919-1230
Fax: +886-2-8919-1231
asia@moxa.com
japan@moxa.com
taiwan@moxa.com

Moxa India

Tel: +91-80-4172-9088
Fax: +91-80-4132-1045
india@moxa.com

Moxa Russia

Tel: +7-495-287-0929
Fax: +7-495-269-0929
russia@moxa.com

Moxa Korea

Tel: +82-31-625-4048
Fax: +82-31-609-7996
korea@moxa.com

China

Moxa Shanghai

Tel: +86-21-5258-9955
Fax: +86-21-5258-5505
china@moxa.com

Moxa Beijing

Tel: +86-10-5976-6123/24/25/26
Fax: +86-10-5976-6122
china@moxa.com

Moxa Shenzhen

Tel: +86-755-8368-4084/94
Fax: +86-755-8368-4148
china@moxa.com

P/N: 1900001601100

MOXA®
Reliable Networks ▲ Sincere Service