SIERRA WIRELESS®

FIRSTNET READY

AirLink® MG90 High Performance Multi-Network Vehicle Router

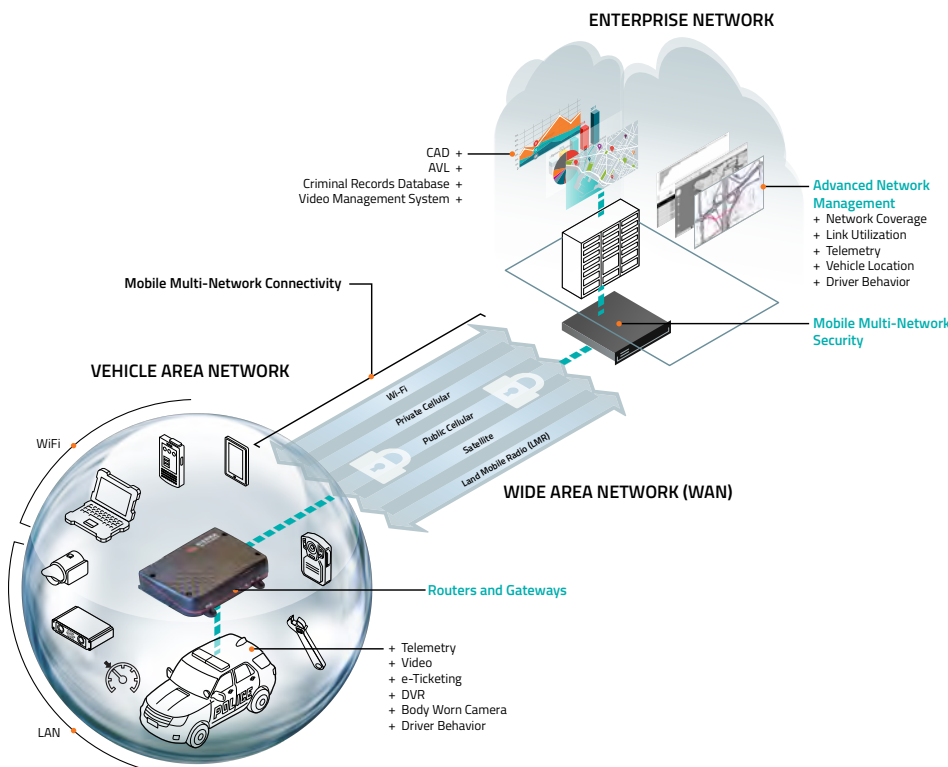# Multi-Network Platform, Vehicle Grade, Dual Concurrent Gigabit Wi-Fi

The AirLink® MG90 is a high performance LTE-Advanced Pro vehicle networking platform, purpose built to provide secure, always-on connectivity for mission critical applications in public safety, transit and field services.

With multi-network connectivity, the MG90 offers dual LTE-Advanced Pro radios, Gigabit Wi-Fi WAN and Gigabit Ethernet, with extensions to Land Mobile Radio (LMR) and satellite systems. The MG90 is also FirstNet Ready™ with support for 700MHz Band 14, and support for priority and pre-emption for first responders.

The MG90 dynamically selects the best available network, based on user-customized scoring systems, using its intelligent policy defined link management, and is able to effortlessly switch between WAN connections to provide uninterrupted communications and prevent downtime, performance issues or dead zones. Together with the AirLink® Connection Manager (ACM), the MG90 consolidates the security for all connected technologies in the vehicle area network (VAN), vastly simplifying deployment and enabling the enterprise to retain management control over network access and connected mobile assets.

The MG90 seamlessly integrates with the AirLink® Mobility Manager (AMM)—a powerful, end-to-end network management solution—to enable simplified, remote and real-time insight and control of connected mobile assets and mission critical applications, and supports vehicle tracking, telemetry and asset management applications. Purpose built for the vehicle with its ruggedized form factor, the MG90 delivers best-in-class reliability and ensures continual operation in harsh mobile environments.

ENTERPRISE NETWORK

CAD +
AVL +
Criminal Records Database +
Video Management System +

Advanced Network Management
+ Network Coverage
+ Link Utilization
+ Telemetry
+ Vehicle Location
+ Driver Behavior

Mobile Multi-Network Connectivity

Mobile Multi-Network Security

VEHICLE AREA NETWORK

Wi-Fi
Private Cellular
Public Cellular
Satellite
Land Mobile Radio (LMR)

WIDE AREA NETWORK (WAN)

WiFi

Routers and Gateways

+ Telemetry
+ Video
+ e-Ticketing
+ DVR
+ Body Worn Camera
+ Driver Behavior

LAN

sierrawireless.com/MG90

High Performance Vehicle Networking Platform

EXTENSIBLE MULTI-NETWORK CONNECTIVITY

Built for first responders and in-field personnel, the AirLink MG90 offers up to 600 Mbps downlink and 150 Mbps uplink speeds over LTE Advanced Pro, 1.3 Gbps over dual radio, dual concurrent 3x3 MIMO 802.11ac Wi-Fi, and 5-port Gigabit Ethernet. The AirLink MG90 can host up to 128 clients at any one time, and concurrently connect multiple mission critical applications in and around the vehicle including laptops, MVRs and tablets, in addition to providing live video streaming, and rapid secure access to remote databases.

The AirLink MG90 supports up to 26 LTE frequency bands, enabling superior coverage on LTE networks worldwide including dedicated regional Public Safety bands such as FirstNet Band 14. The MG90 has five product variants: An LTE-Advanced Pro variant for North America that is FirstNet Ready with support for Band 14, a Global LTE-Advanced Pro variant with support for Band 20 and Band 28; LTE-Advanced variant for North America & EMEA and one for APAC; and one for the US with support for EV-DO fallback. With dual-SIM functionality for automatic failover between SIMs, the MG90 offers superior connectivity and cost optimization when roaming.

PURPOSE BUILT VEHICLE-READY DESIGN

Purpose built for vehicle power environments, the AirLink MG90 does not require any external power conditioning, is optimized to survive extreme transient surges, and maintains continuous power through cold cranking as low as 5V.

The MG90 was developed with industrial grade components to accommodate extreme temperatures, such as a customized die cast aluminum housing to manage thermodynamics. It is sealed to meet IP64 for resistance to dust and water ingress, and has been tested to meet and exceed the MIL-STD-810G specifications for shock, vibration, temperature and humidity.

CONNECTED VEHICLE AWARENESS

Offering built-in vehicle-ready I/O, Bluetooth and Vehicle Telemetry interface (requires external scanner kit), the MG90 enables remote monitoring of auxiliary devices, such as light bars, sirens and gun racks, and can collect OBD-II or J1939 vehicle telemetry data for engine diagnostic and performance data to monitor vehicle health.

Utilizing next generation GNSS location technology that supports 48 satellites from 4 different satellite constellations, the MG90 provides fast, reliable and precise vehicle location information, even in the most challenging environments. The MG90 contains an Inertial Navigation System that allows it to track without satellites, using dead reckoning algorithms integrated with the GNSS. The Inertial Navigation System continues to provide positioning information when the GNSS is unable to acquire satellites, enabling tracking through urban canyons, tunnels and underground parking.

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Network Agility

POLICY-DEFINED LINK MANAGEMENT

With its built-in policy engine, the MG90 dynamically selects the best available network, based on a customized user-defined scoring system, including variables such as time, location and vehicle speed. Utilizing traffic segmentation and quality of service (QoS) rules, the MG90 reserves bandwidth for mission critical applications, to ensure they maintain priority.

Providing seamless network handover and millisecond network switching with its cognitive wireless system, the MG90 is able to automatically sense, assess and select the best available WAN connection to provide "always-on," uninterrupted connectivity in any circumstance, preventing downtime, performance issues or dead zones.

MOBILE MULTI-NETWORK SECURITY

Together with the AirLink® Connection Manager (ACM)—an advanced mobile-optimized VPN server—the MG90 provides secure data connections and retains a static IP address across multiple WAN networks, without interruption or rebuilding VPN tunnels, and consolidates the security for all connected technologies in the vehicle area network (VAN) into a single, centralized platform. This vastly simplifies deployment and enables the enterprise to retain management control over network access and connected mobile assets.

The ACM meets industry standard security and uses standards-based protocols.

For more information on the AirLink® Connection Manager (ACM), visit sierrrawireless.com/ACM.

Advanced Network Management

NETWORK INSIGHT & CONTROL

Coupled with the AirLink® Mobility Manager (AMM), the MG90 supports a leading-edge, end-to-end network management solution to enable simplified, remote and real-time mass configuration, control and troubleshooting of all routers, connected mobile assets and mission critical applications.
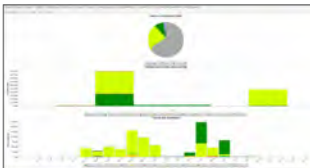
Available in the enterprise datacenter or in the cloud, the AMM seamlessly integrates with the MG90, displaying a dashboard with an up-to-date view of the entire fleet, and delivers a continuous stream of rich, real-time network data, allowing users to observe, track and examine the behaviour of hundreds of devices, networks, and connected vehicle parameters as it occurs. The AMM enables users to create custom alerts and event triggers, and offers on-demand or pre-scheduled historical reports for in-depth analysis and diagnostics including; Network Performance; Link Scoring; Coverage Maps; Trails; Vehicle Heath; Link Utilization; Availability Reports; Router Power Status.

OPERATIONS MANAGEMENT

The AMM provides fleet operations personnel with real-time visibility into vehicle location, network coverage and tracking of mobile assets.

For more information on the AirLink® Management System (AMM), visit sierrawireless.com/AMM.

PERFORMANCE STATS

LOCATION MANAGEMENT

COVERAGE MAP/ TRAILS REPORT

AMM MAP VIEW

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FEATURE	BENEFIT
Extensible, multi-network connectivity with support for single or dual LTE-Advanced Pro radios, dual radio dual concurrent 3x3 MIMO 802.11ac Wi-Fi, and 5-port Gigabit Ethernet, and a multi-band FirstNet upgrade option	• **Flexible:** modular radio design allows users to upgrade, add or switch to their choice of supported WAN and service provider • **Reduces costs:** minimizes operating and capital costs for infrastructure and communications costs by consolidating traffic over single/preferred network connections • **Scalable:** simplifies management and maintenance of field IT equipment
Single or Dual LTE-Advanced (Carrier Aggregation) Wide Area Network (WAN) supporting up to 600 Mbps downlink and 150 Mbps uplink speeds	High speed, concurrent connectivity for multiple wired and wireless devices and applications in and around the vehicle. Provides over 3x better uplink performancevs other LTE routers
FirstNet Ready including support for Band 14 (United States). Also supports and Band 20 and 28 (Europe)	Secure, dedicated connectivity for first responders and other public safety fleets
State-of-the-art LTE coverage spanning 26 LTE frequency bands worldwide, with automatic 3G fallback (HSPA, EV-DO)	Connectivity to LTE networks worldwide
Dual concurrent Gigabit Wi-Fi supports up to 1.3 Gbps, up to 128 clients, WPA2 Enterprise	High speed, concurrent connectivity for all devices and applications in the VAN, and data offload over enterprise Wi-Fi networks
Dual-SIM functionality to enable automatic failover between SIMs	Superior network connectivity and cost optimization when roaming
Serial and USB connectivity	Compatible with legacy and wired applications
One product variant for all major North American and European network operators, and one product variant for all major Asia Pacific network operators	Simplified inventory management by reducing requirements to carry multiple product variants in inventory
Automatic radio configuration based on the SIM	Increases flexibility and simplifies inventory management
Support for vehicle telemetry to collect OBD-II vehicle telemetry data and monitor engine diagnostics	Access to critical vehicle health data
Built-in vehicle ready I/O and Bluetooth for remote monitoring of auxiliary devices, such as light bars, sirens and gun racks	Advanced awareness of fleet operations
Precision Geo-location with GNSS supporting 48 satellites from 4 different satellite constellations (GPS, GLONASS, Galileo, Beidou), streaming data locally over the serial port and remotely over NMEA and TAIP protocols	Superior vehicle location accuracy available to in-field personnel and dispatch staff, and via 3rd party platforms
Sealed to meet IP64 for resistance to dust and water ingress, and exceeds the MIL-STD-810G specification for shock, vibration, temperature and humidity, with built-in surge protection and an aluminum chassis for heat dissipation	Superior reliability and uninterrupted operation in harsh vehicle environments
Leading class power supply that exceeds E-Mark, ISO 7637-2 and SAEJ1455 requirements, surviving 5V brownouts and spikes from -600 VDC to 200 VDC	Designed to perform with unpredictable and "noisy" power sources
Configurable, millisecond network switching and seamless handover across multiple network with policy defined link management	Guarantees always-on, assured connectivity to minimize downtime, increase productivity and reduce costs
Patented cognitive wireless system to sense, assess and select the best available network	
Retains a static IP address across multiple WAN networks, without interruption or rebuilding VPN tunnels, consolidating the security for all connected technologies in the vehicle area network (VAN) into a single, centralized platform using the AirLink® Connection Manager (ACM)	• **Simplified deployment:** eliminates the need for VPN software clients for individual devices and applications • **Secure:** securely connects multiple high bandwidth in-field applications and mobile assets in and around the vehicle • **Control:** enables the enterprise to retain management control over network access and connected mobile assets
End-to-end network management with remote mass-configuration, and real-time monitoring, control, and troubleshooting of all routers, connected mobile assets and mission critical applications using the AirLink® Mobility Manager (AMM)—available in the cloud or in the enterprise data center	Increases efficiency, reduces costs and supports effective maintenance and long term network performance
Advanced precision reporting for detailed analysis and diagnostics including; Network Performance; Link Scoring; Coverage Maps; Trails; Vehicle Heath; Link Utilization; Availability Reports; Router Power Status	Instant, rich network insight to enable real-time troubleshooting and network maintenance
Real-time vehicle location and mobile asset tracking	Complete visibility of entire mobile network
Market leader with over 20 years experience in cellular technology	Proven reliability and over 3 million routers and gateways deployed
Comprehensive customer support	Industry leading warranty includes, software updates and advance replacement (through participating channel partners

	MG90			
	North America & EMEA	**Asia Pacific**	**North America**	**Global**
	LTE-A		**LTE-A Pro**	
LTE CATEGORY	Cat 6		Cat 12	
Peak D/L (Mbps)	300		600	
Peak U/L (Mbps)	50		150	
4G LTE **Frequency Bands**	2100(B1), 1900(B2), 1800(B3), AWS(B4),850(B5), 2600(B7), 900(B8), 700(B12),700(B13), 800(B20), 1900(B25), 850(B26), 700(B29), TDD B41	2100(B1), 1800(B3), 850(B5), 2600(B7), 900(B8), 850(B18), 850(B19), 1500(B21), 700(B28), TDD 38, TDD 39, TDD 40, TDD 41	2100(B1), 1900(B2), 1800(B3), AWS(B4), 850(B5), 2600(B7), 900(B8), 1800(B9), 700(B12), 700(B13), 700(B14), 850(B18), 850(B19), 800(B20), 850(B26), 700(B29), 2300(B30), 1500(B32), TDD B41, TDD B42*, TDD B43*, TDD B46*, CBRS B48*, 1700(B66) *Future Variant	2100(B1), 1900(B2), 1800(B3), AWS(B4), 850(B5), 2600(B7), 900(B8), 1800(B9), 700(B12), 700(B13), 850(B18), 850(B19), 800(B20), 850(B26), 700(B28), 700(B29), 2300(B30), 1500(B32), TDD B41, TDD B42*, TDD B43*, TDD B46*, CBRS B48*, 1700(B66) * Future Variant
Public Safety LTE Bands	N/A	N/A	FirstNet Band 14 (United States) **FIRSTNET READY**	Band 26, 28
2G/3G WCDMA/HSPA+/EVDO **Frequency Bands**	2100(B1), 1900(B2), 1800(B3), AWS(B4),850(B5), 900(B8)	2100(B1), 850(B5), 800(B6), 900(B8), 1700(B9), 850(B19) TD-SCDMA: B39	2100(B1), 1900(B2), AWS(B4), 850(B5), 800(B6), 900(B8), 1700(B9), 850(B19)	2100(B1), 1900(B2), AWS(B4), 850(B5), 800(B6), 900(B8), 1700(B9), 850(B19)
APPROVALS				
Regulatory	FCC, IC, PTCRB, R&TTE, GCF, CE	RCM, JRF/JPA	FCC, IC, PTCRB, GCF	CE, RED, RCM
Carrier	Verizon, ATT, Sprint, Rogers, Telus, Bell, SouthernLINC		AT&T, Verizon	
PART NUMBERS	1102695 (Single) 1102716 (Dual)	1103239 (Single) 1103240 (Dual)	1103981 (Single) 1103982 (Dual)	1103980 (Single) 1103983 (Dual)

	Specification		**Specification**
HOST INTERFACES	5 Gigabit RJ-45 Ethernet ports	**LAN (ETHERNET/USB/ WI-FI/BLUETOOTH/SERIAL)**	DHCP Server VLAN
	2 USB 3.0 type-A ports		Virtual BSSIDs
	1 RS-232 serial port (DB-9 connector)		PPPoE
	1 Auxiliary RJ-45 Input/Output port		AP Isolation
	4 SIM Slots (Dual SIM per radio)	**SATELLITE NAVIGATION (GNSS)**	Dedicated 48 channel GNSS Receiver supporting GPS, GLONASS, BeiDou, Galileo
	5 SMA antenna connectors (2 cellular, 2 diversity, 1 GNSS)		Tracking Sensitivity: -162 dBm
	7 RP-SMA antenna connectors (3x3 Wi-Fi WAN, 3x3 Wi-Fi AP, 1 Bluetooth)		Reports (Update Rate 1Hz): NMEA, TAIP
SECURITY	AAA: 802.1x/Radius authentication with Wi-Fi and Ethernet		Reliable Store and Forward via serial, TCP or UDP
	Firewall: Port forwarding and filtering		Inertial Navigation Sensors (Accelerometer and Gyro)
	WLAN Encryption: WPA2 Personal/Enterprise	**NETWORK MANAGEMENT**	Airlink Mobility Manager (AMM): available as cloud based service or as licensed enterprise application
	WLAN MAC Address filtering		• Status dashboard showing at-a-glance fleet health
	FIPS 140-2		• Remote management, configuration and software updates
WI-FI	Dual Radio, dual concurrent 3x3 MIMO 802.11 b/g/n/ac		• Location-based analytics and diagnostics: Network Coverage Maps and Trails; Link Utilization; Bandwidth Consumption
	Dual Band 2.4/5 GHz (each radio)		• Configurable geo-zone based event monitoring and alerting
	Support for 128 clients		• Live vehicle location tracking
	WWPA2 Enterprise		• Optional fleet operations pack: vehicle diagnostics reporting and mobile asset tracking
	Default mode: Wi-Fi as WAN and Wi-Fi built-in vehicle AP	**VEHICLE TELEMETRY**	OBD II/ J1939/ J1708 interface over serial (optional)
	High output power 21 dBm (per channel)		Diagnostic real time alerts/reports (via AMM)
	Captive Portal		
INPUT/OUTPUT	Configurable I/O GPIOs (5 pins total – 4 DB9 & 1 Power connector)		
	Digital input: 0-36 VDC with optional pullup (Dry contact sense input)		
	Digital Open Collector Output > sinking 500 mA		

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AirLink® MG90 High Performance Multi-Network Vehicle Router

	Specification
ENVIRONMENTAL	Operating Temperature: -30°C to +70°C / -22°F to +158°F
	Storage Temperature: -40°C to +85°C / -40°F to +185°F
	Humidity: 95% RH @ 60C
	IP64 rated ingress protection
	MIL-STD-810G conformance to shock, vibration, thermal shock, and humidity
POWER	Input/Operating Voltage: 7 to 36 VDC
	Power modes: ON 30W (2.5A @12V); Standby 135mW (11mA@12V)
	Built-in protection against voltage transients including 5 VDC engine cranking
	Ignition Sense with time delay shutdown
NETWORK AND ROUTING	Network Address Translation (NAT)
	LAN Segmentation
	WAN/LAN Connection Policy Management
	QoS: Application/ Traffic Priority Queuing
	Load Balancing Over Multiple WAN Links
	WAN Monitors: Connection Failure Recovery
	Configurable MTU size
	Multiple LAN Support
	Customize transmission buffer size
	Static Routing
	WAN Ethernet
VPN	Integrated with ACM VPN Server
	IPsec protocol with IKEv1/IKEv2
	Encryption: 3DES/AES128/AES256
	Hashing: MD5/SHA1/SHA256/SHA512
	Key Exchange: DHGroup2/5/14/15/16/17
	Support LAN to LAN and Host to LAN
	Up to 10 concurrent tunnels per link
	MOBIKE protocol
	IP compression
	Full/Split Tunnel
	Dead Peer Detection (DPD)

	Specification
DIMENSIONS	272mm x 220mm x 60mm (10.71in x 8.66in x 2.36in)
	Weight: 2.4kg / 5.3 lb
INDUSTRY CERTIFICATIONS	Safety: IECEE Certification Bodies Scheme (CB Scheme), UL 60950
	Vehicle Usage: E-Mark (72/245/EEC, 2009/19/EC), ISO7637-2, SAE J1455 (Shock & Vibration)
	Environmental: RoHS2, REACH, WEEE
	Rail Usage: EN50155 (Rolling Stock)
RELIABILITY	MTBF: 23.22 years (Telcordia SR-332 Issue3 Method1)
SUPPORT AND WARRANTY	3-year standard warranty; Optional 2-year warranty Extension
	Unrestricted device software upgrades
ACCESSORIES	In the box: DC Power cable, Quick Start Guide and SMA wrench
	Mounting bracket (6001024)
	AC Adapter (6001023)
	I/O Cable (6001095)
	6-in-1 Dome Antenna (6001121)
	3-in-1 Wi-Fi Antenna (6001143)
	See website for more antenna options

Alcom electronics

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