INDUSTRIAL CONNECTIVITY / TECHNICAL DATASHEET

CM520-59 Series

Two-port industrial Wi-Fi gateway



Original source photograph



Original source photograph

Source filename 260525 | standard edition | English review edition | 18 October 2026

REVIEW EDITION - translated from the supplied Chinese document. Source inconsistencies and optional features are retained. See the final review checklist.

Inside this document

Overview and configuration / Functions / Interfaces / Radio specifications / Power and mechanics / Applications / Company profile / Source review notes

Product overview and model selection

Source pp. 1-2

The CM520-59 is an industrial 5G/4G gateway family with an open software architecture, metal enclosure, two RJ45 Ethernet ports and 2.4 GHz Wi-Fi. Local Wi-Fi and 3G/4G/5G WAN access use VPN tunnels and Wi-Fi authentication for mobile broadband connectivity.

An industrial MIPS communications processor and embedded real-time operating system implement protocols from the logical link layer through the application layer. Listed functions include PPTP + L2TP + MPPE and IPsec + GRE, IPTABLE firewall, static/dynamic routing, PPPoE, PPP server/client, DHCP server/client, DDNS, SNAT/DNAT, DMZ, web configuration, APN/VPDN, power-on dialing, link maintenance, scheduled online/offline operation and power switching.

Applications include electronic bus-stop signs, parcel lockers, self-service terminals, vehicle Wi-Fi, ATM monitoring, financial/postal transactions, smart grids, transport, environmental/fire/security/water monitoring, surveying, industrial control, oilfields/mines, earthquakes, weather, instruments and water/electricity/gas meter reading.

Model selection

Model	Source-listed cellular	Modem	SIM slots
CM520-59N	Wired access	No cellular modem / SIM	None
CM520-59F	2G/3G/4G	1 x 4G	1
CM520-59FS-GC	2G/3G/4G/5G	1 x 5G	1
CM520-59FB	2G/3G/4G	1 x 4G	2
CM520-59FBS-GC	2G/3G/4G/5G	1 x 5G	2

Shared interface selection

Parameter	Source specification
Interfaces	Ethernet and terminal block; RS232; optional RS485.
Variant scope	59N is the wired-access variant without SIM support. Cellular generation and SIM count for other variants follow their model rows; no Rel-16 or 5G LAN claim is supplied in this edition.

Advantages and integration

Source p. 2

- 5G SA/NSA; 4G Cat 1/4/6 options with stated 3G/2G fallback. Model applicability depends on the modem.
- Online-maintenance technology interacts with the base station to maintain connectivity. The source claims reconnection within tens of milliseconds, followed by module restart or a complete device power cycle if needed. This timing is a source claim without test conditions: NEEDS_VERIFICATION.
- Local Wi-Fi and cellular WAN; wired/wireless backup and optional dual-SIM backup. Selection-table dual-SIM variants use a single modem.
- Web and SNMP management, remote configuration and upgrades, router OTA and user-application OTA for large deployments.
- Python custom application development; Linux/OpenWrt system development.
- Optional industrial protocols: Modbus TCP, Modbus RTU, EtherNet/IP and Modbus TCP Slave.
- Optional IoT platforms: Alibaba Cloud, Tencent Cloud, power-industry platforms and Amazon AWS; centralized management and batch configuration.
- PPTP, L2TP, IPsec and OpenVPN; TCP/IP, UDP and ICMP; DMZ isolation, virtual IP mapping, MAC-IP binding, WAN access restrictions and user privileges.
- Three-layer system protection adds Virtual Man Watch (VWM) monitoring to software protection and the CPU watchdog timer (WDT). On a network or interference-related exception, the device can perform a full reset, intended to provide recovery without an on-site power cycle.
- High-speed industrial CPU for protocol conversion and recovery from false-online, unresponsive or crashed states.
- The source reports a 3000 V electrical test and lists CE, FCC, RoHS, E-mark, CCC, Mo'er high/low-temperature tests and EMC testing. Certificate identifiers and model-specific scope are not supplied.

Industrial design and detailed functions

Source pp. 3-4

- Industrial 32-bit CPU, 650 MHz, 32 KB D-cache and 64 KB I-cache; industrial wireless module; PCB following stated 3H/3W principles and selected components.
- Ethernet 1.5 kV isolation; metal shielding, enclosure/system isolation, lightning-protection design and IP30.
- 7-36 V in this design section; the power table instead states 7-32 V DC input with reverse-polarity, overvoltage and overcurrent protection. SIM/UIM and RS232 ESD protection are stated as 15 kV.
- Three-layer system protection adds Virtual Man Watch (VWM) monitoring to software protection and the CPU watchdog timer (WDT). On a network or interference-related exception, the device can perform a full reset, intended to provide recovery without an on-site power cycle.
- The 1.8 V / 3 V / 5 V push-type UIM/SIM interface includes 15 kV ESD protection.
- The source states that wireless modules have CGD, FCC or CE certification. "CGD" is reproduced as written; the certification name and model-specific scope need verification.
- High-speed protocol processing addresses false-online and unresponsive states. MMU memory management and a complete TCP/IP stack are described. Flash 128 Mbit; SDRAM 1 Gbit.

- The source reports a 3000 V electrical test and favorable EMC/EMI performance, CE certification and EMC testing. It also cites a 2010 customer-satisfaction supplier award. Test conditions, certificates and the award date require source review before publication.
- PPTP/L2TP/IPsec; TCP/IP/UDP/ICMP; online detection/maintenance and automatic redial; IPTABLES firewall and packet filtering.
- DHCP/DHCPD; SNAT/DNAT; DMZ; APN/VPDN; SSH; one RS232 and optional RS485 for TCP/UDP DTU transmission; factory reset; local configuration and upgrades.
- Wired WAN, cellular or Wi-Fi Internet access; PPPoE, DHCP or static IP; intelligent link backup; edge computing for data collection, processing, execution and real-time analysis.
- Local system and serial-output logs; MQTT, Modbus TCP/RTU conversion, Ntrip Client/Server and HJ212-2005/2017.

Commissioning and interfaces

Source pp. 4-5, 8

The source labels these as reference interface views; exact appearance is subject to requirements discussion.

- Factory default settings support quick commissioning with few or no parameter changes, depending on the installation.
- A graphical configuration tool provides quick configuration.
- The product manual provides quick-configuration instructions.
- SYSLOG output supports inspection of operating logs and fault analysis. Serial debugging software provides different diagnostic-output levels to help locate problems.
- Network options listed: GSM, GPRS, EDGE, WCDMA, EVDO, TD-SCDMA, LTE TDD/FDD and 5G SA/NSA; applicability depends on the modem.



Front interfaces



Rear interfaces



Top view

External interfaces

Parameter	Source specification
Ethernet	2 x 10/100 Mbps Base-T; IEEE 802-3 / 802-2 as printed; 1.5 kV isolation.
WAN / LAN	Default two LAN ports; configurable as one WAN plus one LAN, or two LAN ports. WAN is switchable to LAN. These are two physical ports, not three.
Serial	1 RS232, optionally configured as RS485; specify when ordering. Data bits: 7/8; stop bits: 1/2; parity: none/odd/even; 300-4000000 bit/s; no, hardware or software flow control.
Cellular / Wi-Fi antennas	SMA female, 50 ohm; cellular extension leads optionally 3/5/10 m.
Positioning, optional	GPS and BeiDou.
SIM/UIM	Full-size push-type card interface, 1.8/3/5 V, 15 kV ESD protection; slot count depends on model.
Power	Standard round power socket.
Indicators	POWER, ONLINE and WIFI.
RESET	Restore factory defaults.

Accessories shown

Parameter	Source specification
Power	Power supply with terminal lead
Network	Ethernet cable
Antennas	Optional antenna set

Software specifications

Source pp. 5-7

Network connectivity and IP functions

Parameter	Source specification
Network access	APN / VPDN
Authentication	CHAP / PAP / MS-CHAP / MS-CHAPv2
Radio system	See cellular radio specifications.
LAN protocols	ARP / Ethernet
IP applications	Ping, traceroute, DHCP server/relay/client, DNS relay, DDNS, Telnet, SSH, HTTPS, TFTP, FTP and SFTP.
Routing	Static and dynamic routes.

Security and reliability

Parameter	Source specification
Firewall	Stateful packet inspection (SPI), denial-of-service (DoS) protection, multicast/Ping filtering and access-control lists (ACL).
Address translation	NAT, PAT, DMZ, port mapping and virtual servers.
Users / AAA	User privilege levels; local authentication, RADIUS, TACACS+ and LDAP.
Data security	CA support, including automatic application; SM1/SM2/SM3/SM4 algorithms.
Backup	VRRP, interface backup and optional dual-SIM backup; depends on ordered model.
Link monitoring	Heartbeat checks and automatic reconnection.
Watchdog	Operating self-check and fault self-recovery.

Management and optional integration

Parameter	Source specification
WLAN	Marked optional in the software-table heading; confirm ordered configuration.

Parameter	Source specification
Configuration	Local or remote HTTPS, Telnet and SSH.
"Upgrade method" source row	The source actually lists local/remote log output and log retention after power loss. Heading/content mismatch: NEEDS_VERIFICATION.
SMS, optional	Status inquiry, configuration and restart.
On-demand dialing	Data-triggered or SMS-triggered connection; scheduled online/offline operation.
Management	SNMP and power-industry TR-069.
Development / platforms, optional	Python custom development; AWS, Tencent Cloud, power-industry platforms, Alibaba Cloud; central and batch management.
Industrial protocols, optional	Modbus TCP, Modbus RTU, EtherNet/IP and Modbus TCP Slave.

Additional software-table entries

Parameter	Source specification
Optional WLAN	IEEE 802.11ac/a/b/g/n; open-system/shared-key/WPA/WPA2 authentication; WEP/TKIP/AES encryption. Detailed Wi-Fi table lists only b/g/n: NEEDS_VERIFICATION.
WLAN modes	AP and Client; detailed table also lists repeater.
DM / diagnostics	Centralized management and batch configuration; Ping, traceroute and Sniffer packet capture.

Security and reliability additions

Parameter	Source specification
Data security	CA support, including automatic application as stated; SM1/SM2/SM3/SM4 cryptographic algorithms.
VPN	IPsec, L2TP, PPTP, GRE, N2N, L2TP over IPsec, GRE over IPsec, EOIP and OpenVPN.
Hardware encryption	State Grid, China Southern Power Grid and Chinese commercial-cryptography encryption support, as stated. Exact algorithms, modules and approvals require confirmation.
Bandwidth aggregation	Two-SIM and three-SIM bandwidth aggregation are claimed in the software table. Hardware and service prerequisites are unspecified; this is not inferred from a single-modem dual-SIM selection row. NEEDS_VERIFICATION.

Parameter	Source specification
Link health	Online maintenance, heartbeat detection and automatic reconnection.
Management	SNMP and power-industry TR-069 management; DM central management and batch configuration.
DHCP / translation	DHCP server/client; SNAT/DNAT port mapping; DMZ.

Communication, Wi-Fi and access functions

Parameter	Source specification
Transport	5G/4G/3G; Ethernet-to-cellular; Ethernet-to-Wi-Fi; serial/RS485-to-cellular, Wi-Fi and Ethernet.
Transparent services	DTU and MQTT transparent transfer; APN/VPDN; VXLAN.
Link backup	Wired/cellular mutual backup; Wi-Fi/cellular primary/backup.
Health checks	Online maintenance and DTU LAN-client heartbeat packets.
Radio restrictions	Cellular frequency locking and SIM locking, as named in source.
Wi-Fi access	Client-count limits and client isolation.
Multiple SSIDs	Up to four Wi-Fi names, each with an independent MAC address.
Identity / controls	MAC and serial-number persistence; access restrictions; port alarms.
Positioning	BeiDou-only, GPS-only and combined GPS/BeiDou. Listed here without optional marking; physical interface table marks positioning optional. Confirm fitted hardware.

Optional customized and platform functions

Parameter	Source specification
Three-link backup	Wired, Wi-Fi and cellular links as mutual primary/backup.
IP traffic splitting	Distribute flows by source/destination IP across network links, servers or paths to reduce congestion and improve utilization/stability.
Wi-Fi diagnostics	Client signal-strength monitoring.
Session records	Online/offline timestamps for wired, cellular and Wi-Fi users.

Parameter	Source specification
TF security	Software encryption for TF cards. Physical TF-slot availability depends on hardware.
Product customization	Customer-customized product log and model identifier, as written; whether log means logo NEEDS_VERIFICATION.
Central platform	Remote parameters, OTA, remote multimedia updates (music/video/advertising), allow/block lists, traffic and online statistics, radio-system statistics, SMS/WeChat/Wi-Fi authentication, traffic and speed controls, time limits, Internet-behavior controls, Wi-Fi probe and multi-level user management. Backend/platform scope requires configuration review.

Optional development and industrial protocols

Parameter	Source specification
Development / clouds	Python custom development; Amazon AWS, Alibaba Cloud, Tencent Cloud and power-industry platforms.
Industrial protocols	Modbus TCP; Modbus TCP/RTU conversion; Modbus RTU; EtherNet/IP; Modbus TCP Slave; MQTT; Ntrip Client and Ntrip Server.
Power-industry protocols	101/104, 61850 and TR-069. Identifiers are translated as written without inferring unspecified editions or conformity.
Environmental protocol	HJ212-2005/2017.

Radio and Wi-Fi

Source pp. 8-9

Cellular parameters

Parameter	Source specification
Wireless module	Industrial-grade module.
5G SA/NSA bands	n1 / n2 / n3 / n5 / n7 / n8 / n20 / n28 / n41 / n66 / n71 / n77 / n78 / n79
TDD frequency group	LTE TDD: 2600/2300 MHz; UMTS: 2100/900 MHz; GSM: 850/900/1800/1900 MHz; UMTS Rx diversity: 2100/900 MHz.
FDD frequency group	LTE FDD: 2600/2100/1800/DD800 MHz (DD800 reproduced as printed); UMTS and UMTS Rx diversity: 2100/900 MHz.

Parameter	Source specification
Radio schemes	NR/LTE/UMTS/HSPA+/HSDPA/HSUPA/WCDMA/EDGE/GSM
5G NR rate	DL 3.4 Gbps / UL 350 Mbps. Modem theoretical figures, not Ethernet throughput.
TDD rates	LTE TDD: DL 68 Mbps / UL 17 Mbps; DC-HSPA+: DL 42 Mb/s (Category 24); HSPA+: DL 28 Mb/s (Category 18); HSDPA: DL 14.4 Mb/s (Category 8); HSUPA+: DL 5.76 Mb/s (Category 6), as printed; WCDMA CS: UL/DL 64 kbps; WCDMA PS: UL/DL 384 kbps.
FDD rates	LTE FDD: DL 100 Mbps / UL 50 Mbps; other DC-HSPA+, HSPA+, HSDPA, HSUPA+ and WCDMA values are the same as the TDD table.
Transmit power	LTE: 23 dBm; WCDMA/HSDPA: 24 dBm.
Receiver sensitivity	<-109 dBm
Source-listed module functions	Data, voice, SMS and fax; actual hardware/firmware applicability NEEDS_VERIFICATION.
Power private network	1.8 GHz power-industry private-network bands and integrated public/private modules.
Overseas options	The source claims broad international coverage; specify country and required bands so an appropriate optional modem can be selected. No universal band or certification claim is inferred.

Wi-Fi

Parameter	Source specification
Module	Integrated chipset Wi-Fi module.
Standards / rates	802.11 b/g/n; listed rates 6/9/12/18/24/36/48/54/450 Mbps, maximum 600 Mbps as printed. The software table lists ac/a/b/g/n. Exact standard/rate and band scope NEEDS_VERIFICATION.
Encryption	WEP, WPA and WPA2; hardware security engines listed as 802.11i 4.0, TKIP, AES and CCMP.
Modes	AP and repeater.
Coverage claim	Up to 100 m outdoors without obstructions; conditions not specified. NEEDS_VERIFICATION.

Hardware, power and mechanics

Source pp. 10-11

Hardware

Parameter	Source specification
CPU	650 MHz industrial embedded CPU with MMU.
Flash	128 Mbit, described as expandable; this edition does not state a maximum.
SDRAM	1 Gbit, described as expandable.

Power

Parameter	Source specification
DC input	7-32 V DC in power table, with reverse-polarity, overvoltage and overcurrent protection. Design section instead gives 7-36 V: NEEDS_VERIFICATION.
Standard supply	9 V DC / 1.33 A; varies by model.
Communication current	Average 390 mA at 9 V DC; network-registration peak 1.0 A at +9 V DC.
Standby	Average <200 mA at +9 V DC.

Environment and mechanics

Parameter	Source specification
Operating temperature	-35 to +75 °C
Storage	-40 to +80 °C
Humidity	95%, non-condensing.
Enclosure	Metal; shielding, isolated enclosure/system, lightning-protection design and IP30.
Body	92 x 89 x 25 mm, excluding antennas and mounting hardware.
Package	350 x 215 x 88 mm
Weight	0.569 kg, excluding antennas and adapter.
Shock / vibration / drop	IEC 60068-2-27 / IEC 60068-2-6 / IEC 60068-2-32

Source-listed EMC parameters

Parameter	Source specification
ESD	EN 61000-4-2, level 2
Radiated electric field	EN 61000-4-3, level 2
Electrical fast transient	EN 61000-4-4, level 2
Surge	EN 61000-4-5, level 2
Conducted disturbances	EN 61000-4-6, level 2
Power-frequency magnetic field	EN 61000-4-8, level 2.

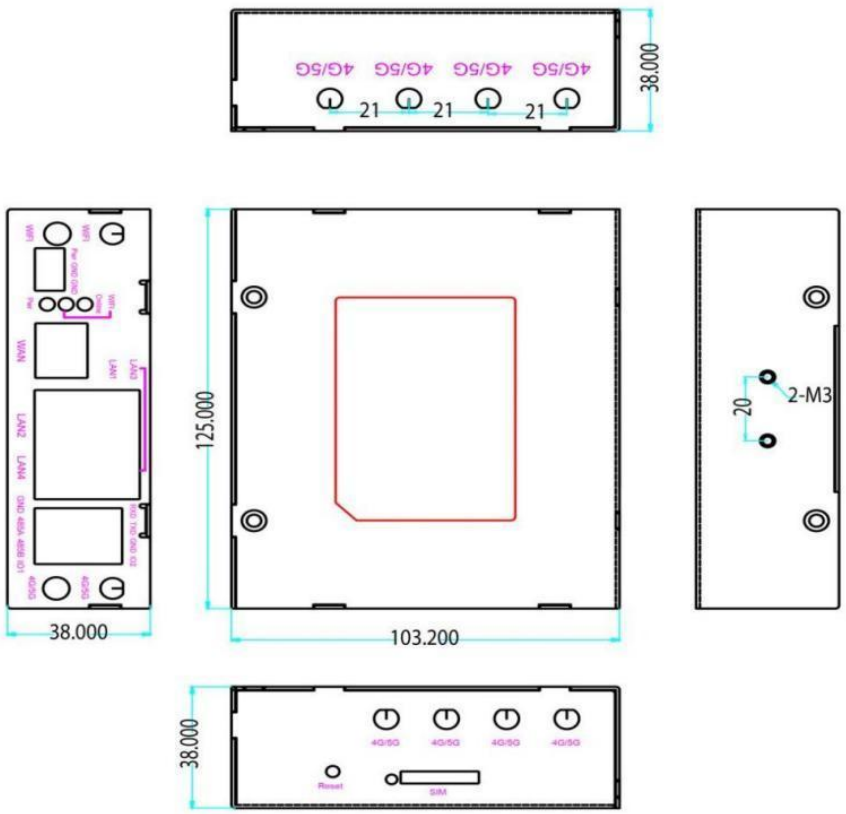
Source-listed certificates

Parameter	Source specification
Domestic	MIIT network-access permit, CRCC, Ministry of Housing and Urban-Rural Development interoperability certificate, CCC, radio-committee certificate, EMC and high/low-temperature testing.
International	CE, FCC, E-mark, CB and RoHS.
Scope	Certificate numbers, validity and exact model scope NEEDS_VERIFICATION.

Installation drawing - source mismatch

Source p. 11

NEEDS_VERIFICATION: the source body table gives 92 x 89 x 25 mm and two Ethernet ports, but its attached drawing labels 125 x 103.2 x 38 mm and depicts five RJ45 connector outlines. This conflicting source figure is retained for traceability only, not as an approved installation drawing for this model.



Original conflicting source figure; obtain the correct model-specific drawing before installation.

Application architectures

Source pp. 12-13

Manufacturing connectivity

Parameter	Source specification
Field equipment	Injection-molding machines connected through PLCs and wireless routers.
Communication	Local Wi-Fi / mobile monitoring and 4G/5G operator access through a firewall.
Factory services	Machine operating data and fault information; WeChat server and factory service network.

Traffic-control / electronic policing

Parameter	Source specification
Signals	Camera control and video signals via industrial gateway.
Control	Control-code distributor and control keyboard.
Video	Video distributor, monitor, recorder, video matrix, screen splitter and projection controller.

Distribution-room environmental monitoring

Parameter	Source specification
Users	Mobile services, centralized control, electricity supervision, power bureau and maintenance staff.
Platform	Power private network; site management platform with firewall, management server and desktop controller; LAN to subsystems.
Inspection robot	Rail-mounted inspection robot with CAIMORE routing equipment.
Power / environment	Temperature/humidity, gas, standing water, illuminance, alarms, fan/water-level/lighting control.
Security	Video surveillance and access control.
Online monitoring	Partial discharge, switchgear temperature and electrical measurements.

Company profile and historical recognition

Source p. 14

The following company information is translated from the supplied document and describes the source-era profile. Awards, counts and certifications have not been updated to the present day. English award names are descriptive translations.

Company honors

Year	Recognition stated in source
2011	Named a "Best Supplier for Customer Satisfaction in China's Industrial Control Industry"; the company's GPRS DTU received an "Innovative Product Award".
2012	Became a member of China Quality Long March.

Year	Recognition stated in source
2013	Became a member of the Strategic Alliance for Technological Innovation in the Intelligent Power Transmission and Distribution Equipment Industry.
2014	Recognized as an innovative pilot enterprise. The Zhanjiang Wi-Fi coverage project received a "Model Engineering Project Award" at the 13th China Automation Annual Conference.
2015	Video products were named among the "Top Ten Video Transmission Enterprises" by China Industrial Control and by Huaqiang Security Network. The noise-monitoring project received a "Model Engineering Project Award" at the 14th China Automation Annual Conference.
2016	The video product line was named a "2015-2016 Quality Supplier in China's Security Industry" by Huaqiang Security Network. Charging-pile communication equipment received a "Best Charging Equipment Component Supplier" award.
2016	Received a product gold award at the 7th Guangzhou International New Energy Automobile Industry Exhibition. The organizing committee of the 3rd China Good Wi-Fi event named CAIMORE a "2016 Best Wi-Fi Industry Application Solution Provider".
2018	Industrial routers and DTUs were named among China's top ten brands in their respective categories. Recognized as a key reserve enterprise for public listing in Xiamen.
2019	Recognized as a key reserve enterprise for public listing in Xiamen and Fujian Province. Selected as a DICT solution partner of China Telecom Corporation Limited, Shanghai Branch.
2020	Recognized as a key reserve enterprise for public listing in Xiamen.

Company qualifications

Parameter	Source specification
High-tech enterprise	Recognized nationally as a high-tech enterprise in 2009.
Dual-software enterprise	Recognized nationally as a dual-software enterprise in 2010.
Management systems listed	ISO 9001:2015 quality management; ISO 14001:2015 environmental management; ISO 45001:2018 occupational health and safety management.
Intellectual property	14 patented technologies for device stability and 39 software copyright certificates.
Regional offices	6 regional offices across China, providing nearby customer service.
Registered capital	RMB 20.58 million. The source identifies CAIMORE as a high-tech enterprise supported by Xiamen.

Parameter	Source specification
Industry experience	15 years of industry R&D accumulation and application experience, as stated in the source.

Contact information

Parameter	Source specification
Company	Xiamen CAIMORE Communication Technology Co., Ltd.
Address as printed in source	Units 7-8, Room 802, Building C10, Software Park Phase III, Xiamen, China
Telephone	+86-592-5902655
Website / email	https://www.caimore.com / caimore@caimore.com

Translation and source review notes

Editorial review; not additional manufacturer specifications

English review edition translated from the supplied Chinese source. Optional features and variant differences are retained. Manufacturer images and numeric drawings preserve the original hardware details; application architectures are reformatted in English. NEEDS_VERIFICATION marks an unresolved source ambiguity. No absent specification has been invented.

Review checklist

Source / topic	Review note
Source file substitution	The user-listed filename with (1) suffix was unavailable. Translation uses the readable same-base file without (1), revision 260525. Its actual source path and hash are recorded; byte identity to the unavailable file is not asserted.
Edition / variant scope	Standard 260525 file adds 59N wired-only/no-SIM variant. Do not inherit Rel-16 or 5G LAN from the separate R16 edition.
Input voltage	Design section 7-36 V conflicts with power table 7-32 V. Both are retained; maximum approved voltage NEEDS_VERIFICATION.
Aggregation / positioning / TF	Generic software claims two-/three-SIM aggregation; selection table specifies single-modem configurations and no three-SIM hardware. Positioning is optional in interfaces. TF encryption appears without a physical TF-slot specification. Confirm exact hardware and firmware.
Wi-Fi / dimensions	Source rate table lists b/g/n and up to 600 Mbps, while software lists ac/a/b/g/n. Verify exact radios/rates and whether drawing/reference photos match 92 x 89 x 25 mm body and 0.569 kg weight.
Expanded features	Cryptographic algorithms, utility protocols, platform/customization functions, recovery/range claims, DD800, HSUPA+ wording and certification scope require model-specific verification. Product log may mean logo.
Installation drawing - critical	The 125 x 103.2 x 38 mm / five-RJ45 drawing conflicts with the 92 x 89 x 25 mm / two-port table. A corrected model-specific installation drawing is required.
Source-era statements	Company office, patent, software-copyright and years-of-experience counts differ among the supplied documents. Each translation preserves its own source counts rather than combining them into a new current company profile.
Certificates and historic awards	Certification and award statements are translations of source material, not independent verification. No certificate numbers were supplied; CGD and Mo'er naming are not expanded into assumed issuing bodies.
Publication status	This English review edition is prepared for technical/editorial review. Resolve the identified source discrepancies before replacing the review status with a public website release.