LANCOM
SYSTEMS

LCOS 10.50 (HW Rel. R2)

lancom-systems.com

LANCOM L-321agn Wireless

Single-radio business-class 11n WLAN access point with up to 300 Mbps

The LANCOM L-321agn Wireless is a powerful 11n WLAN business-class access point. It optionally provides professional and reliable WLAN to 11n clients in the 2.4-GHz or 5-GHz band. An ideal combination for professional 300 Mbps WLAN in the business field.

→ Single operation WLAN – optional operation at 2.4 or 5 GHz with up to 300 Mbps with IEEE 802.11n
→ Dynamic WLAN optimization thanks to LANCOM Active Radio Control (ARC)
→ Powerful WLAN diagnostics with Spectral Scan
→ Operation via LANCOM Management Cloud, WLAN controller or stand-alone
→ Easy and secure integration of external users with the Public Spot Option

LCOS 10.50 (HW Rel. R2)

LANCOM
SYSTEMS

lancom-systems.com

LANCOM L-321agn Wireless

Single Operation Wi-Fi with up to 300 Mbps

The LANCOM L-321agn Wireless is a powerful 11n WLAN business-class access point. It provides 11n clients optionally in the 2.4-GHz frequency band or 5-GHz band with 300 Mbps WLAN.

Active Radio Control for dynamic radio-field optimization

The LANCOM L-321agn Wireless supports the WLAN optimization concept LANCOM Active Radio Control. This intelligent combination of innovative features included with the LCOS operating system – such as Adaptive Noise Immunity, RF Optimization, and Client Steering – sustainably increases WLAN performance and supports administrators with professional tools for WLAN management.

Powerful WLAN diagnostics with Spectral Scan

The LANCOM L-321agn Wireless uses Spectral Scan to search the surrounding radio field for sources of interference. This professional tool for efficient WLAN troubleshooting is a combination of hardware and software features. It identifies and graphically represents sources of interference, so helping the administrator to initiate countermeasures.

LANCOM security for wireless networks

With numerous integrated security features, such as IEEE 802.1X, the LANCOM L-321agn Wireless provides optimal security for networks. As a result, employees and visitors all benefit from security policies in the network.

Zero-touch deployment

The LANCOM LN-321agn Wireless can be versatilely operated: Managed via the LANCOM Management Cloud it is integrated into a comprehensive, automated network orchestration, based on Software-defined Networking technology. It can also be operated via a LANCOM WLAN controller or be applied in stand-alone operation.

Secure integration of external users

In combination with the LANCOM Public Spot Option, the LANCOM L-321agn Wireless is ideal for operating hotspots. Users benefits from a hotspot that is secure and easy-to-use, while hotspot operators can be sure that their own network remains separate from the hotspot.

Maximum future viability

LANCOM products are designed for a service life of several years and are equipped with hardware dimensioned for the future. Even reaching back to older product generations, updates to the LANCOM Operating System – LCOS – are available several times a year, free of charge and offering major features.

LANCOM
SYSTEMS

LCOS 10.50 (HW Rel. R2)

lancom-systems.com

LANCOM L-321agn Wireless

WLAN product specifications

Frequency band 2.4 GHz or 5 GHz	2400-2483.5 MHz (ISM) or 5150-5825 MHz (depending on country-specific restrictions)
Data rates IEEE 802.11n	300 Mbps according to IEEE 802.11n with MCS15 (fallback to 6,5 Mbps with MCS0). Compatible to IEEE 802.11a/n, IEEE 802.11g/n, IEEE 802.11b/g/n or IEEE 802.11b/g compatibility mode or pure IEEE 802.11n, pure IEEE 802.11a, IEEE 802.11g or pure IEEE 802.11b mode and data rates selectable
Data rates IEEE 802.11a/ h	54 Mbps (fallback to 48, 36 , 24, 18, 12, 9, 6 Mbps, Automatic Rate Selection), fully compatible with TPC (adjustable power output) and DFS (automatic channel selection, radar detection) and data rates selectable
Data rates IEEE 802.11b/g	54 Mbps to IEEE 802.11g (fallback to 48, 36, 24, 18, 12, 9, 6 Mbps, Automatic Rate Selection) compatible to IEEE 802.11b (11, 5.5, 2, 1 Mbps, Automatic Rate Selection), IEEE 802.11b/g compatibility mode or pure IEEE 802.11g or pure IEEE 802.11b and data rates selectable
Range IEEE 802.11a/b/g *	Up to 150 m (up to 30 m in buildings)
Output power at radio module, 5 GHz	IEEE 802.11a/h: +15 dBm @ 6 up to 36 Mbps, +14 dBm @ 48 Mbps, +12 dBm @ 54 Mbps IEEE 802.11n: +15 dBm @ (MCS0/8, 20 MHz), +7 up to +10 dBm @ (MCS7/15, 20 MHz), +14 dBm @ (MCS0/8, 40 MHz), +6 up to +9 dBm @ (MCS7/15, 40 MHz)
Output power at radio module, 2.4 GHz	IEEE 802.11b: +14dBm @ 1, 2, 5.5 and 11 Mbps, IEEE 802.11g: +17dBm @ 6 up to 36 Mbps, +16dBm @ 48 and 54 Mbps, IEEE 802.11n: +16dBm @ (MCS0/8, 20 MHz), +15 dBm @ (MCS7/15, 20 MHz), +15 dBm @ (MCS0/8, 40 MHz), +14 dBm @ (MCS7/15, 40 MHz)
Max. allowed radiation power (EIRP), 5 GHz	IEEE 802.11a/h: Up to 30 dBm / 1000 mW EIRP (depending on national regulations on channel usage and subject to further obligations such as TPC and DFS)
Max. allowed radiation power (EIRP), 2.4 GHz	IEEE 802.11b/g: Up to 20 dBm / 100 mW EIRP (transmission power control according to TPC)
Minimum transmission power	Transmission power reduction in software in 1 dB steps to min. 0.5 dBm
Receiver sensitivity 5 GHz	IEEE 802.11a/h: -98 dBm @ 6 Mbps, -81 dBm @ 54 Mbps, IEEE 802.11n: -94 dBm @ (MCS0, 20 MHz), -76dBm @ (MCS 7, 20 MHz), -92 dBm @ (MCS0, 40 MHz), -72 dBm @ (MCS7, 40 MHz)
Receiver sensitivity 2.4 GHz	IEEE 802.11b: -97 dBm @ 1 MBit/s, -93 dBm @ 11 MBit/s, IEEE 802.11g: -95dBm @ 6 MBit/s, -81dBm @ 54 MBit/s IEEE 802.11n: -94 dBm @ 6,5MBit/s (MCS0, 20 MHz), -77 dBm @ 65 MBit/s (MCS7, 20 MHz), -91 dBm @ 15 MBit/s (MCS0, 40 MHz), -74 dBm @ 150 MBit/s (MCS7, 40 MHz)
Radio channels 5 GHz	Up to 26 non-overlapping channels (available channels and further obligations such as automatic DFS dynamic channel selection depending on national regulations)
Radio channels 2.4 GHz	Up to 13 channels, max. 3 non-overlapping (depending on country-specific restrictions)
Multi-SSID	Up to 16 independent WLAN networks; time-controlled activation and deactivation of WLAN networks
Concurrent WLAN clients	Up to 256 clients (recommended)
*) Note	The effective distances and transmission rates that can be achieved are depending of the onsite RF conditions

LCOS 10.50 (HW Rel. R2)

LANCOM L-321agn Wireless

Supported WLAN standards

IEEE standards	IEEE 802.11n (Wi-Fi 4), IEEE 802.11a, IEEE 802.11g, IEEE 802.11b, IEEE 802.11i, IEEE 802.1X, IEEE 802.11u, IEEE 802.11r (Fast Roaming), IEEE 802.11w (Protectet Management Frames), WME and U-APSD/WMM Power Save as defined in IEEE 802.11e, IEEE 802.11h, IEEE 802.11d

Standard IEEE 802.11n (Wi-Fi 4)

Supported features	2x2 MIMO, 40 MHz channel, 20/40MHz coexistence mechanisms in the 2.4 GHz band, MAC aggregation, Block Acknowledgement, STBC (Space Time Block Coding), LDPC (Low Density Parity Check), MRC (Maximal Ratio Combining), Short Guard Interval

WLAN operating modes

Modes	WLAN access point (standalone, WLC or LANCOM Management Cloud managed), WLAN bridge (P2P or P2MP) (standalone or AutoWDS*), (standalone, WLC or LANCOM Management Cloud managed), WLAN client mode, transparent WLAN client mode
*) Note	Only in installations with WLAN controller

Security

Encryption options	WPA3-Personal, IEEE 802.1X (WPA3-Enterprise, WPA2-Enterprise), IEEE 802.11i (WPA2-Personal), Wi-Fi Certified™ WPA2™, WPA, WEP, IEEE 802.11w (Protected Management Frames), LEPS-MAC (LANCOM Enhanced Passphrase Security MAC), LEPS-U (LANCOM Enhanced Passphrase Security User)
Encryption	AES-CCMP AES-GCMP, TKIP, RC4 (only used by WEP)
EAP types (authenticator)	EAP-TLS, EAP-TTLS/MSCHAPv2, PEAPv0/EAP-MSCHAPv2, PEAPv1/EAP-GTC, EAP-FAST
RADIUS/EAP-server	User administration MAC-based, rate limiting, passphrases, VLAN user based, authentication of IEEE 802.1X clients via EAP-TLS, EAP-TTLS, EAP-MD5, EAP-GTC, PEAP, MSCHAP, MSCHAPv2, Dynamic Peer Discovery
Others	WLAN protocol filters, IP-redirection of any packet received over the WLAN interface, IEEE 802.1X supplicant, background scanning, client detection ("rogue WLAN client detection"), Wireless Intrusion Detection System (WIDS), RADIUS CoA (Change of Authorization)

LANCOM Active Radio Control

Client Management	Steering of WLAN clients to the ideal access point using 802.11k and 802.11v
Managed RF Optimization*	Selection of optimal WLAN channels by the administrator
Adaptive Noise Immunity	Better WLAN throughput due to immunity against interferences
Spectral Scan	Monitoring your WLAN for sources of interference
Adaptive RF Optimization	Dynamic selection of the optimal WLAN channel
Airtime Fairness	Improved utilization of the WLAN bandwidth
Adaptive Transmission Power	Automatic adjustment of the transmission power for Wi - Fi backup scenarios

LCOS 10.50 (HW Rel. R2)

LANCOM L-321agn Wireless

LANCOM Active Radio Control

*) Note	Only in installations with WLAN controller

Roaming

Roaming	IAPP (Inter Access Point Protocol), IEEE 802.11r (Fast Roaming), OKC (Opportunistic Key Caching), Fast Client Roaming (only in operating mode client modus)

Layer 2 features

VLAN	4.096 IDs based on IEEE 802.1q, dynamic assignment
Quality of Service	WME based on IEEE 802.11e, Wi-Fi Certified™ WMM®
Rate limiting	SSID based, WLAN client based
Multicast	IGMP-Snooping, MLD-Snooping, Multicast-to-Unicast-conversion on WLAN interfaces
Protocols	Ethernet over GRE-Tunnel (EoGRE), ARP-Lookup, LLDP, DHCP option 82, IPv6-Router-Advertisement-Snooping, DHCPv6-Snooping, LDRA (Lightweight DHCPv6 Relay Agent), Spanning Tree, Rapid Spanning Tree, ARP, Proxy ARP, BOOTP, DHCP

Layer 3 features

Firewall	Stateful inspection firewall including paket filtering, extended port forwarding, N:N IP address mapping, paket tagging, support for DNS targets, user-defined rules and notifications
Quality of Service	Traffic shaping, bandwidth reservation, DiffServ/TOS, packetsize control, layer-2-in-layer-3 tagging
Security	Intrusion Prevention, IP spoofing, access control lists, Denial of Service protection, detailed settings for handling reassembly, session-recovery, PING, stealth mode and AUTH port, URL blocker, password protection, programmable reset button
PPP authentication mechanisms	PAP, CHAP, MS-CHAP, and MS-CHAPv2
High availability / redundancy	VRRP (Virtual Router Redundancy Protocol), analog/GSM modem backup
Router	IPv4-, IPv6-, NetBIOS/IP multiprotokoll router, IPv4/IPv6 dual stack
Router virtualization	ARF (Advanced Routing and Forwarding) up to separate processing of 16 contexts
IPv4 services	HTTP and HTTPS server for configuration by web interface, DNS client, DNS server, DNS relay, DNS proxy, dynamic DNS client, DHCP client, DHCP relay and DHCP server including autodetection, NetBIOS/IP proxy, NTP client, SNTP server, policy-based routing, Bonjour-Proxy, RADIUS
IPv6 services	HTTP and HTTPS server for configuration by web interface, DHCPv6 client, DHCPv6 server, DHCPv6 relay, DNS client, DNS server, dynamic DNS client, NTP client, SNTP server, Bonjour-Proxy, RADIUS
Dynamic routing protocols	RIPv2

LANCOM
SYSTEMS

LCOS 10.50 (HW Rel. R2)

LANCOM L-321agn Wireless

Layer 3 features

IPv4 protocols	DNS, HTTP, HTTPS, ICMP, NTP/SNTP, NetBIOS, PPPoE (server), RADIUS, RADSEC (secure RADIUS), RTP, SNMPv1,v2c,v3, TFTP, TACACS+, IGMPv3
IPv6 protocols	NDP, stateless address autoconfiguration (SLAAC), stateful address autoconfiguration (DHCPv6), router advertisements, ICMPv6, DHCPv6, DNS, HTTP, HTTPS, PPPoE, RADIUS, SMTP, NTP, Syslog, SNMPv1,v2c,v3, MLDv2, NPTv6 (NAT66)
WAN operating mode	VDSL, ADSL1, ADSL2 or ADSL2+ additional with external DSL modem at an ETH port
WAN protocols	PPPoE, Multi-PPPoE, ML-PPP, GRE, EoGRE, PPTP (PAC or PNS), L2TPv2 (LAC or LNS), L2TPv3 with Ethernet-Pseudowire, IPoE (using DHCP or no DHCP), RIP-1, RIP-2, VLAN, IPv6 over PPP (IPv6 and IPv4/IPv6 dual stack session), IP(v6)oE (autokonfiguration, DHCPv6 or static)
Tunneling protocols (IPv4/IPv6)	6to4, 6in4, 6rd (static and over DHCP), Dual Stack Lite (IPv4-in-IPv6-Tunnel), 464XLAT

Interfaces

Ethernet port	1 x 10/100/1000BASE-T autosensing (RJ-45), PoE (Power over Ethernet)
Serial interface	Serial configuration interface / COM port (8 pin Mini-DIN): 9,600 - 115,000 baud, suitable for optional connection of analog/GPRS modems. Supports internal COM port server and allows for transparent asynchronous transmission of serial data via TCP
External antenna connectors	Two reverse SMA connectors

Hardware

Environment	Temperature range 0° to +45°C; humidity up to 95%; non-condensing
Power consumption (max)	Approx. 4.5 watt with power supply adapter (total power consumption of access point and power supply adapter), approx. 5.1 watt via PoE
Housing	Robust synthetic housing, rear connectors, ready for wall mounting, Kensington lock; 210 x 45 x 140 mm (W x H x D)

Management and monitoring

Management	LANCOM Management Cloud, LANconfig, WEBconfig, WLAN controller, LANCOM Layer 2 management (emergency management)
Management functions	Alternative boot configuration, voluntary automatic updates for LCMS and LCOS, individual access and function rights up to 16 administrators, RADIUS and RADSEC user management, remote access (WAN or (W)LAN, access rights (read/write) adjustable seperately), SSL, SSH, HTTPS, Telnet, TFTP, SNMP, HTTP, access rights via TACACS+, scripting, timed control of all parameters and actions through cron job
FirmSafe	Two stored firmware versions, incl. test mode for firmware updates
automatic firmware update	configurable automatic checking and installation of firmware updates
Monitoring	LANCOM Management Cloud, LANmonitor, WLANmonitor

LCOS 10.50 (HW Rel. R2)

LANCOM L-321agn Wireless

Management and monitoring

Monitoring functions	Device SYSLOG, SNMPv1,v2c,v3 incl. SNMP-TRAPS, extensive LOG and TRACE options, PING and TRACEROUTE for checking connections, internal logging buffer for firewall events
Monitoring statistics	Extensive Ethernet, IP and DNS statistics; SYSLOG error counter, accounting information exportable via LANmonitor and SYSLOG
IPerf	IPerf is a tool for measurements of the bandwidth on IP networks (integrated client and server)
SLA-Monitor (ICMP)	Performance monitoring of connections
SD-WLAN	SD-WLAN – automatic WLAN configuration via the LANCOM Management Cloud
SD-LAN	SD-LAN – automatic LAN configuration via the LANCOM Management Cloud

Declarations of conformity*

CE	EN 60950-1, EN 301 489-1, EN 301 489-17
Wi-Fi Alliance Certification	Wi-Fi Certified
5 GHz WLAN	EN 301 893
2.4 GHz WLAN	EN 300 328
Medical	Medical conformity with EN 60601-1-2
IPv6	IPv6 Ready Gold
Country of Origin	Made in Germany
*) Note	You will find all declarations of conformity in the products section of our website at www.lancom-systems.com

Scope of delivery

Manual	Installation Guide (DE/EN/FR/ES/IT/PT/NL)
Cable	1 Ethernet cable, 3 m
Antennas	Two 3 dBi dipole antennas (Gain depends on frequency.)
Power supply unit	External power adapter (230 V), NEST 12 V/2.0 A DC/S, coaxial power connector 2.1/5.5 mm, temperature range from -5 to +45° C, LANCOM item no. 111303 (EU)/ External power adapter (230 V), NEST 12 V/1.5 A DC/S, coaxial power connector 2.1/5.5 mm, temperature range from -5 to +45° C, LANCOM item no 110829 (UK) (not included in bulk delivery)

Support

Warranty	3 years For details, please refer to the General Warranty Conditions at: www.lancom-systems.com/warranty-conditions

LCOS 10.50 (HW Rel. R2)
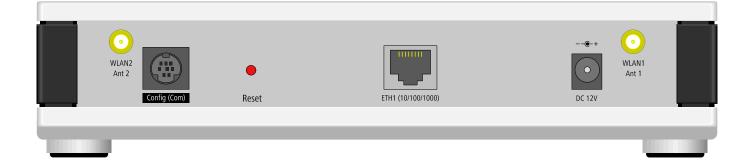
LANCOM L-321agn Wireless

Support

Software updates	Regular free updates as part of the LANCOM Software Lifecycle Managements (www.lancom-systems.com/lifecycle)
Manufacturer support	Free technical manufacturer support as part of the LANCOM Software Lifecycle Management (www.lancom-systems.com/lifecycle).

Software

Software Lifecycle Management	After discontinuation, the device is subject to the LANCOM Software Lifecycle Management. Details can be found at: www.lancom-systems.com/lifecycle
Anti-backdoor policy	Products from LANCOM are free of hidden access paths (backdoors) and other undesirable features for introducing, extracting or manipulating data. The trust seal "IT Security made in Germany" (ITSMIG) and certification by the German Federal Office for Information Security (BSI) confirm the trustworthiness and the outstanding level of security.

Options

LANcare Basic S	Service package with security updates and support entitlement* until EOL and 5 years replacement service (* support access required, e.g. support contract or LANCOM Service Packs 24/7 or 10/5), item no. 10720
LANcare Advanced S	Service package with security updates and support entitlement* until EOL and 5 years NBD advance replacement (* support access required, e.g. support contract or LANCOM Service Packs 24/7 or 10/5), item no. 10730
LANCOM Public Spot	Hotspot option for LANCOM products, versatile access (via voucher, e-mail, SMS), including a comfortable setup wizard, secure separation of guest access and internal network, item no. 60642

LANCOM Management Cloud

LANCOM LMC-A-1Y LMC License	LANCOM LMC-A-1Y License (1 Year), enables the management of one category A device for one year via the LANCOM Management Cloud, item no. 50100
LANCOM LMC-A-3Y LMC License	LANCOM LMC-A-3Y License (3 Years), enables the management of one category A device for three years via the LANCOM Management Cloud, item no. 50101
LANCOM LMC-A-5Y LMC License	LANCOM LMC-A-5Y License (5 Years), enables the management of one category A device for five years via the LANCOM Management Cloud, item no. 50102

Accessories

LANCOM WLAN controllers	LANCOM WLC-30, Art.-Nr. 61789 (EU), LANCOM WLC-1000, Art.-Nr. 61783 (EU), LANCOM WLC Basic Option for Routers, Art.-Nr. 61639
External antenna, indoor use	AirLancer IN-Q180+, item no. 61249
LANCOM WLAN PSU (EU, Bulk 10)	10x black LANCOM WLAN PSU 230V to 12V/2A DC power adapter, item no. 61810
LANCOM WLAN PSU (UK, Bulk 10)	10x black LANCOM WLAN PSU 230V to 12V/2A DC power adapter, item no. 61811
LANCOM Wall Mount	For simple, theft-proof mounting of LANCOM devices with plastic housings, item no. 61349

LCOS 10.50 (HW Rel. R2)

LANCOM L-321agn Wireless

Accessories

LANCOM Wall Mount (White)	For simple, theft-proof mounting of LANCOM devices with plastic housings, item no. 61345
LANCOM Serial Adapter Kit	For the connection of V.24 modems with AT command set and serial interface for the connection to the LANCOM COM interface, incl. serial cable and connection plug, item no. 61500
LANCOM PoE++ Injector (EU)	1-port PoE injector with multi-Gigabit support, integrated power supply, compatible with the standard IEEE 802.3af/at/bt (up to 65W), item no. 61779 (EU)

Item number(s)

LANCOM L-321agn dual Wireless (EU)	61531
LANCOM L-321agn dual Wireless (UK)	61532
LANCOM L-321agn dual Wireless 10-piece bulk	61570