

## LANCOM OAP-322

**Dual-radio outdoor 11n WLAN access point for professional outdoor WLAN applications – simultaneously in the 2.4-GHz and 5-GHz frequency bands**



The LANCOM OAP-322 features two radio modules for parallel operation in the 2.4-GHz and 5-GHz frequency bands. Connectors for external antennas mean that it offers maximum flexibility for outdoor wireless applications.

- Dual concurrent WLAN – parallel operation at 2.4 and 5 GHz with up to 300 Mbps with IEEE 802.11a/g/n
- Four external antenna connectors
- Robust IP66 protective housing – reliable even at extreme temperatures (-33°C to +70°C)
- Dynamic WLAN optimization thanks to LANCOM Active Radio Control (ARC)
- Professional security features such as IEEE 802.1X
- Operation via LANCOM Management Cloud, WLAN controller or stand-alone
- Easy and secure integration of external users with the LANCOM Public Spot Option

LCOS 10.12

# LANCOM OAP-322

## **Dual concurrent Wi-Fi with up to 300 Mbps**

The LANCOM OAP-322 features two WLAN radio modules for IEEE 802.11n and offers a wide range of options for outdoor applications: The quick and easy setup of modern outdoor hotspots, professional WLAN coverage of open spaces, or even high-speed P2P links for interconnecting buildings in the 5-GHz band.

## **Maximum reliability in all weathers**

The LANCOM OAP-322 has a robust IP66 protective housing, making it fully dust proof and water-jet resistant. What's more, a temperature range of -33°C to +70°C guarantees reliable operation even under extreme conditions.

## **Active Radio Control for dynamic radio-field optimization**

The LANCOM OAP-322 supports the WLAN optimization concept LANCOM Active Radio Control. This intelligent combination of innovative features included with the LCOS operating system - such as Band Steering, Adaptive Noise Immunity, RF Optimization, and Client Steering - sustainably increases WLAN performance and supports administrators with professional tools for WLAN management.

## **LANCOM security for wireless networks**

With numerous integrated security features, such as IEEE 802.1X, this outdoor access point provides optimal security for networks. Administrators and employees alike benefit from professional security policies on the network.

## **Zero-touch deployment**

The LANCOM OAP-322 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 OAP-322 is ideal for operating hotspots. Users benefit from a hotspot that is secure and easy-to-use, while hotspot operators can be sure that their own network remains separate from the guest network.

## **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.

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## WLAN product specifications

Frequency band 2.4 GHz and 5 GHz	2400-2483.5 MHz (ISM), 5150-5350 MHz and 5470-5725 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 (outdoor / P2P)	The actual range depends on the environmental conditions. The Antenna Distance Calculator on <a href="http://www.lancom-systems.com">www.lancom-systems.com</a> provides information on the possible data rates and distances.
Output power at radio module, 5 GHz and per transmit chain	IEEE 802.11a/h: +14 dBm @ 54 MBit/s, IEEE 802.11n: +12 dBm @ (MCS7, 20 MHz), +11 dBm @ (MCS7, 40 MHz)
Output power at radio module, 2.4 GHz and per transmit chain	IEEE 802.11b: +19 dBm @ 54 MBit/s, IEEE 802.11g: +16 dBm @ 54 MBit/s, IEEE 802.11n: +15 dBm @ (MCS7, 20 MHz), +14 dBm @ (MCS7, 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: -77 dBm @ 54 Mbps, IEEE 802.11n: -63 dBm @ MCS7, 20 MHz, -70 dBm @ MCS7, 40 MHz
Receiver sensitivity 2.4 GHz	IEEE 802.11b: -85 dBm @ 11 Mbps, IEEE 802.11g: -77 dBm @ 54 Mbps, IEEE 802.11n: -74 dBm @ MCS7, 20 MHz, -71 dBm @ 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 32 independent WLAN networks
Concurrent WLAN clients	Up to 30 clients per radio (recommended), 512 clients (max.)

## 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
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## 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
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## 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
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\*) 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)
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Encryption	AES-CCMP AES-GCMP, TKIP, RC4 (only used by WEP)
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EAP types (authenticator)	EAP-TLS, EAP-TTLS/MSCHAPv2, PEAPv0/EAP-MSCHAPv2, PEAPv1/EAP-GTC, EAP-FAST
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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
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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)
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## LANCOM Active Radio Control

Client Management	Steering of WLAN clients to the ideal access point using 802.11k and 802.11v
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Band Steering	Steering of 5GHz clients to the corresponding high-performance frequency band
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Managed RF Optimization*	Selection of optimal WLAN channels by the administrator
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Adaptive Noise Immunity	Better WLAN throughput due to immunity against interferences
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Spectral Scan	Monitoring your WLAN for sources of interference
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Adaptive RF Optimization	Dynamic selection of the optimal WLAN channel
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Airtime Fairness	Improved utilization of the WLAN bandwidth
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Adaptive Transmission Power	Automatic adjustment of the transmission power for Wi - Fi backup scenarios
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\*) Note Only in installations with WLAN controller

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## 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)
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## 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), L2TPv3, 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, LACP

## 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
IPv4 protocols	DNS, HTTP, HTTPS, ICMP, NTP/SNTP, NetBIOS, PPPoE (server), RADIUS, RADSEC (secure RADIUS), RTP, SNMPv1,v2c,v3, TFTP, TACACS+, IGMPv3

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## Layer 3 features

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)
WAN protocols	PPPoE, Multi-PPPoE, ML-PPP, GRE, EoGRE, PPTP (PAC or PNS), L2TPv2 (LAC or LNS), L2TPv3 with Ethernet-Pseudowire and 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)
Ethernet port	1 x 10/100BASE-T autosensing (RJ-45), PoE (Power over Ethernet)
External antenna connectors	Four N connectors

## Hardware

Power supply	10 bis 28 V DC input voltage, optionally available: 24 V DC power supply unit LANCOM OAP-320 PSU
Environment	Temperature range -33°C to +70°C
Housing	Robust metal housing, IP 66 protection rating, ready for wall and pole mounting, 3 LEDs for status display, please note: device must not be mounted in salt water environments without a suitable protective housing; Dimensions 255 x 250 x 80 mm (length x width x depth)

## 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 separately), 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

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## 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
5 GHz WLAN	EN 301 893
2.4 GHz WLAN	EN 300 328
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 <a href="http://www.lancom-systems.com">www.lancom-systems.com</a>

## Scope of delivery

Manual	Hardware Quick Reference (DE/EN), Installation Guide (DE/EN)
Cable	Water-resistant, UV-resistant Ethernet PoE cable with water-resistant screw connector, 15m, temperature range from -33°C to +70°C
Mounting Kit	Mounting kit for wall and pole mounting
Antenna	Four 3 dBi dipole dual-band antennas
Power supply unit	Via Power over Ethernet compliant with IEEE 802.3af, 1 x PoE Injector supplied

## Support

Software updates	Regular free updates (LCOS operating system and LANtools) via Internet
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## Options

LANcare Basic L	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. 10722
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## Options

**LANcare Advanced L** 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. 10732

**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, outdoor use** AirLancer Extender O-D80g, item no. 61221, AirLancer Extender O-D60a, item no. 61222, AirLancer Extender O-D9a, item no. 61224

**Antenna cable** AirLancer cable NJ-NP 3m, item no. 61230, AirLancer cable NJ-NP 6m, item no. 61231, AirLancer cable NJ-NP 9m, item no. 61232

**Surge arrester (antenna cable)** AirLancer SN-ANT surge arrester (2.4 and 5 GHz), to be integrated between Access Point and antenna, item no. 61258

**Surge arrester (antenna cable)** AirLancer Extender SA-5L surge arrester (2.4 and 5 GHz), to be integrated between Access Point and antenna, item no. 61553

**Surge arrester (LAN cable)** AirLancer Extender SN-LAN surge arrester (LAN cable), item no. 61261

**LAN cable (outdoor)** LANCOM OAP Ethernet cable (30 m), item no. 61347

**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)

**\*) Note** The polarization diversity antennas require 2 cables and surge arrestors



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**Item number(s)**

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LANCOM OAP-382

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