



## LANCOM IAP-1781VAW+

Reliable networking for demanding application scenarios

This router offers reliable VDSL connectivity, fast 11ac Wi-Fi, and professional telephony for all industries with covered outdoor installations. Its robust housing is dust-tight, protected against splash water and with its extended temperature range of -25 to +70°C stands for highest reliability even in demanding application scenarios such as WLAN hotspots in street furniture. The IPsec VPN functionality also enables secure site networking, e.g. for the connection of machines or surveillance equipment.

- Integrated VDSL2/ADSL2 + modem for up to 100 Mbps
- Wi-Fi operation with 5 GHz at up to 867 mbps as per IEEE 802.11ac (Wi-Fi 5) or with 2.4 GHz at up to 300 mbps as per IEEE 802.11n (Wi-Fi 4)
- Practical wall mount included
- Robust IP54 protective housing - reliable even in extreme temperatures (-25°C to +70°C)
- 5 integrated IPsec VPN channels (25 optional)
- Integrated Voice Call Manager (VCM) & Session Border Controller (SBC)
- SD-WAN - automatic VPN and VLAN configuration via the LANCOM Management Cloud
- Network virtualization with up to 16 networks on one device (ARF)
- Security Made in Germany

# LANCOM IAP-1781VAW+

## **Business VPN router with VDSL2 and ADSL2+ modem**

Thanks to the VDSL/ADSL modem, the LANCOM IAP-1781VAW+ enables high-speed VDSL with up to 100 Mbps thanks to VDSL2 vectoring support and offers maximum flexibility for a transition from ADSL to VDSL. The optimal choice with regard to the sustainability of the network.

## **Integration of wireless clients**

The LANCOM IAP-1781VAW+ is a powerful 11ac WLAN business VPN router. It provides 11n and 11ac clients with fast WI-FI either at up to 867 Mbps in 5 GHz or up to 300 Mbps with 2.4 GHz.

## **Robust IP54 protective housing**

Due to the durable full-metal housing, this router guarantees excellent Internet connectivity even in harsh, dusty environments. The LANCOM IAP-1781VAW+ is thus optimally protected against external influences and is ideally suited for use in warehouses. Thanks to the extended temperature range of -25°C to +70°C, the IAP-1781VAW+ is ideally suited for the connection of machines or surveillance equipment.

## **Secure site networking via VPN**

The LANCOM IAP-1781VAW+ offers a high level of security. The 5 already integrated IPSec VPN channels guarantee maximum encryption for the secure connection of mobile employees and the protection of corporate data. With the LANCOM VPN Option, the router can be upgraded with up to 25 VPN channels. So the network is optimally scalable and the infrastructure grows when needed - without additional hardware components.

## **Integrated Voice Call Manager (VCM) & Session Border Controller (SBC)**

The LANCOM Voice Call Manager is already integrated in the LANCOM IAP-1781VAW+ and is equipped with extensive telephony functions. He takes over classic telephone management tasks and controls all TK components connected to the router and their functions. Furthermore, it enables the easy integration of DECT telephony via the autoprovisioning of the LANCOM DECT 510 IP base station.

## **Radical simplification of configuration with SD-WAN**

In combination with the LANCOM Management Cloud, the LANCOM IAP-1781VAW+ opens the way for automated management. With software-defined WAN (SD-WAN), it enables the automatic establishment of secure VPN connections between sites, including network virtualization and backup over long-distance routes: the VPN functionality is activated with a mouse click and the desired VLANs are selected for the respective location. The complex configuration of the individual tunnel endpoints is completely eliminated.

## **Security Made in Germany**

Software and hardware development of LANCOM Systems as well as production take place mainly in Germany, as well as the hosting of the network management. Special attention is paid to the trustworthiness and security. The company is committed to the backdoor freedom of its products and is the carrier of the quality mark "IT Security Made in Germany" initiated by the Federal Ministry of Economics.

## LANCOM IAP-1781VAW+

LCOS 10.40

WLAN product specifications	
Frequency band 2.4 GHz or 5 GHz	2400-2483.5 MHz (ISM) or 5180-5700 MHz (depending on country-specific restrictions)
Data rates IEEE 802.11ac/n	867 Mbps according to IEEE 802.11ac with MCS9 (fallback to 6,5 Mbps with MCS0). Compatible to IEEE 802.11ac/n/a, IEEE 802.11ac/n, IEEE 802.11n/a compatibility mode or pure IEEE 802.11ac, pure IEEE 802.11n, pure IEEE 802.11a mode and data rates selectable
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	IEEE 802.11a/h: +15 dBm @ 54 MBit/s; IEEE 802.11an/ac: +14 dBm @ (MCS7, 20 MHz), +14 dBm @ (MCS7, 40 MHz), +14 dBm (MCS9, 20 MHz), +13 dBm (MCS9, 40/80 MHz)
Output power at radio module, 2.4 GHz and per transmit chain	IEEE 802.11b/g: +18 dBm @ 54 MBit/s; IEEE 802.11n: +16 dBm @ (MCS7, 20 MHz), +16 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: -80 dBm @ 54 MBit/s; IEEE 802.11an/ac: -73 dBm @ (MCS7, 20/40MHz), -68 dBm @ (MCS9, 20/40 MHz), -68 dBm (MCS9, 80 MHz)
Receiver sensitivity 2.4 GHz	IEEE 802.11b/g: -80 dBm @ 54 MBit/s; IEEE 802.11n: -77 dBm @ (MCS7, 20 MHz), -75 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 15 independent WLAN networks
Concurrent WLAN clients	Up to 65 clients (recommended), 128 clients (max.)
Supported WLAN standards	
IEEE standards	IEEE 802.11ac (Wi-Fi 5), 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 (Protected Management Frames), WME and U-APSD/WMM Power Save as defined in IEEE 802.11e, IEEE 802.11h, IEEE 802.11d
Standard IEEE 802.11ac (Wi-Fi 5)	
Supported features	2x2 MIMO, 80 MHz channels, QAM-256
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
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)

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Security	
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 or MSCHAPv2
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
*) 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, Q-in-Q tagging
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)
Router	IPv4-, IPv6-, NetBIOS/IP multiprotokoll router, IPv4/IPv6 dual stack
SD-WAN Application Routing	SD-WAN Application Routing in connection with the LANCOM Management Cloud
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, BGPv4, OSPFv2, LISP (Locator/ID Separation Protocol)
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, BGP, LISP, Syslog, SNMPv1,v2c,v3, MLDv2, PIM
Multicast Routing	PIM (Protocol Independent Multicast), IGMP proxy, MLD proxy
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)
Security	
Intrusion Prevention	Monitoring and blocking of login attempts and port scans
IP spoofing	Source IP address check on all interfaces: only IP addresses belonging to the defined IP networks are allowed
Access control lists	Filtering of IP or MAC addresses and preset protocols for configuration access and LANCAPI
Denial of Service protection	Protection from fragmentation errors and SYN flooding
General	Detailed settings for handling reassembly, PING, stealth mode and AUTH port
URL blocker	Filtering of unwanted URLs based on DNS hitlists and wildcard filters. Extended functionality with Content Filter Option
Password protection	Password-protected configuration access can be set for each interface
Alerts	Alerts via e-mail, SNMP traps and SYSLOG
Authentication mechanisms	PAP, CHAP, MS-CHAP and MS-CHAPv2 as PPP authentication mechanism
Anti-theft	Anti-theft ISDN site verification over B or D channel (self-initiated call back and blocking)
High availability / redundancy	
VRRP	VRRP (Virtual Router Redundancy Protocol) for backup in case of failure of a device or remote station.
FirmSafe	For completely safe software upgrades thanks to two stored firmware versions, incl. test mode for firmware updates
Load balancing	Static and dynamic load balancing over up to 2 WAN connections. Channel bundling with Multilink PPP (if supported by network operator)
VPN redundancy	Backup of VPN connections across different hierarchy levels, e.g. in case of failure of a central VPN concentrator and re-routing to multiple distributed remote sites. Any number of VPN remote sites can be defined (the tunnel limit applies only to active connections). Up to 32 alternative remote stations, each with its own routing tag, can be defined per VPN connection. Automatic selection may be sequential, or dependant on the last connection, or random (VPN load balancing)
Line monitoring	Line monitoring with LCP echo monitoring, dead-peer detection and up to 4 addresses for end-to-end monitoring with ICMP polling
VPN	
IPSec over HTTPS	Enables IPSec VPN based on TCP (at port 443 like HTTPS) which can go through firewalls in networks where e. g. port 500 for IKE is blocked. Suitable for client-to-site connections and site-to-site connections. IPSec over HTTPS is based on the NCP VPN Path Finder technology
Number of VPN tunnels	Max. number of concurrent active IPSec, PPTP (MPPE) and L2TPv2 tunnels: 5 (25 with VPN 25 Option). Unlimited configurable connections. Configuration of all remote sites via one configuration entry when using the RAS user template or Proadaptive VPN.
Hardware accelerator	Integrated hardware accelerator for 3DES/AES encryption and decryption
Random number generator	Generates real random numbers in hardware, e. g. for improved key generation for certificates immediately after switching-on
1-Click-VPN Client assistant	One click function in LANconfig to create VPN client connections, incl. automatic profile creation for the LANCOM Advanced VPN Client
1-Click-VPN Site-to-Site	Creation of VPN connections between LANCOM routers via drag and drop in LANconfig
IKE, IKEv2	IPSec key exchange with Preshared Key or certificate (RSA signature, ECDSA-Signature, digital signature)
Smart Certificate*	Convenient generation of digital X.509 certificates via an own certification authority (SCEP-CA) on the webpage or via SCEP.
Certificates	X.509 digital multi-level certificate support, compatible with Microsoft Server / Enterprise Server and OpenSSL. Secure Key Storage protects a private key (PKCS#12) from theft.
Certificate rollout	Automatic creation, rollout and renewal of certificates via SCEP (Simple Certificate Enrollment Protocol) per certificate hierarchy

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VPN	
Certificate revocation lists (CRL)	CRL retrieval via HTTP per certificate hierarchy
OCSP Client	Check X.509 certifications by using OCSP (Online Certificate Status Protocol) in real time as an alternative to CRLs
OCSP Server/Responder*	Offers validity information for certificates created with Smart Certificate via OCSP
XAUTH	XAUTH client for registering LANCOM routers and access points at XAUTH servers incl. IKE-config mode. XAUTH server enables clients to register via XAUTH at LANCOM routers. Connection of the XAUTH server to RADIUS servers provides the central authentication of VPN-access with user name and password. Authentication of VPN-client access via XAUTH and RADIUS connection additionally by OTP token
RAS user template	Configuration of all VPN client connections in IKE ConfigMode via a single configuration entry
Proadaptive VPN	Automated configuration and dynamic creation of all necessary VPN and routing entries based on a default entry for site-to-site connections. Propagation of dynamically learned routes via RIPv2 if required
Algorithms	3DES (168 bit), AES-CBC and -GCM (128, 192 or 256 bit), Blowfish (128 bit), RSA (1024-4096 bit), ECDSA (P-256-, P-384-, P-521-curves), Chacha20-Poly 1305 and CAST (128 bit). OpenSSL implementation with FIPS-140 certified algorithms. MD-5, SHA-1, SHA-256, SHA-384 or SHA-512 hashes
NAT-Traversal	NAT-Traversal (NAT-T) support for VPN over routes without VPN passthrough
LANCOM Dynamic VPN	Enables VPN connections from or to dynamic IP addresses. The IP address is communicated via the ICMP or UDP protocol in encrypted form. Dynamic dial-in for remote sites via connection template
Dynamic DNS	Enables the registration of IP addresses with a Dynamic DNS provider in the case that fixed IP addresses are not used for the VPN connection
Specific DNS forwarding	DNS forwarding according to DNS domain, e.g. internal names are translated by proprietary DNS servers in the VPN. External names are translated by Internet DNS servers
Split DNS	Allows the selective forwarding of traffic for IKEv2 depending on the addressed DNS domain.
IPv4 VPN	Connecting private IPv4 networks
IPv4 VPN over IPv6 WAN	Use of IPv4 VPN over IPv6 WAN connections
IPv6 VPN	Connecting private IPv6 networks
IPv6 VPN over IPv4 WAN	Use of IPv6 VPN over IPv4 WAN connections
RADIUS	RADIUS authorization and accounting, outsourcing of VPN configurations in external RADIUS server in IKEv2, RADIUS CoA (Change of Authorization)
High Scalability VPN (HSVPN)	Transmission of multiple, securely separated networks within a VPN tunnel
IKEv2 EAP*	VPN clients can be authenticated with IKEv2 EAP against a central database like Microsoft Windows Server or RADIUS Server
*)	Only with VPN 25 option
Performance	
Routing-Performance	Data regarding the overall routing performance can be found inside the LANCOM tech paper "Routing-Performance" on <a href="http://www.lancom-systems.com">www.lancom-systems.com</a>
VoIP	
Number of local subscribers	10 (up to 40 with VoIP +10 Option)
Number of local ISDN subscribers	max. 10
Number of simultaneous VoIP connections	Up to 60 external VoIP connections depending on code conversion, echo canceling and load
Functionality	Hold/Request, Swap, Transfer, Call Forwarding (CFU, CFB, CFNR), number display/suppression (CLIP, CLIR), suppression of second call (Busy on Busy), immediate outgoing line, hunt groups, call diversion, overlap dialing
Hunt groups	Hunt group cascades, Call diversion, simultaneously or sequentially. Automatic forwarding after timeout or when busy/unreachable
Multi login	Registration of several local VoIP terminal devices with the same number/ID.
Call router	Central switching of all incoming and outgoing calls. Number translation by mapping, numeral replacement and number supplementation. Configuration of line and route selection incl. line backup. Routing based on calling and called number, SIP domain and line. Blocking of telephone numbers or blocks of telephone numbers. Inclusion of local subscribers into the number range of an upstream PBX. Supplement/remove line-related prefixes or switchboard numbers.

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VoIP	
SIP registrar	Management of local VoIP users/VoIP PBXs, registration at VoIP providers/upstream VoIP PBXs. Service location (SRV) support. Line monitoring for SIP trunk, link, remote gateway and SIP PBX line
SIP proxy	Up to 25 SIP-provider accounts (up to 55 with VoIP +10 Option), up to 4 SIP PBXs incl. line backup. SIP connections from/to internal subscribers, SIP providers and SIP PBXs. Automatic bandwidth management and automatic configuration of the firewall for SIP connections.
SIP gateway	Conversion of ISDN telephone calls to VoIP calls, and vice versa. Local ISDN subscribers register as local VoIP users, and local ISDN subscribers automatically register as VoIP users at upstream VoIP PBXs/with VoIP providers. Number translation between internal numbers and MSN/DDI
SIP trunk	Call switching based on extension numbers to/from VoIP PBXs/VoIP providers (support of the VoIP-DDI functions compliant with ITU-T Q.1912.5). Mapping of entire VoIP telephone number blocks
SIP link	Call switching of any numbers to/from SIP PBXs/SIP providers. Mapping of entire SIP telephone number blocks
Media proxy	Termination and interconnection of multiple media streams. Control of media sessions. IP address and port translation for media stream packets. Connection of parties at media stream level where a call transfer in SIP (REFER) is not possible
Session Border Controller (SBC)	Separation of insecure and secure networks, QoS, management of signaling and voice data, transcoding
Media protocols	RTP, SIPs and SRTP
Supported providers	German Telekom, QSC, Ecotel and Sipgate
Audio properties	Echo canceling (G.168) with automatic deactivation during fax transmission, automatic adaptive jitter buffer. Inband tone signaling compliant with EU standards and country-specific. Voice encoding with G.711 $\mu$ -law/A-law (64 kbps)
SIP-Codec support	SIP only: G.711 $\mu$ -law/A-law (64 kbps), G.722, G.723, G.726, G.729, iLBC, PCM (16, 20 and 24 Bit, Mono und Stereo), OPUS, AAC (LC, HE HEv2), MPEG Layer II, ADPCM 4SB. DTMF support (Inband, RFC2833, SIP-INFO)
Fax transmission	Transmission of fax via SIP on the LAN/WAN side with T.38 or G.711. Conversion of SIP fax with T.38 and break-in/break-out at the outside line to ISDN G.711 with service signalisation. Connection and conversion to SIP T.38 or G.711 for SIP or ISDN fax machines. Compatible to SwyxFax on true G.711 SIP lines.
Data transmission	64 kbit/s ISDN transmission via clearmode (RFC 4040)
Auto QoS	Automatic dynamic bandwidth reservation per SIP connection. Voice packet prioritization, DiffServ marking, traffic shaping (incoming/outgoing) and packet-size management of non-prioritized connections compared to VoIP. Independent settings for DiffServ marking of signaling (SIP) and media streams (RTP)
VoIP monitoring	Reporting of Call Data Records (CDR) via SYSLOG or e-mail. Status display of subscribers, lines, and connections. Logging of VoIP Call Manager events in LANmonitor. SYSLOG and TRACE for voice connections. Active monitoring even with SNMP
Autoprovisioning	Automatic network and VoIP integration of LANCOM DECT 510 IP base station
SIP ALG	The SIP ALG (Application Layer Gateway) acts as a proxy for SIP communication. For SIP calls the ALG opens the necessary ports for the corresponding media packets. Automatic address translation (STUN is no longer needed).
Interfaces	
WAN: VDSL / ADSL2+	<ul style="list-style-type: none"> <li>&gt; VDSL2 compliant with ITU G.993.2, profiles 8a, 8b, 8c, 8d, 12a, 12b, 17a</li> <li>&gt; VDSL2 vectoring compliant with ITU G.993.5</li> <li>&gt; Compliant to: ADSL2+ over ISDN as per ITU G.992.5 Annex B with DPBO, ADSL2 over ISDN as per ITU G.992.3/5 Annex B/J, ADSL over ISDN as per ITU G.992.1 Annex B (EU, over ISDN)</li> <li>&gt; Supports one virtual ATM circuit (VPI, VCI pair) at a time</li> </ul>
Ethernet ports	2 individual 10/100/1000 Mbps Ethernet ports; up to 1 ports can be operated as additional WAN ports with load balancing. Ethernet ports can be electrically disabled within LCOS configuration. The ports support energy saving according to IEEE 802.3az
Port configuration	Each Ethernet port can be freely configured (LAN, DMZ, WAN, monitor port, off). LAN ports can be operated as a switch or separately. Additionally, external DSL modems or termination routers can be operated as a WAN port with load balancing and policy-based routing. DMZ ports can be operated with their own IP address range without NAT
ISDN	ISDN BRI port (S0 bus)
IP protection class	All specified interfaces are conform to IP protection class IP 54.
Management and monitoring	
Management	LANCOM Management Cloud, LANconfig, WEBconfig, WLAN controller, LANCOM Layer 2 management (emergency management)

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Management and monitoring	
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
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, Layer 7 Application Detection including application-centric tracking of traffic volume
IPerf	IPerf is a tool for measurements of the bandwidth on IP networks (integrated client and server)
SLA-Monitor (ICMP)	Performance monitoring of connections
Netflow	Export of information about incoming and outgoing IP traffic
SD-WLAN	SD-WLAN – automatic WLAN configuration via the LANCOM Management Cloud
SD-LAN	SD-LAN – automatic LAN configuration via the LANCOM Management Cloud
SD-WAN	SD-WAN – automatic WAN configuration via the LANCOM Management Cloud
Hardware	
Housing	Robust metal housing, IP protection class IP-67, connections on the bottom side of the device; Dimensions 250x158x55 mm (LxWxH)
Power supply	230 - 240V
Environment	Temperature range -25 – +70° C; humidity 0–95%; non-condensing
Fans	None; fanless design without rotating parts, high MTBF
Power consumption (max)	14 watt
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	2 Ethernet cable, 3m
Cable	ISDN cable, 2m
Cable	VDSL/ADSL cable, 3m
Cable	IEC power cord, 3m
Accessories	1 wall mounting kit
Accessories	1 reset magnet
Support	
Warranty	3 years support
Software updates	Regular free updates (LCOS operating system and LANtools) via Internet



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Options	
VPN	LANCOM VPN-25 Option (25 channels), item no. 60083
LANCOM Content Filter	LANCOM Content Filter +10 user (additive up to 100), 1 year subscription, item no. 61590
LANCOM Content Filter	LANCOM Content Filter +25 user (additive up to 100), 1 year subscription, item no. 61591
LANCOM Content Filter	LANCOM Content Filter +100 user (additive up to 100), 1 year subscription, item no. 61592
LANCOM Content Filter	LANCOM Content Filter +10 user (additive up to 100), 3 year subscription, item no. 61593
LANCOM Content Filter	LANCOM Content Filter +25 user (additive up to 100), 3 year subscription, item no. 61594
LANCOM Content Filter	LANCOM Content Filter +100 user (additive up to 100), 3 year subscription, item no. 61595
LANCOM Warranty Basic Option M	Option to extend the manufacturer's warranty from 3 to 5 years, item no. 10711
LANCOM Warranty Advanced Option M	Option to extend the manufacturer's warranty from 3 to 5 years and replacement of a defective device, item no. 10716
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 Public Spot PMS Accounting Plus	Extension of the LANCOM Public Spot (XL) Option for the connection to hotel billing systems with FIAS interface (such as Micros Fidelio) for authentication and billing of guest accesses for 178x/19xx routers, WLCs, and current central-site gateways, item no. 61638
LANCOM VoIP +10 Option	Upgrade for LANCOM VoIP router with 10 additional internal VoIP numbers (additionally up to 40) and 10 external SIP lines (additionally up to 55) item no. 61423
LANCOM Management Cloud	
LANCOM LMC-B-1Y LMC License	LANCOM LMC-B-1Y License (1 Year), enables the management of one category B device for one year via the LANCOM Management Cloud, item no. 50103
LANCOM LMC-B-3Y LMC License	LANCOM LMC-B-3Y License (3 Years), enables the management of one category B device for three years via the LANCOM Management Cloud, item no. 50104
LANCOM LMC-B-5Y LMC License	LANCOM LMC-B-5Y License (5 Years), enables the management of one category B device for five years via the LANCOM Management Cloud, item no. 50105
Accessories	
LANCOM DECT 510 IP (EU)	Professional DECT base station for up to 6 DECT phones, network integration and configuration via LANCOM VoIP router, 4 simultaneous calls possible, highest voice quality, power supply via PoE or power supply unit, item no. 61901
External antenna, outdoor use	AirLancer ON-360ag, item no. 61209, AirLancer ON-D9a, item no. 61244, AirLancer ON-T90ag, item no. 61241, AirLancer ON-T60ag, item no. 61243
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
VPN Client Software	LANCOM Advanced VPN Client for Windows 7, Windows 8, Windows 8.1, Windows 10, single license, item no. 61600
VPN Client Software	LANCOM Advanced VPN Client for Windows 7, Windows 8, Windows 8.1, Windows 10, 10 licenses, item no. 61601
VPN Client Software	LANCOM Advanced VPN Client for Windows 7, Windows 8, Windows 8.1, Windows 10, 25 licenses, item no. 61602
VPN Client Software	LANCOM Advanced VPN Client for Mac OS X (10.5 Intel only, 10.6 or higher), single license, item no. 61606
VPN Client Software	LANCOM Advanced VPN Client for Mac OS X (10.5 Intel only, 10.6 or higher), 10 licenses, item no. 61607
*) Note	The polarization diversity antennas require 2 cables and surge arrestors
Item number(s)	
LANCOM IAP-1781VAW+ (EU, over ISDN)	69032