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07/07

**LANCOM**  
Systems



## Industrial Ethernet Solutions

- Markets
- Infrastructures
- Networks
- Products

**LANCOM**  
Systems



### LANCOM – Leading through Experience

LANCOM Systems is a leading German manufacturer of reliable communications solutions for large enterprises and SMEs, public authorities and institutions. We supply products and software for IP-based VPN, Voice over IP and wireless networks, along with support and services. As one of the first companies to manufacture networking products for the industrial market, LANCOM leads the way with more than a decade of experience in the fields of Ethernet and IP technology.

### Quality – Made in Germany

Traditionally, both hardware and software for all LANCOM products are developed and tested in Germany. In the process, customer feedback plays a key role in the creation and design of new products, just as the specific demands of the German and European markets do.

The LCOS operating system is developed directly by LANCOM. This assures all of our customers that any modifications made to meet new standards will be integrated quickly and reliably. This also enables LANCOM to guarantee standards conformity.

### Ethernet and Wireless LAN in Industrial Applications

In recent years, Ethernet technology has become the de facto standard for networking computers and peripherals (such as operating terminals, printers, scanners, measuring instruments, etc.) together in a Local Area Network (LAN). Wireless LAN technology (WLAN) in accordance with the IEEE 802.11a/b/g/h standards has established an Ethernet-compatible communication technology for mobile applications (e.g. connecting notebooks to the corporate network). Access Points (APs) are required for transmitting data from a WLAN to a LAN. In their most basic form, access points are similar to switches at the Ethernet layer. However, WLAN APs from LANCOM are also equipped with a full IP router.

Wireless LAN is the ideal enhancement to wired Ethernet. It is used to replace cables in order to support mobile applications such as remote controlled vehicles or data capture in warehouses, in automation, measurement data capture and control systems. Ethernet has a variety of important advantages:

- A standardized protocol that is compatible with a number of standard components available on the market, increasing the number of suppliers from which customers can choose.
- Less expensive than proprietary bus systems, largely due to widespread availability.

Ethernet's high level of availability also promotes the use of this protocol in industrial settings. Since the solutions are IP-based, this proven office technology can also be used for building network infrastructures. LANCOM routers and WLAN access points profit from over a decade of advancements in development and offer a wealth of experience and a high level of practicability. The road from from wired Ethernet LANs (Local Area Networks) to WLANs (Wireless Local Area Networks) is not long. WLAN can be of great benefit in industrial settings. For example, process optimization not only saves time but also provides greater flexibility in designing networks. Consequently, it allows integration in production and office networks. This, in turn, promotes improved data exchange as well as greater control due to the compatibility of the applications, leading to the most important customer benefit: Cost savings. WLAN has additional advantages over wired Ethernet:

- low installation costs
- easier expandability
- also standardized, thus offering a high level of compatibility.

LANCOM industrial devices enhance the professional functions in software with hardware that is suitable for industrial use. 5x redundant power supplies, multiple LAN and WAN connectors, dual WLAN interfaces and IP classification-compliant metal housing qualify LANCOM industrial products for secure use with both hardware and software. Using industrial Ethernet leverages significant cost advantages, higher flexibility and standardization. In addition, LANCOM's unique expertise provides further benefits.

1998

### Pioneer in the Field of Wireless Networking

The foundation for LANCOM Systems' comprehensive range of WLAN products was laid with the introduction of the world's first 2 Mbps WLAN access point with integrated router and ISDN interface.

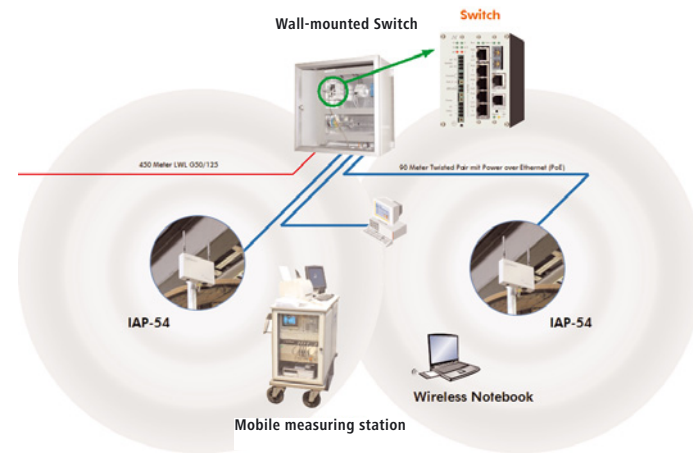
- 5 GHz WLAN in accordance with IEEE 802.11a/h
- Security in accordance with IEEE 802.11i



## Industrial Applications

### Production

Mobility and flexibility make it possible to adapt to new requirements more quickly. Permanent data capture during the production process opens up new possibilities in quality assurance. Just-in-time processes are better supported when important information is available immediately and at any time.



### Power and Water

Controlling measurement systems, mobile data capture and the ability to react immediately to problems can help improve water quality. Measurement devices can be connected via WLAN for this purpose. 5GHz WLAN is the ideal technology for meeting requirements that arise from the need to cover large areas with WLAN.

Wireless LAN makes it possible to connect remote power generation facilities such as wind power, water power, drilling platforms or refineries directly, without laying cables. This makes it possible to identify failures more quickly, control energy production more flexibly or perform services more affordably.

## Industrial Applications

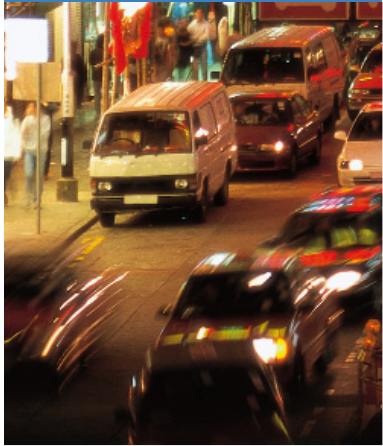
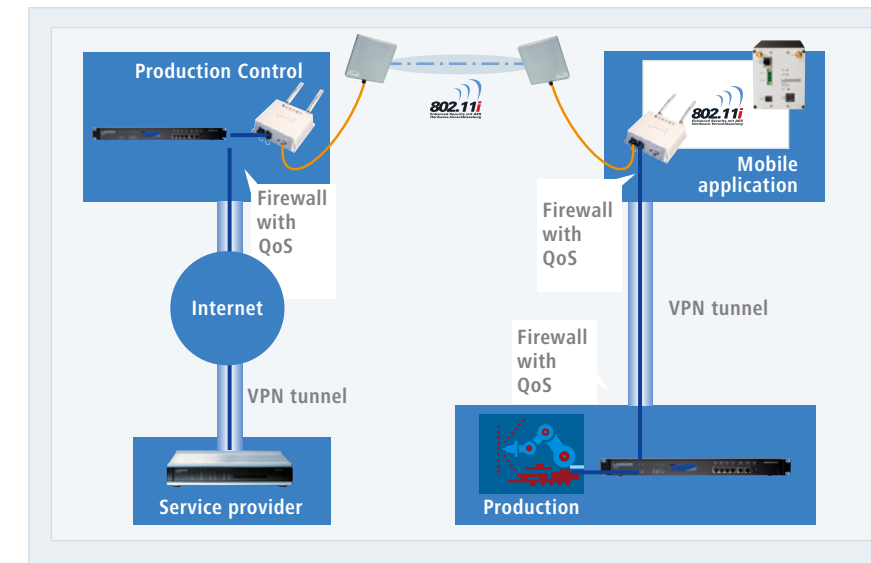
### Transportation

Operating information can also be transmitted and stored via WLAN in buses or trains. Furthermore, customers can take advantage of new offers made possible by permanent Internet connections or high-speed information systems.

For transportation company operators, rapid data exchange between the vehicles and the central office help to save time thereby offering important competitive advantages.

### Service

Using a complete Ethernet network can also help create new applications and products. This makes it possible to develop consistent services models. A third party company can maintain the network and the systems connected to it and even provide updates online. The operating electrician can order spare parts or install new software while at the machine.



## Security on every level

The term security can be defined by key three factors:

- Assured data communication due to high availability
- Operating security due to lower failure probability
- Network security due to hacker-proof encryption, firewalls and management systems

LANCOM products are equipped standard with the right solution for all three of these factors.

## More Secure than Cabling

The increasingly widespread use of WLAN technology has led to higher demands on security mechanisms to protect the transmitted data from interception by unauthorized persons. Advancements have been made since the early days of IEEE 802.11 and recent years have seen the development of new functions and standards for the protection of modern WLANs. LANCOM Wireless access points offer the optimal solution for whichever level of security you demand as they support comprehensive security standards and mechanisms such as closed networks with access control lists, WEP and IEEE 802.1x/EAP, 802.11i and VPN.

## Management

Wireless networking solutions demand powerful and yet simple systems for monitoring and control. LANCOM Systems and their LCOS and LAN tools offer outstanding management tools - even in the most complex application scenarios. The software is user friendly and has a uniform look and feel to aid the configuration and control of devices and networks. Network management with the LANtools enables the following functions, among others:

- Device configuration
- Administration of configurations - backup and restore your settings
- Carries out updates to the latest firmware versions
- Activates additional software options
- Monitors the device status, connections and firewall activities

The LANCOM WLANmonitor is part of the professional management suite that is delivered with every LANCOM access point.

## Operating Security

The LANCOM XAP and XVG industrial devices are equipped with a power unit that can be supplied redundantly from 5 different sources: With 12V DC, 2x 24V DC and 2x 48V DC PoE, the failure of any power supply can be replaced by any of the other sources.

## Redundancy in the WLAN

5GHz technology is not only advantageous for outdoor applications but it also dramatically helps maintain the stability and increase the performance of WLAN in difficult environments.

In cases where both frequencies are used in a redundant fashion, an alternate path can be utilized when disturbances occur within the frequency range that is actively in use.



## Product Overview

Products	LANCOM IAP-54 Wireless	LANCOM OAP-54 Wireless	LANCOM XAP-40-2	LANCOM XAC-40-1
Description	WLAN access point for warehouses and coverage in production facilities.	WLAN access point for outdoor applications and Wide Area	Industrial WLAN access point for automation, control	Industrial WLAN access point for automation and control
Power supply	PoE (IEEE 802.3af)	PoE	12V DC, 2x 24V DC, 2x PoE (IEEE 802.3af)	12V DC, 2x 24V DC, PoE (IEEE 802.3af)
Interfaces	WLAN IEEE 802.11a/b/g/h/i, LAN	2x WLAN IEEE 802.11a/b/g/h/i, LAN, WAN	WLAN IEEE 802.11a/b/g/h/i, 2xLAN, serial	WLAN IEEE 802.11a/b/g/h/i, LAN, serial
Firewall	In WAN operating mode	In WAN operating mode	In WAN operating mode	In WAN operating mode
VPN	-	Optional, max.25 tunnels	-	-
Housing, form factor	Robust metal housing, connections on the back of the device, measurements 158x40x135mm (WxHxD)	235 x 210 x 80 mm (WxHxD), 3.4 kg, robust metal housing	Robust metal housing, connections on the front, measurements 80x100x135mm (WxHxD)	Robust metal housing, connections on the front, measurements 80x100x135mm (WxHxD)
Temperature range	0°C to 50°C	-30°C to +70°C	-20°C to +50°C	-20°C to +50°C
Protection rating	IP 50	IP 66	IP 40	IP 40
Mounting options	Wall, pole, top-hat rail	Wall and pole	Wall and top-hat rail	Wall and top-hat rail
Item numbers	61504 (EU) 61505 (UK)	61507 (EU)	61147 (EU)	61196 (EU)

## Overview of antennas

Model / combination	Technical data	Equipment	Range/capabilities
<b>2.4 GHz</b>			
<b>AirLancer Extender O-30</b> Item no. 60478	30° directional antenna +14 dBi amplification	9m cable N-RSMA + adapter RSMA Lucent	Up to 2.5 km @ 1 Mbps Up to 140 m @ 54 Mbps
<b>AirLancer Extender O-70</b> Item no. 60469	70° sector antenna, + 8.5 dBi amplification	6m cable RSMA-N + adapter RSMA Lucent	Sector antenna for coverage of open areas
<b>AirLancer Extender O-D80g</b> Item no. 61221	80° sector antenna, + 9 dBi amplification <b>polarization diversity</b>	2 x 1 m cable TNC-N, 2 x adapter RSMA-N	Sector antenna for coverage of open areas 3dB improvement in signal quality from polarization diversity
<b>5 GHz</b>			
<b>AirLancer Extender O-9a</b> Item no. 61220	9° directional antenna + 23 dBi amplification	1 m cable N-N + Adapter N-RSMA	Up to 19 km @ 6 Mbps Up to 2.8 km @ 54 Mbps Up to 2 km @ 108 Mbps
<b>AirLancer Extender O-18a</b> Item no. 61210	18° directional antenna + 18 dBi amplification	3 m cable N-N + 1 m cable N-RSMA	Up to 8 km @ 6 Mbps Up to 630 m @ 54 Mbps Up to 450 m @ 108 Mbps
<b>AirLancer Extender O-D60a</b> Item no. 61222	60° sector antenna + 10 dBi amplification <b>Polarization diversity</b>	2 x 1 m cable TNC-N, 2 x adapter RSMA-N	Sector antenna for coverage of open areas 3dB improvement in signal quality from polarization diversity
<b>Accessories</b>			
<b>AirLancer cable NJ-NP</b> Extension cable 3m, 6m, 9m Item no. 61230, 61231, 61232	Cable N-connector to N-socket	3m, 6m or 9m length	3m: 3dB loss @ 2.4 GHz; 4.5dB @ 5GHz 6m: 3dB loss @ 2.4 GHz; 4.7dB @ 5GHz 9m: 4.5dB loss @ 2.4 GHz; 7dB @ 5GHz
<b>AirLancer Extender SA-5</b> Antenna cable lightning protector Item no. 61212	Lightning protector for antenna cable	N-connector to N-socket	Frequency range 0-6 GHz
<b>AirLancer Extender SA-LAN</b> Ethernet cable lightning protector Item no. 61213	Lightning protector for LAN (PoE) cable	RJ-45 to RJ-45	8 pin for PoE Cat.5 cable

