# LANCOM XS-5110F

Managed 10G fiber aggregation switch for smaller distributed networks

Due to its 8 future-proof fiber-optics SFP+ ports this 10G aggregation switch acts as a superordinated instance for connecting further access switches in smaller distributed networks. 2 further multi-Gigabit Ethernet ports (10/5/2,5/1G) enable a flexible and cost-efficient integration of high-performance network components. Thanks to the holistic LANCOM network management the device can be configured dynamicallyand automatically via the LANCOM Management Cloud (SD-LAN) or via cloud-enabled web GUI as well as via cloud-enabled CLI.

> Multi-gigabit aggregation switch with 8x SFP+ ports (10G) and 2x multi-gigabit ethernet (10/5/2.5/1G)
> Layer-3 features such as static routing and DHCP server
> Security with configurable access control on all ports as per IEEE 802.1X and access control lists
> Secure remote management through TACACS+, SSH, SSL, and SNMPv3
> SD-LAN – for quick and easy configuration via the LANCOM Management Cloud
> Stacking support via downlink ports
> 5-year warranty on all components

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### Flexible network topologies

The LANCOM XS-5110F is an ideal aggregation instance for the networking of access switches. Depending on the size of the installation, it integrates into the network topology either at the top level facing the WAN (2-tier design) or at the second level between a core switch and the access switches (3-tier design).

### Maximum performance on all ports

With its fiber-optics and multi-Gigabit Ethernet (mGbE) ports, the LANCOM XS-5110F offers future-proof port performance for networks that meet the increasing demands occuring from increasingly powerful clients, a growing number of IoT devices, and cloud applications. Equipped with 8 SFP+ ports (10G) and 2 further backward-compatible 10G mGbE ports, this powerful networking device is used to connect access switches and is ideal for smaller distributed networks.

### Configurable access control

The LANCOM XS-5110F stops rogue clients from gaining unauthorized access to the network. This is ensured by secured access control on all ports as per IEEE 802.1X (port-based, single, multi, and MAC-based) or by ACLs (access control lists).

### Static routing & DHCP server

The LANCOM XS-5110F can handle layer-3 tasks to offer, for example, a DHCP server for IP-address management or to define fixed network routes across one or more network segments. This takes load off of the router or firewall and increases the overall speed of data exchange. Capacities are freed up to handle the external data traffic and improve the overall network efficiency.

### Software Lifecycle Management with update guarantee

LANCOM regularly offers free updates for maximum investment protection. Major releases with new features, release updates with minor improvements and bug fixes are available not only for the entire product life cycle, but also for a period of two years after the product's discontinuation. With a warranty in place, critical security fixes and the associated support are also guaranteed for two years after the announced end-of-sales.

### Security "Made in Germany"

As a holder of the "IT Security made in Germany" trust mark, LANCOM is committed to keeping its products free of secret backdoors. This makes the LANCOM switches ideal for operation in sensitive environments and always in accordance with General Data Protection Regulations (GDPR).

### Secure remote management

Secure communication protocols such as SSH, SSL and SNMPv3 mean that the LANCOM XS-5110F is ideal for the professional management of remote networks. The switch also supports the TACACS+ protocol for authentication, authorization and accounting. This optimized solution promises maximum security for multi-site network management and monitoring.

### SD-LAN – easy management of complex networking scenarios

With the LANCOM Management Cloud, the LANCOM XS-5110F offers quick and easy network integration as well as automatic provision of the configuration. With SD-LAN, holistic network orchestration replaces the configuration of individual devices and allows the automatic assignment of VLANs to the required switch ports. Configurations are customized to the multi-site network architecture and, with a click of a mouse, they are rolled-out or updated simultaneously to every site.

### Secure Terminal Access

This function provides access to the command line of the LANCOM switch ("CLI tunneling") directly from the LANCOM Management Cloud—encrypted and without leaving the cloud interface. Be it trace or ping commands for rapid troubleshooting, access to low-level configuration parameters

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and detailed statistics in the LCOS SX operating system, or secure remote access to third-party devices in the local network via the integrated SSH client—Secure Terminal Access offers expert functions and extensive diagnostic and troubleshooting commands on your devices.

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| Security | |
|---|---|
| Secure Shell Protocol (SSH) | SSH for a secure remote configuration |
| Secure Sockets Layer (SSL) | SSL to encrypt HTTP connections; advanced security for browser-based configuration via web interface |
| IEEE 802.1X | IEEE 802.1X access control on all ports; RADIUS for authentication, authorization and accounting with MD5 hashing; guest VLAN; dynamic VLAN assignment |
| Private VLAN edge | Layer 2 isolation between clients in the same VLAN ('protected ports''); support multiple uplinks |
| Port security | Locking of MAC addresses to ports; limiting of the number of learned MAC addresses |
| IP source guard | Blocking access for illegal IP addresses on specific ports |
| Access-control-lists | Drop or rate limitation of connections based on source and destination MAC addresses, VLAN ID, IP address (IPv4/IPv6), protocol, port, DSCP/IP precedence, TCP/UDP source and destination ports, IEEE 802.1p priority, ICMP packets, IGMP packets, TCP flag. Support of 1023 ACEs per ACL and up to 16384 entries in total. |
| RADIUS/TACACS+ | Authentication, authorization and accounting of configuration changes by RADIUS or TACACS+ |
| Storm Control | Multicast/Broadcast/Unicast storm suppression |
| Isolated Group | Allows certain ports to be designated as protected. All other ports are non-isolated. Traffic between isolated group members ist blocked. Traffic can only be sent from isolated group to non-isolalted group. |
| DHCP Snooping | Protection against rogue DHCP servers on the network - Outgoing DHCP-server packets are only allowed on specific ports. |
| Dynamic ARP Inspection | dynamic ARP Inspection to prevent man-in-the-middle attacks incl. inkl. proxy ARP |
| ARP Request Poisoning | Protection against ARP Request Poisoning (ARP Spoofing) |
| IPv6 First Hop | IPv6 First Hop Security by Snooping Guard, DHCPv6 Guard, Source Guard, Prefix Guard |
| Denial-of-Service | Protection against Denial-of-Service attacks to prevent the loss of important protocol functions |

| Performance | |
|---|---|
| Switching technology | Store and forward with latency less than 4 microseconds |
| MAC addresses | Support of max 32K MAC addresses |
| Throughput | Max. 200 Gbps on the backplane |
| Maximum packet processing | 148 million packets per second (mpps) at 64-byte packets |
| VLAN | Port based and IEEE 802.1q tag based VLAN with up to 4,096 VLAN and up to 4,000 active VLANs; Supports ingress and egress packet filter in port based VLAN |
| Jumbo frame support | Jumbo frame support with up to 12288 bytes |
| Packet Buffer | 4 MB |

| Layer 3 features | |
|---|---|
| Static routing (IPv4/IPv6) | Hardware based static routing (IPv4/IPv6) |
| DHCP Server | DHCP Server per VLAN |
| Dynamic routing | ready for policy-based dynamic routing (activation by future software upgrade) |

| Layer 2 switching | |
|---|---|
| Spanning Tree Protokoll (STP) / Rapid STP / Multiple STP | Standard Spanning Tree according to IEEE 802.1d with fast convergence support of IEEE 802.1w (RSTP); using Multiple Spanning Tree instances by default according to IEEE 802.1s (MSTP) |
| Link Aggregation Control Protocol (LACP) | Support of 64 groups containing up to 8 ports each according to IEEE 802.3ad |
| VLAN | Support for up to 4K VLANs simultaneously (out of 4096 VLAN Ids); matching due to port, IEEE 802.1q tagged VLANs, MAC adresses, IP subnet and Private VLAN Edge function ('protected ports') |
| Voice VLAN | Voice traffic is automatically assigned to a voice-specific VLAN and treated with appropriate levels of QoS |
| IGMP multicasts | IGMP v1, v2, v3 to limit bandwidth-intensive multicast traffic to ports with requesters; supports 1024 multicast groups; source-specific multicasting |
| IGMP querier | Support of multicast domains of snooping switches in the absence of a multicast router |
| IGMP proxy | IGMP proxy to pass IGMP messages through |

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| Layer 2 switching | |
|---|---|
| MLD v1/v2 | Multicast Listener Discovery - IPv6 multicast packets are transmitted to interested listeners only |
| Generic VLAN registration | VLAN registration with GVRP according to IEEE 802.1q for automatic delivery of VLANs in bridged domains |
| DHCP Relay Agent | Relay of DHCP broadcast request to different LANs |
| Supported DHCP options | all options listed in RFC2132 |

| Stacking | |
|---|---|
| Stacking Option | Stacking via Downlink ports (Ports 7 & 8) |

| Interfaces | |
|---|---|
| Ethernet | > 8 SFP+-Ports 1/10 GBit/s<br>> 2 10mGbE-Ports 1000/2500/5000/10000 MBit/s Ethernet<br>> 10 concurrent Ethernet ports in total |
| Console port | Micro-USB and RJ45 configuration port for command line access |

| Management and monitoring | |
|---|---|
| Management | LANconfig, WEBconfig, LANCOM Management Cloud |
| Command Line Interface (CLI) | Configuration and status display from the command line with console application and direct connection to console port, via Telnet or SSH |
| Monitoring | LANmonitor, LANCOM Management Cloud |
| Remote Monitoring | Integrated RMON software agent supports 4 RMON groups (history, statistics, alarms and events) for enhanced traffic management, monitoring and analysis |
| Port Mirroring | Traffic can be mirrored from on port to another for investigation with network analyzer or RMON probe. Up to 9 ports can be mirrored to a single mirror port. Single sessions can be selected |
| Security | Access rights (read/write) can be set up separately, access control list |
| SNMP | SNMP management via SNMPv1, v2c or v3 with support of traps. User-based security model for SNMPv3 (USM) |
| Diagnosis | Diagnosis from the switch with PING and cable diagnosis |
| Firmware update | > Update via WEBconfig and browser (HTTP/HTTPS)<br>> Update via TFTP, SCP, and LANconfig<br>> Update via LANCOM Management Cloud<br>> Dual firmware image to update during operation |
| Secure Copy | Securely import and export files |
| DHCP client | Automatic assignement of the management IP address by DHCP |
| SNTP | Automatic time settings with Simple Network Time Protocol (SNTP) |
| s-flow v5 | Standard for monitoring of high-speed-networks. Visualization of network use, accounting an analysation to protect your network against dangers |

| Hardware | |
|---|---|
| Weight | 10,80 lbs (4,9 kg) |
| Power supply | Internal power supply unit (100 – 240 V, 50 – 60 Hz) |
| Environment | Temperature range 0 – 40° C; humidity 10 – 90%; non-condensing |
| Housing | Robust metal housing, 19" 1U (442 x 44 x 300 mm > W x H x D) with removable mounting brackets, network connectors on the front |
| Fans | 2 |
| Power consumption (max) | 34 W |
| Power consumption (idle) | 20 W |
| Acoustic noise (typ.) | 32 dBa |
| Heat power (max) | 116 BTU/h |

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| Software | |
|---|---|
| Software Lifecycle Management | Following the official announcement of a product's discontinuation by means of the LANCOM price list, during an existing LANCOM warranty you will receive: |
| | > For 2 years: free updates to the operating system, including new features and other updates with general improvements |
| | > For 2 years: critical security fixes based on the last applicable firmware version |
| | > For 5 years: free technical manufacturer support |
| 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 |

| Declarations of conformity* | |
|---|---|
| CE | EN 62368-1, EN 55032, EN 55024 |
| FCC | FCC Part 15 (CFR47) Class A |
| Country of origin | Software designed in Germany, Assembled in Taiwan |
| *) Note | You will find all declarations of conformity in the products section of our website at www.lancom-systems.com |

| Supported IEEE standards | |
|---|---|
| IEEE 802.1AB | Link Layer Discovery Protocol (LLDP) |
| IEEE 802.1AB | LLDP-MED |
| IEEE 802.1d | MAC Bridging |
| IEEE 802.1d | Spanning Tree |
| IEEE 802.1p | Class of Service |
| IEEE 802.1q | VLAN |
| IEEE 802.1s | Multiple Spanning Tree Protocol (MSTP) |
| IEEE 802.1w | Rapid Spanning Tree Protocoll (RSTP) |
| IEEE 802.1X | Port Based Network Access Control |
| IEEE 802.3 | 10Base-T Ethernet |
| IEEE 802.3ab | 1000Base-TX Ethernet |
| IEEE 802.3ad | Link Aggregation Control Protocol (LACP) |
| IEEE 802.3ae | 10 Gigabit Ethernet over fiber |
| IEEE 802.3x | Flow Control |
| IEEE 802.3ac | VLAN tagging |
| IEEE 802.3bj-CL91 | Forward Error Correction (FEC) |
| IEEE 802.1ak | Multiple Registration Protocol (MRP) |
| IEEE 802.1as | Timing and Synchronization for Time-Sensitive LANs |
| IEEE 802.1Qat | Multiple Stream Reservation Protocol (MSRP) |
| IEEE 802.1Qav | Forwarding and Queuing Enhancements for Time-Sensitive Streams |
| IEEE 802.1Qbb | Priority-based Flow control |
| IEEE 802.1v | Protocol-based VLANs |

| Supported RFC standards | |
|---|---|
| RFC 854 | Telnet Protocol Specification |
| RFC 1213 | MIB II |
| RFC 1493 | Bridge MIB |
| RFC 2021 | Remote Network Monitoring MIB v2 (RMONv2) |
| RFC 2233 | Interface MIB |

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| Supported RFC standards | |
|---|---|
| RFC 2460 | Internet Protocol Version 6 (IPv6) |
| RFC 2613 | SMON MIB |
| RFC 2674 | IEEE 802.1p and IEEE 802.1q Bridge MIB |
| RFC 2818 | Hypertext Transfer Protocol Secure (HTTPS) |
| RFC 2819 | Remote Network Monitoring MIB (RMON) |
| RFC 2863 | Interface Group MIB using SMIv2 |
| RFC 2933 | IGMP MIB |
| RFC 3414 | User based Security Model for SNMPv3 |
| RFC 3415 | View based Access Control Model for SNMP |
| RFC 3587 | IPv6 Global Unicast Address Format |
| RFC 3636 | IEEE 802.3 MAU MIB |
| RFC 4251 | The Secure Shell Protocol Architecture (SSH) |
| RFC 4291 | IP Version 6 Addressing Architecture |
| RFC 4443 | Internet Control Message Protocol (ICMPv6) |
| RFC 5519 | Multicast Group Membership Discovery MIB |
| RFC 5519 | IGMP- and MLD-Snooping |
| RFC 5519 | Unidirectional Link Detection Protocol (UDLD) |
| RFC 2618 | RADIUS Authentication Client MIB |
| RFC 2737 | Entity MIB v2 |
| RFC 3276 | RMON Groups 1,2,3 and 9 |
| RFC 1534 | Interoperation between DHCP and BootP |
| **Scope of delivery** | |
| Manual | Hardware Quick Reference (DE/EN), Installation Guide (DE/EN) |
| Cable | Serial configuration cable, 1.5m |
| Cable | Micro-USB configuration cable, 1.0m |
| Cable | IEC power cord |
| 19" brackets | Two 19" brackets for rackmounting |
| **Support** | |
| Warranty | 5 years, support via hotline and Internet KnowledgeBase |
| LANCOM Warranty Advanced Option L | Option for replacement of a defective device within one working day, item no. 10717 |
| **LANCOM Management Cloud** | |
| LANCOM LMC-C-1Y LMC License | LANCOM LMC-C-1Y License (1 Year), enables the management of one category C device for one year via the LANCOM Management Cloud, item no. 50106 |
| LANCOM LMC-C-3Y LMC License | LANCOM LMC-C-3Y License (3 Years), enables the management of one category C device for three years via the LANCOM Management Cloud, item no. 50107 |
| LANCOM LMC-C-5Y LMC License | LANCOM LMC-C-5Y License (5 Years), enables the management of one category C device for five years via the LANCOM Management Cloud, item no. 50108 |
| **Accessories** | |
| 1000Base-SX SFP module | LANCOM SFP-SX-LC1, item no. 61556 |
| 1000Base-LX SFP module | LANCOM SFP-LX-LC1, item no. 61557 |
| 10GBase-SX SFP module | LANCOM SFP-SX-LC10, item no. 61485 |
| 10GBase-LX SFP module | LANCOM SFP-LX-LC10, item no. 61497 |

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| Accessories | |
|---|---|
| 10G multi gigabit Ethernet copper module | LANCOM SFP-CO10-MG, Art.-Nr.: 60170 |
| 10G Direct Attach Cable 1m | LANCOM SFP-DAC10-1m, Art.-Nr.: 61495 |
| 10G Direct Attach Cable 3m | LANCOM SFP-DAC10-3m, Art.-Nr.: 60175 |
| LANCOM Power Cord (UK) | IEC power cord, UK plug, item no. 61650 |
| LANCOM Power Cord (CH) | IEC power cord, CH plug, item no. 61652 |
| LANCOM Power Cord (US) | IEC power cord, US plug, item no. 61651 |
| LANCOM Power Cord (AU) | IEC power cord, AU plug, item no. 61653 |
| **Item number(s)** | |
| LANCOM XS-5110F | 61858 |

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