

LANCOM XS-5116QF

Managed 10G fiber aggregation switch for mid-sized distributed networks



This 10G aggregation switch offers future-proof fiber-optics performance and acts as a superordinated instance in distributed networks and provides high-performance 14 SFP+ ports for aggregating access switches and further 2 QSFP+ ports. Professional redundancy functionalities and two hot-swappable power supplies guarantee fail-safe operations. Thanks to the holistic LANCOM network management the device can be configured dynamically and automatically via the LANCOM Management Cloud (LMC) or via cloud-enabled web GUI, and even via cloud-enabled CLI.

- Multi-gigabit aggregation switch with 12x SFP+ ports (10G) and 2x combo ports (10/5/2.5/1 multi-gigabit ethernet / SFP+) and 2x QSFP+ (40G) uplink ports
- Full layer 3 functionality through VRRP, DHCP, static and policy-based dynamic routing via OSPF v2/v3
- Backplane stacking via uplink ports
- 2x hot-swappable PSU for maximum reliability
- Front-to-back airflow for optimal cooling in 19" racks
- 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
- Cloud-managed LAN and switch stacking for quick configuration and convenient management via the LMC
- Limited Lifetime Warranty (LLW) included
- Includes security updates for 5 years after end of sale and major releases for 2 years after end of sale

LANCOM XS-5116QF

Flexible network topologies

The LANCOM XS-5116QF 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-5116QF offers future-proof port performance for resilient networks that meet the increasing demands occurring from increasingly powerful clients, a growing number of IoT devices, and cloud applications. 14 SFP+ ports (10G), 2 of which can be used as mGbE combo ports, serve as a high-performance distribution instance for establishing switch structures. A powerful uplink featuring 2x QSFP+ ports (40G), which can alternatively be used for stacking, makes the LANCOM XS-5116QF the ideal solution for mid-sized distributed networks with high performance requirements.

Flexibility thanks to stacking technology

Keep your network flexible with stacking and protect your investment. Stacking makes child's play of expanding your network, as several physical switches combine into a single logical unit for convenient maintenance and management. When you expand your network, the new switch automatically receives a configuration from the stack master and is ready to use within seconds. Furthermore, device or network redundancies can be implemented with stacking for maximum reliability. With the LANCOM XS-5116QF, stack processing with a separate backplane CPU remains independent of network load thanks to the QSFP+ uplink ports.

Configurable access control

The LANCOM XS-5116QF 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).

Full layer 3 functionality

The LANCOM XS-5116QF is capable of performing layer 3 tasks such as DHCP server functionality, i.e. IP address management, or the predefinition of network routes across one or more network segments. Thanks to dynamic routing, the switch can also react quickly to network changes. The optimal route for data traffic within the network is thus constantly redefined by the LANCOM XS-6128QF based on the load level. This results in a load reduction on the router, so that these capacities are then additionally available for handling external data traffic and increase the efficiency of the entire network.

High operational security

The LANCOM XS-5116QF features two integrated hot-swappable PSUs (power supply units). This allows a quick and uninterrupted replacement of defective power supply units. Front-to-back airflow design improves cooling in 19-inch racks and extends the product lifetime. Stacking is a major contribution to highly resilient scenarios.

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Cloud-managed LAN and switch stacking

With the LANCOM Management Cloud, the XS-5116QF offers quick and easy network integration as well as automatic provision of the configuration across locations with the click of a mouse. Cloud-managed LAN replaces the configuration of individual devices and enables automatic assignment of VLANs to switch ports. Cloud-managed switch stacking also enables convenient management and monitoring of the entire stack. Learn more in the Design guide switch stacking.

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-5116QF 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.

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 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.

Limited Lifetime Warranty (LLW)

This enterprise switch is covered ex works by the LANCOM Limited Lifetime Warranty. Regardless of the operating time, the warranty is valid until the end-of-life status of the device (max. 10 years). For next-business-day delivery of a replacement device, we recommend the LANCOM Next Business Day Replacement Option and the LANCOM Service Packs in the 24/7 or 10/5 variants. The Service Packs also offer professional end customers manufacturer support with customized service times.

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Security

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| 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 e.g. 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 is blocked. Traffic can only be sent from isolated group to non-isolated 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. 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

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| Switching technology | Store and forward with latency less than 4 microseconds |
| MAC addresses | Support of max 32K MAC addresses |
| Throughput | Max. 440 Gbps on the backplane |
| Maximum packet processing | 327 million packets per second (mpps) at 64-byte packets |
| VLAN | Port based and IEEE 802.1q tag based VLAN with up to 4,093 VLAN; Supports ingress and egress packet filter in port based VLAN |
| Jumbo frame support | Jumbo frame support with up to 12288 bytes |

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Performance

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| Packet Buffer | 4 MB |
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Layer 3 features

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| Number of L3 interfaces | up to 128 |
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| Static routing (IPv4/IPv6) | Hardware based static routing (IPv4/IPv6) with a number of 16,000 possible routes |
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| DHCP Server | DHCP Server per VLAN |
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| VRRP | Virtual Router Redundancy Protocol |
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| Dynamic routing (IPv4/IPv6) | dynamic routing by OSPFv2 and OSPFv3 |
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Layer 2 switching

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| 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) |
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| Link Aggregation Control Protocol (LACP) | Support of 64 groups containing up to 8 ports each according to IEEE 802.3ad |
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| VLAN | Support for up to 4K VLANs simultaneously (out of 4093 VLAN Ids); matching due to port, IEEE 802.1q tagged VLANs, MAC addresses, IP subnet and Private VLAN Edge function ("protected ports") |
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| Voice VLAN | Voice traffic is automatically assigned to a voice-specific VLAN and treated with appropriate levels of QoS |
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| IGMP multicasts | IGMP v1, v2, v3 to limit bandwidth-intensive multicast traffic to ports with requesters; supports 1024 multicast groups; source-specific multicasting |
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| IGMP querier | Support of multicast domains of snooping switches in the absence of a multicast router |
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| IGMP proxy | IGMP proxy to pass IGMP messages through |
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| MLD v1/v2 | Multicast Listener Discovery - IPv6 multicast packets are transmitted to interested listeners only |
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| Generic VLAN registration | VLAN registration with GVRP according to IEEE 802.1q for automatic delivery of VLANs in bridged domains |
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| DHCP Relay Agent | Relay of DHCP broadcast request to different LANs |
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| Supported DHCP options | all options listed in RFC2132 |
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Stacking

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| Stacking Option | Stacking via Uplink ports (2x 40G) |
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Interfaces

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| Ethernet | <ul style="list-style-type: none"> → 12 SFP+-Ports 1/10 GBit/s → 2 10GbE-Combo-Ports 1000/2500/5000/10000 MBit/s Ethernet → 2 QSFP+-Ports 40 GBit/s → 16 concurrent Ethernet ports in total |
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| Console port | Micro-USB and RJ45 configuration port for command line access |
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Management and monitoring

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| Management | LANconfig, WEBconfig, LANCOM Management Cloud, Industry Standard CLI |
| 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 13 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 | <ul style="list-style-type: none"> → Update via WEBconfig and browser (HTTP/HTTPS) → Update via TFTP, SCP, and LANconfig → Update via LANCOM Management Cloud → 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 analysisation to protect your network against dangers |

Hardware

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| Weight | 13.23 lbs (6.0 kg) |
| Power supply | Two bays for swappable power supply units (100 – 240 V, 50 – 60 Hz) |
| Environment | Temperature range 0 – 40° C; humidity 10 – 90%; non-condensing |

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Hardware

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| Housing | Robust metal housing, 19" 1U (442 x 44 x 375 mm > W x H x D) with removable mounting brackets, network connectors on the front |
| Fans | 2 |
| Power consumption (max) | 46 W |
| Power consumption (idle) | 28 W |
| Acoustic noise (typ.) | 40 dBa |
| Heat power (max) | 157 BTU/h |

Software

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| LCOS version | based on LCOS SX 5.00 |
| Software Lifecycle Management | After discontinuation, the device is subject to the LANCOM Software Lifecycle Management. Details can be found at: www.lancom.de/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 |

Declarations of conformity*

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| Europe/EFTA | CE |
| North America | FCC/IC |
| Australia / New Zealand | ACMA |
| *) Note | The full text of the specific Declaration of Conformity is available at the following Internet address: www.lancom-systems.com/doc |

Supported IEEE standards

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|--------------|---|
| IEEE 802.1AB | Link Layer Discovery Protocol (LLDP) |
| IEEE 802.1AB | LLDP-MED |
| IEEE 802.1ad | Q-in-Q tagging |
| IEEE 802.1ak | MRP and MVRP - Multiple Registration Protocol and Multiple VLAN Registration Protocol |
| IEEE 802.1d | MAC Bridging |
| IEEE 802.1d | Spanning Tree |
| IEEE 802.1p | Class of Service |

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Supported IEEE standards

| | |
|-------------------|--|
| IEEE 802.1q | VLAN |
| IEEE 802.1s | Multiple Spanning Tree Protocol (MSTP) |
| IEEE 802.1w | Rapid Spanning Tree Protocol (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 802.3ba | 40GBase-X Ethernet |
| 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 |
| RFC 2460 | Internet Protocol Version 6 (IPv6) |

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Supported RFC standards

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|----------|---|
| 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 7513 | DHCP Snooping |
| 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

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| Manual | Hardware Quick Reference (DE/EN), Installation Guide (DE/EN) |
| Cable | Serial configuration cable, 1.5m |
| Cable | Micro-USB configuration cable, 1.0m |

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Scope of delivery

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| Cable | IEC power cord |
| Power supply | 1 hot-swappable power supply |
| 19" brackets | Two 19" brackets for rackmounting |

Support

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| Warranty | LANCOM Limited Lifetime Warranty – Hardware warranty until the End of Life status of the device (maximum 10 years). For details, please refer to the General Warranty Conditions at: www.lancom.de/garantiebedingungen . |
| LANCOM support | → Free technical manufacturer support for LANcommunity partners as part of the LANCOM Software Lifecycle Management www.lancom.de/lifecycle → Charged technical manufacturer support for end customers is optionally available |
| LANCOM Next Business Day Replacement option XL | In addition to the LANCOM Limited Lifetime Warranty replacement option for a defective device, item no. 61323 |
| LANCOM service pack 24/7 XL * | The LANCOM Service Pack 24/7 Emergency Support offers end customers direct manufacturer support with a guaranteed initial response time of max. 30 minutes in the event of massive operational disruptions. Additional extended service times for concerns outside of emergency support (Monday to Friday, 8 a.m. to 6 p.m.). It also includes advance replacement in the event of a hardware defect, including delivery of a replacement device on the next working day. Available for 3 different terms: → 1 year: 10233 → 3 years: 10237 → 5 years: 10241 |
| LANCOM service pack 10/5 XL * | The LANCOM Service Pack 10/5 offers end customers direct manufacturer support for ten hours on five working days with a maximum initial response time of four hours. It also includes advance replacement in the event of a hardware defect, including delivery of a replacement device on the next working day. The following terms are available: → 1 year: 10251 → 3 years: 10252 → 5 years: 10253 |
| *) Note | Further details on LANCOM Service Packs are available at the following Internet address: https://www.lancom-systems.de/produkte/service-und-support |

LANCOM Management Cloud

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| 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 |

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LANCOM Management Cloud

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| LANCOM LMC-C-10Y LMC License | LANCOM LMC-C-10Y License (10 Years), enables the management of one category C device for ten years via the LANCOM Management Cloud, item no. 50134 |
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Accessories*

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| 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 |
| 10G multi gigabit Ethernet copper module | LANCOM SFP-CO10-MG, Art.-Nr.: 60170 |
| 40GBase-SX SFP module | LANCOM SFP-SR-MPO40, Art.-Nr.: 60173 |
| 40GBase-LX SFP module | LANCOM SFP-LR-LC40, Art.-Nr.: 60174 |
| 10G Direct Attach Cable 1m | LANCOM SFP-DAC10-1m, Art.-Nr.: 61495 |
| 10G Direct Attach Cable 3m | LANCOM SFP-DAC10-3m, Art.-Nr.: 60175 |
| 40G Direct Attach Cable 1m | LANCOM SFP-DAC40-1m, Art.-Nr.: 60176 |
| 40G Direct Attach Cable 3m | LANCOM SFP-DAC40-3m, Art.-Nr.: 60177 |
| Power supply (swappable) | LANCOM SPSU-250, item no. 61499 **) |
| Rack mount rails | LANCOM Switch rack mount rails, item no. 61432 |
| 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 |
| *) Note | Support for third-party accessories (SFP and DAC) is excluded and cannot be granted |
| ***) Note | In case of unavailability of the 250W power supply, a 550W power supply can also be enclosed |

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Item number(s)

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61859

