LANCOM XS-6128QF

10G stackable managed fiber aggregation switch for distributed small & medium enterprise networks

This 10G aggregation switch is a high-performance distribution base for subordinate access switches and offers the highest operational efficiency and reliability. Its full configuration of 20 SFP+ ports (10G) — including 4 mGbE (1G/2.5G/5G/10G) combo ports — and FleX uplink ports with up to 200G uplink capacity guarantees flexibility and investment protection. In addition, the professional PSU redundancy, hot-swappable fan modules and backplane stacking of up to 400G bandwidth ensure fail-safe operation. Management is automated via the LANCOM Management Cloud (SD-LAN) or via Web-GUI and CLI.

- Multi-Gigabit aggregation switch with 20x 10G downlink ports of which 16x SFP+ and 4x multi-Gigabit comboports (SFP+ / 1G/2.5G/5G/10G nBASE-T), plus 4 additional SFP+ ports when using SFP+ modules in the 4x SFP28 ports
- FleX uplink ports (4x SFP28 (10G/25G) or 2x QSFP+ (40G))
- Non-blocking backplane stacking via 4 dedicated SFP-DD-FleX ports
- Full layer 3 functionality: VRRP, DHCP, static and policy-based dynamic routing via OSPF v2/v3 and BGP4
- Redundant hot-swappable PSU and 2 hot-swappable fans 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
- Includes security updates for 5 years after end of sale and major releases for 2 years after end of sale
- Limited Lifetime Warranty (LLW) included
- SD-LAN —for quick and easy configuration via the LANCOM Management Cloud

LANCOM Systems

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State-of-the-art multi-Gigabit performance on all ports

The LANCOM XS-6128QF offers extremely strong port performance and unmatched port flexibility through its future-proof fiber-optic FleX ports. This makes it the perfect foundation for fail-safe networks that can cope with the increasing demands from IoT, mobile devices, and cloud applications. 20 SFP+ ports (10G), 4 of which can be used as multi-Gigabit Ethernet (mGbE) combo ports, serve as a high-performance distribution instance for building switch structures. Enormous backhaul capacity is available via either 2 QSFP+ (40G) or 4 SFP28 (25G) high-speed uplink FleX ports. Non-blocking backplane stacking via 4 SFP-DD FleX ports (50G) ensure "line-speed" switching without latency. Ideal for virtualized applications and use as a higher-level campus switch in very large, distributed enterprise networks. If uplinking or stacking is not required, the front FleX uplink ports can be used as either 4x 10G/25G or 2x 40G downlink ports, and the rear SFP-DD FleX ports can be used as 4x 25G downlink ports for aggregating access switches.

Unsurpassed flexibility with FleX port configuration options

Unmatched port flexibility is provided on the LANCOM XS-6128QF via four different board configurations. The four configuration options can be conveniently changed via CLI or Web GUI followed by a device reboot. The following table shows the impressive flexibility of the LANCOM XS-6128QF:

Port configurations XS-6128QF

		XS-6128QF switch ports			
		SFP+ (combo)	SFP28	QSFP+	SFP-DD
Option	Board configuration	Used port bandwidth			
1	1	20 x 10G	4 x 25G	–	4 x 50G
2	1	20 x 10G	4 x 10G*	–	4 x 50G
3	2	20 x 10G	–	2 x 40G	4 x 50G
4	3	20 x 10G	4 x 25G	–	4 x 25G**
5	3	20 x 10G	4 x 10G*	–	4 x 25G**
6	4	20 x 10G	–	2 x 40G	4 x 25G**

Port combinations			
10G	25G	40G	50G
20	4	–	4
24	–	–	4
20	–	2	4
20	8	–	–
24	4	–	–
20	4	2	–

* via 10G transceiver in the SFP28 port, ** via SFP28 tranceiver in the SFP-DD port

Flexible network topologies

The LANCOM XS-6128QF 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 on the top level as core switch facing the WAN (2-tier design) or on the second level as distribution switch between a core switch and the access switches (3-tier design).

Flexibility and investment protection thanks to LANCOM fail-safe stacking

The LANCOM fail-safe stacking feature keeps your network flexible and your investment secure. 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-6128QF, stack processing with a separate backplane CPU remains independent of network load thanks to four dedicated SFP-DD-FleX ports (50G).

TCO-optimized design

The design concept of the LANCOM XS-6128QF provides for a very low total cost of ownership (TCO), because all ports are natively available, which saves a costly modular design. So this aggregation switch enables all maximum port options out of the box with combo downlink (copper/fiber) and combo uplink (25G/40G) fiber ports. All ports are industry standard, even for stacking, so there is no need for costly proprietary cables. For example, there is the option of using SFP+ modules in the 4x 25G SFP28 ports for up to 4 additional SFP+ ports. Decentralized stacking thanks to the possibility of using standard short and long range modules is also possible with this model.

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Full layer 3 functionality

The LANCOM XS-6128QF 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.

Maximum operational security

The LANCOM XS-6128QF can be operated with up to two hot-swappable PSUs (power supply units). This allows a quick and uninterrupted replacement of defective power supply units. For highest resiliency it is also equipped with swappable fans. 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.

SD-LAN – easy management of complex networking scenarios

With the LANCOM Management Cloud, the LANCOM XS-6128QF offers quick and easy network integration as well as automatic provision of the configuration. This makes it easy to manage even complex networking scenarios. 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.

Configurable access control

The LANCOM XS-6128QF 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).

Security “made in Germany”

As a holder of the "IT Security made in Germany" trust mark, LANCOM has also 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-6128QF 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”) as well as direct access to the WebGUI (“GUI 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.

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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	
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 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	
Switching technology	Store and forward with latency less than 4 microseconds
MAC addresses	Support of max 32K MAC addresses
Throughput	Max. 1000 Gbps on the backplane
Maximum packet processing	744 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	8 MB
6in4 Tunneling	Support of encapsulation of IPv6 traffic in IPv4 packets
Layer 3 features	
Number of L3 inferfaces	up to 128
Static routing (IPv4/IPv6)	Hardware based static routing (IPv4/IPv6) with a number of 16,000 possible routes
DHCP Server	DHCP Server per VLAN
VRRP	Virtual Router Redundancy Protocol
Dynamic routing (IPv4/IPv6)	dynamic routing by OSPFv2, OSPFv3 and BGP4
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 32 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

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Layer 2 switching	
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
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 backplane-stacking ports (non-blocking) 4x SFP-DD (25/50 Gbps)—using the optional “LANCOM SFP-DD-DAC50-1m” or “LANCOM SFP-DD-DAC50-2.5m” or by using “LANCOM SFP-SR-LC25” or “LANCOM SFP-LR-LC25” modules
Interfaces	
Ethernet	› 16 SFP+ ports 1/10 Gbps › 4 SFP+ / 4 mGbE combo downlink ports (SFP+ 1/10 Gbps resp. 1/2.5/5/10 Gbps Ethernet) › 2 QSFP+ / 4 SFP28 FleX uplink ports (1/40 Gbps resp. 10/25 Gbps) › 4 SFP-DD stacking ports (25/50 Gbps) › up to 28 concurrent ports
Console port	Micro-USB and RJ45 configuration port for command line access
Management and monitoring	
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 19 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) › 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 analysation to protect your network against dangers
Hardware	
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
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

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Hardware	
Fans	2 (swappable—replace defective fans within 48 hours to protect device from possible damage / time required for replacement approx. 2 min) Exchange fan "LANCOM SFAN-XS6" optionally available
Power consumption (max)	105 W
Power consumption (idle)	70 W
Acoustic noise (typ)	50 dBa
Heat power (max)	359 BTU/h
Software	
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*	
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	
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 802.3bz	2.5GBASE-T Ethernet
IEEE 802.3bj	25GBASE-X Ethernet
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)

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Supported IEEE standards	
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)
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
Power supply	1 hot-swappable power supply
19" brackets	Two 19" brackets for rackmounting
Support	
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.

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Support	
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 Warranty Advanced Option XL	Replacement of a defective device within 5 years after purchase date, item no. 10718
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	
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
10G multi gigabit Ethernet copper module	LANCOM SFP-CO10-MG, Art.-Nr.: 60170
25GBase-LX SFP module	LANCOM SFP-SR-LC25, Art.-Nr.: 60171
25GBase-LX SFP module	LANCOM SFP-LR-LC25, Art.-Nr.: 60172
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
25G Direct Attach Cable 1m	LANCOM SFP-DAC25-1m, Art.-Nr.: 60180
25G Direct Attach Cable 3m	LANCOM SFP-DAC25-3m, Art.-Nr.: 60181
50G Direct Attach Stacking Cable 1m	LANCOM SFP-DD-DAC50-1m, Art.-Nr.: 60179
50G Direct Attach Stacking Cable 3m	LANCOM SFP-DD-DAC50-2.5m, Art.-Nr.: 60178

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Accessories*	
Power supply (swappable)	LANCOM SPSU-250, item no. 61499
Fan(swappable)	LANCOM SFAN-XS6, item no. 61491
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
Item number(s)	
LANCOM XS-6128QF	61860