

# 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 (LMC) or via Web-GUI and CLI.

- Multi-Gigabit aggregation switch with 20x 10G SFP+ downlink ports, thereof 4x multi-Gigabit combo ports (SFP+ or 1G / 2.5G / 5G / 10G nBASE-T), plus 4 additional SFP+ ports when using SFP+ modules in the 4x 25G SFP28 ports
- Flex uplink ports (4x 25G SFP28 or 2x 40G QSFP+)
- Support of Virtual Port Channel (VPC or MC-LAG) to implement networks with 100% uptime
- Non-blocking backplane stacking via 4 dedicated 50G 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
- Industry standard CLI
- Cloud-managed LAN and switch stacking for a convenient management via the LMC
- Limited Lifetime Warranty (LLW) included



# LANCOM XS-6128QF

## 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 |            |                     |          |         |           | Port combinations |     |     |     |
|------------------------|------------|---------------------|----------|---------|-----------|-------------------|-----|-----|-----|
|                        |            | SFP+ (combo)        | SFP28    | QSFP+   | SFP-DD    | 10G               | 25G | 40G | 50G |
| Option                 | Board Type | Used port bandwidth |          |         |           |                   |     |     |     |
| 1                      | 1          | 20 × 10G            | 4 × 25G  | –       | 4 × 50G   | 20                | 4   | –   | 4   |
| 2                      | 1          | 20 × 10G            | 4 × 10G* | –       | 4 × 50G   | 24                | –   | –   | 4   |
| 3                      | 2          | 20 × 10G            | –        | 2 × 40G | 4 × 50G   | 20                | –   | 2   | 4   |
| 4                      | 3          | 20 × 10G            | 4 × 25G  | –       | 4 × 25G** | 20                | 8   | –   | –   |
| 5                      | 3          | 20 × 10G            | 4 × 10G* | –       | 4 × 25G** | 24                | 4   | –   | –   |
| 6                      | 4          | 20 × 10G            | –        | 2 × 40G | 4 × 25G** | 20                | 4   | 2   | –   |

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

## Network design with 100% uptime via VPC / MC-LAG

Virtual Port Channel (VPC), or Multi-chassis Link Aggregation Group (MC-LAG), is the preferred solution for increasing the reliability of large network infrastructures. If you link two LANCOM XS-6128QF in a VPC network, one of the two devices takes over the tasks of the other device without interruption in the event of a defect or failure, e.g. during a firmware update. To ensure constant data forwarding, the switches exchange important information about the network via their peer link, such as MAC tables and routing information. For 100% network uptime, the switches remain independently manageable devices that can be restarted or updated individually.



# LANCOM XS-6128QF

## 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 stacking technology

With the help of the stacking function, your network keeps 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.

## 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.



# LANCOM XS-6128QF

## Cloud-managed LAN and switch stacking

With the LANCOM Management Cloud, the XS-6128QF 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.

## 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).

## „IT 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.

## Limited Lifetime Warranty (LLW)

This enterprise switch is covered ex works by the LANCOM Limited Lifetime Warranty. Regardless of the operating time, the replacement service 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 LANcare NBD Replacement as well as LANcare Direct Advanced in 24/7 or 10/5 variants. LANcare Direct Advanced also offers technical manufacturer support with guaranteed service and response times.



# LANCOM XS-6128QF

## 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 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 (max. rules per list) per ACL and up to 2800 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 4,093 VLAN; Supports ingress and egress packet filter in port based VLAN |
| Jumbo frame support       | Jumbo frame support with up to 12288 bytes                                                                                    |



# LANCOM XS-6128QF

## Performance

|                |                                                          |
|----------------|----------------------------------------------------------|
| Packet Buffer  | 8 MB                                                     |
| 6in4 Tunneling | Support of encapsulation of IPv6 traffic in IPv4 packets |

## Layer 3 features

|                             |                                                                                   |
|-----------------------------|-----------------------------------------------------------------------------------|
| Number of L3 interfaces     | 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, max. 16 pools                                               |
| VRRP                        | Virtual Router Redundancy Protocol                                                |
| VRF                         | Virtual Routing and Forwarding                                                    |
| 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 802.1ax                                                                                                                                                             |
| Virtual port channel VPC                                 | VPC (also known as MLAG) enables a LAG to be created across two independent switches, so that some member ports of a VPC can reside on one switch and the other members of a VPC can reside on another switch, for details see CLI manual |
| 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")                                             |
| 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                                                                                                                                                                                                  |
| 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                                                                                                                                                                                                             |



# LANCOM XS-6128QF

## 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” transceiver modules |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Interfaces

|          |                                                                                                                                                                                                                                                                    |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet | → 16 SFP+ ports 1/10 Gbps<br>→ 4 SFP+ / 4 mGbE combo downlink ports (SFP+ 1/10 Gbps resp. 1/2.5/5/10 Gbps Ethernet)<br>→ 2 QSFP+ / 4 SFP28 Flex uplink ports (1/40 Gbps resp. 10/25 Gbps)<br>→ 4 SFP-DD stacking ports (25/50 Gbps)<br>→ up to 28 concurrent ports |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|              |                                                               |
|--------------|---------------------------------------------------------------|
| Console port | Micro-USB and RJ45 configuration port for command line access |
|--------------|---------------------------------------------------------------|

|                             |                                                                                            |
|-----------------------------|--------------------------------------------------------------------------------------------|
| Out of band management port | Out of band management RJ45 configuration port for command line access via terminal server |
|-----------------------------|--------------------------------------------------------------------------------------------|

## 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)<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 assignment of the management IP address by DHCP                                                                                                                                      |
| SNTP                         | Automatic time settings with Simple Network Time Protocol (SNTP)                                                                                                                               |



# LANCOM XS-6128QF

## Management and monitoring

|           |                                                                                                                                              |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| s-flow v5 | Standard for monitoring of high-speed-networks. Visualization of network use, accounting an analysis 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                                                                   |
| Fans                     | 2 (swappable—replace defective fans within 48 hours to protect device from possible damage / time required for replacement approx. 2 min)<br>Exchange fan "LANCOM SFAN-XS6" optionally available |
| Power consumption (idle) | 70 W                                                                                                                                                                                             |
| Acoustic noise (typ)     | 50 dBa                                                                                                                                                                                           |
| Heat power (max)         | 359 BTU/h                                                                                                                                                                                        |

## Software

|                      |                                                                                                                                                                                                                                                                                                                                                         |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LCOS version         | based on LCOS SX 5.20                                                                                                                                                                                                                                                                                                                                   |
| Lifecycle Management | After discontinuation (End of Sale), the device is subject to the LANCOM Lifecycle Management. Details can be found at: <a href="http://www.lancom-systems.com/lifecycle">www.lancom-systems.com/lifecycle</a>                                                                                                                                          |
| 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:<br><a href="http://www.lancom-systems.com/doc">www.lancom-systems.com/doc</a> |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Supported IEEE standards

|              |                                      |
|--------------|--------------------------------------|
| IEEE 802.1AB | Link Layer Discovery Protocol (LLDP) |
|--------------|--------------------------------------|



# LANCOM XS-6128QF

## Supported IEEE standards

|                             |                                                                                       |
|-----------------------------|---------------------------------------------------------------------------------------|
| 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                                                                      |
| 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 802.1ax, incl. 802.3ad | Link Aggregation Control Protocol (LACP)                                              |
| IEEE 802.3ae                | 10 Gigabit Ethernet over fiber                                                        |
| IEEE 802.3bz                | 2.5GBASE-T Ethernet                                                                   |
| IEEE 802.3an                | 10GBASE-T Ethernet                                                                    |
| IEEE 802.3bj                | 25GBASE-X Ethernet                                                                    |
| IEEE 802.3ba, 40G           | 40GBASE-X Ethernet                                                                    |
| IEEE 802.3u                 | 100Base-T Ethernet                                                                    |
| IEEE 802.3x                 | Flow Control                                                                          |
| IEEE 802.3z                 | 1000Base-X Ethernet                                                                   |
| 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                                    |



# LANCOM XS-6128QF

## Supported IEEE standards

|               |                                                                |
|---------------|----------------------------------------------------------------|
| 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)           |
| 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     |



# LANCOM XS-6128QF

## Supported RFC standards

|          |                                               |
|----------|-----------------------------------------------|
| 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 | Routing Information Protocol - RIPv2          |
| 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                            |
| 19" rack rails | LANCOM Switch rack mount rails                               |

## Support

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Warranty extension   | LANCOM Limited Lifetime Warranty – replacement service up to the End of Life status of the device (maximum 10 years). For details, please refer to the service and support conditions at: <a href="http://www.lancom.de/www.lancom-systems.com/support-conditions">www.lancom.de/www.lancom-systems.com/support-conditions</a> and in the LLW info paper at <a href="http://www.lancom-systems.com/infopaper-llw">www.lancom-systems.com/infopaper-llw</a> |
| Security Updates     | Up to the End of Life of the device (see <a href="http://www.lancom-systems.com/product-tables">www.lancom-systems.com/product-tables</a> )                                                                                                                                                                                                                                                                                                                |
| Software Updates     | Regular free updates including new features as part of the LANCOM Lifecycle Management <a href="http://www.lancom-systems.com/lifecycle">www.lancom-systems.com/lifecycle</a> )                                                                                                                                                                                                                                                                            |
| Manufacturer support | For LANcommunity partners up to the End of Life of the device. For end customers with LANcare Direct or LANcare Premium Support during the LANcare validity                                                                                                                                                                                                                                                                                                |



# LANCOM XS-6128QF

## Support

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LANcare Direct 24/7 Advanced XL | Direct, prioritized 10/5 manufacturer support incl. 24/7 emergency hotline and security updates for the device, NBD advance replacement with delivery of the device on the next business day (24/7/NBD), guaranteed first response times (SLA) of max. 30 minutes for reporting massive operational disruptions by telephone (priority 1) and max. 4 hours for all other concerns (priority 2), term-based for 1, 3, or 5 years (item no. 10785, 10786 or 10787) |
| LANcare Direct 24/7 XL          | Direct, prioritized 10/5 manufacturer support incl. 24/7 emergency hotline and security updates for the device, guaranteed first response times (SLA) of max. 30 minutes for reporting massive operational disruptions by telephone (priority 1) and max. 4 hours for all other concerns (priority 2), term-based for 1, 3, or 5 years (item no. 10761, 10762 or 10763)                                                                                          |
| LANcare Direct Advanced 10/5 XL | Direct, prioritized 10/5 manufacturer support and security updates for the device, NBD advance replacement with delivery of the device on the next business day (10/5/NBD), guaranteed first response times (SLA) of max. 2 hours for reporting massive operational disruptions by telephone (priority 1) and max. 4 hours for all other concerns (priority 2), term-based for 1, 3, or 5 years (item no. 10773, 10774 or 10775)                                 |
| LANcare Direct 10/5 XL          | Direct, prioritized 10/5 manufacturer support and security updates for the device, guaranteed first response times (SLA) of max. 2 hours for reporting massive operational disruptions by telephone (priority 1) and max. 4 hours for all other concerns (priority 2), term-based for 1, 3, or 5 years (item no. 10749, 10750 oder 10751)                                                                                                                        |
| LANcare NBD Replacement XL      | Addition of the Limited Lifetime Warranty with NBD advance replacement with delivery of the device on the next business day in case of hardware defect, item no. 61323                                                                                                                                                                                                                                                                                           |

## 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 transceiver module      | LANCOM SFP-SX-LC1, item no. 61556       |
| 1000Base-SX SFP transceiver module      | LANCOM SFP-SX2-LC1, item no. 60183      |
| 1000Base-LX SFP transceiver module      | LANCOM SFP-LX-LC1, item no. 61557       |
| 1000Base-LX SFP BiDi transceiver module | LANCOM SFP-BiDi1550-SC1, item no. 60201 |
| 10GBase-SX SFP transceiver module       | LANCOM SFP-SX-LC10, item no. 61485      |
| 10GBase-LX SFP transceiver module       | LANCOM SFP-LX-LC10, item no. 61497      |
| 10GBase-LX SFP transceiver module       | LANCOM SFP-LR40-LC10, item no. 60182    |



# LANCOM XS-6128QF

## Accessories\*

|                                               |                                                                                                                                      |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| 10GBase-LX SFP BiDi transceiver module        | LANCOM SFP-BiDi1310-LC10, item no. 60202                                                                                             |
| 10G multi gigabit Ethernet copper module      | LANCOM SFP-CO10-MG, Art.-Nr.: 60170, max. 4 modules to be used simultaneously due to increased power consumption and associated heat |
| 25GBase-SX SFP transceiver module             | LANCOM SFP-SR-LC25, Art.-Nr.: 60171                                                                                                  |
| 25GBase-LX SFP transceiver module             | LANCOM SFP-LR-LC25, Art.-Nr.: 60172                                                                                                  |
| 40GBase-SX SFP transceiver transceiver module | LANCOM SFP-SR-MPO40, Art.-Nr.: 60173                                                                                                 |
| 40GBase-LX SFP transceiver 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                                                                                            |
| Power supply (swappable)                      | LANCOM SPSU-250, item no. 61499 **)                                                                                                  |
| Fan(swappable)                                | LANCOM SFAN-XS6, item no. 61491                                                                                                      |
| 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                                         |

# LANCOM XS-6128QF

| Item number(s)   |       |
|------------------|-------|
| LANCOM XS-6128QF | 61860 |



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