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LANCOM CS-8132F

100G Fiber Core Switch for enterprise campus networks

As a central node in campus networks, the LANCOM CS-8132F core switch meets the requirements of today's and tomorrow's bandwidth-intensive applications. Especially for companies with many locations and very high data traffic, the 32 high-performance 100G wire-speed QSFP28 industry-standard ports with up to 6.4 Tbps switch capacity (full duplex) are the powerful backbone of the network. This makes the LANCOM CS-8132F ideal for use as a core switch in three-tier networks and for realizing switch architectures with 100% uptime. Intelligent functions such as Virtual Port Channel (VPC / MC-LAG), redundant and hot-swappable power supply and fan modules, a selectable ventilation concept, and a Limited Lifetime Warranty make this possible. If the switch is managed via the LANCOM Management Cloud, you benefit from standardized management and location-independent real-time monitoring of all network components. Alternatively, you can use the industry-standard Web GUI and CLI for network management.

- → 100G core switch with 32x 100G QSFP28 ports for distributed campus networks
- → Support of Virtual Port Channel (VPC or MC-LAG)
- → Full layer 3 functionality thanks to VRRP, DHCP, static and policy-based dynamic routing via OSPF v2/v3 and BGP4
- → Two variants available with different fan modules for front-to-back (F2B) or back-to-front (B2F) airflow for optimum cooling in 19” racks
- → Including 2 redundant, hot-swappable PSU and 3 hot-swappable fans for maximum reliability
- → Functional expansion option with integrated 64GB SSD for the use of third-party software such as monitoring applications (feature release after product launch)
- → Secure remote management through TACACS+, SSH, SSL, and SNMPv3
- → Industry standard CLI
- → Cloud-managed LAN for a convenient management via the LMC
- → LANCOM Limited Lifetime Warranty (LLW) included

LANCOM CS-8132F

High-performance three-tier networks in the campus environment

From 10G access switches and 10G/25G aggregation switches to the 100G core switch: With the LANCOM switch portfolio, you can implement modern three-tier LAN infrastructures, as required in larger campus networks. As the powerful backbone of the network, the LANCOM CS-8132F core switch serves up to 60,000 ports in high-availability network designs with VPC, and even up to 460,000 ports simultaneously in conjunction with stackable access switches and a predictable maintenance window. It performs non-blocking switching tasks on layer 2 (data link layer) and routing tasks on layer 3 (the network or switching layer) and thus forwards data packets with maximum efficiency and latency-free (packet forwarding).

100G performance with 32 industry-standard ports

The LANCOM CS-8132F with 32x QSFP28 ports (100G) offers the necessary wire-speed performance of 3.2 Tbit/s and corresponding switch capacity of 6.4 Tbit/s in full duplex mode for the construction of a future-proof, three-tier campus network. It provides sufficient performance to do justice to the advancing digitalization. With a view to minimizing the total cost of ownership (TCO), this LANCOM switch comes with an operating software that is not limited in its lifetime. In addition, all ports of the LANCOM CS-8132F are natively available and comply with the industry standard. This eliminates the need for a costly modular design, and no proprietary accessories are required when switching to LANCOM core switches.

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 CS-8132F in a VPC network and connect the underlying network components redundantly, the other switch remains active in the event of a failure or during in-service software update (ISSU) of one of the VPC-connected switches, thus ensuring 100% uptime. This is possible because both switches remain physically independent devices that merely form a virtual network. In addition, the link speed of the underlying network components is multiplied, as a VPC network allows multiple connections to the underlying level (active/active). For constant data forwarding, the switches exchange important information about the network, such as MAC tables, via their peer link.

Maximum operational reliability with redundancies and airflow design

The LANCOM CS-8132F is equipped as standard with 2 hot-swappable power supply units for fast and uninterrupted replacement. Additional load capacity is provided by three replaceable fans (n+1 redundancy). These can also be removed during operation. The switch achieves optimum cooling performance in the rack environment thanks to two hardware variants with different airflow designs and matching power supply units and fans: With a front-to-back or back-to-front airflow direction (F2B variant / B2F variant), the LANCOM CS-8132F meets the different cooling requirements. This extends the service life of the product and increases the flexibility of use.

LANCOM CS-8132F

Cloud-managed LAN and switch stacking

With the LANCOM Management Cloud (LMC) and Cloud-managed LAN, the LANCOM CS-8132F offers quick and easy network integration as well as automatic provision of the configuration across locations with the click of a mouse. Time-consuming individual device and switch port configurations are now a matter of the past. The targeted switch rollout via the LMC enables automatic VLAN assignment to switch ports including practical switch port profiles and therefore “zero-touch” assignment to the devices. Secure Terminal Access 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. Secure Terminal Access provides expert functions as well as extensive diagnostic and troubleshooting commands for the devices.

Configurable access control and secure remote management

The LANCOM CS-8132F 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). Thanks to secure communication protocols such as SSH, SSL, and SNMPv3, professional remote management of the network is possible. 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.

Maximum future-proofing and digital sovereignty

As an established German manufacturer of IT network solutions, LANCOM stands for reliability and know-how. Software and hardware development as well as production take place primarily in Germany, as does the hosting of the network management. Special attention is given to providing trusted solutions with outstanding security features. Another important security characteristic of the products is that they are free from backdoors, as awarded by the German Federal Ministry of Economy with the quality seal “IT Security made in Germany”. All devices are always equipped with with hardware that is dimensioned for the future. Even across product generations, updates to the LANCOM operating system family are available several times a year, free of charge. his guarantees a long service life while staying technically up to date, which represents a true protection of your investment. In addition, LANCOM infrastructures are easily scalable thanks to maximum compatibility.

Limited Lifetime Warranty (LLW)

This enterprise switch is reliably covered ex factory by the LANCOM Limited Lifetime Warranty. Regardless of the switch's operating time, the replacement service is valid until the End of Life status of the device (max. 10 years).
For perfect complement: Ensure minimal downtime in the event of a hardware defect with next-business-day delivery of a replacement device. We recommend LANcare NBD Replacement or in combination with guaranteed service times LANcare Direct Advanced 24/7 or 10/5. Learn more in the Infopaper LANCOM Limited Lifetime Warranty

LANCOM CS-8132F

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 131K MAC addresses
Throughput	Max. 3200 Gbps on the backplane
Maximum packet processing	2381 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 CS-8132F

Performance	
Packet Buffer	32 MB
6in4 Tunneling	Support of encapsulation of IPv6 traffic in IPv4 packets

Layer 3 features	
Number of L3 inferfaces	max. 168k at IPv4, max. 100k at IPv6
Number of L3 multicast groups	16k
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 (max. quantity 4k)
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) for details refer to VPC CLI manual and design guide
VLAN	Support for up to 4K VLANs simultaneously (out of 4093 VLAN Ids); matching due to port, IEEE 802.1q tagged VLANs, MAC adresses, IP subnet and Private VLAN Edge function ("protected ports")
Voice VLAN	Voice traffic is automatically assigned to a voice-specific VLAN and treated with appropriate levels of QoS
IGMP multicasts	IGMP v1, v2, v3 to limit bandwidth-intensive multicast traffic to ports with requesters; supports 1024 multicast groups; source-specific multicasting
IGMP querier	Support of multicast domains of snooping switches in the absence of a multicast router
IGMP proxy	IGMP proxy to pass IGMP messages through
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 CS-8132F

Interfaces	
Ethernet	→ 32 QSFP28 ports 40/100 Gbps → up to 32 concurrent ports
Console port	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 31 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
s-flow v5	Hardware implementation of s-Flow - Standard for monitoring of high-speed-networks. Visualization of network use, accounting an analysation to protect your network against dangers

Hardware	
Processor (CPU)	Intel Denverton4-Core with 1.6GHz

LANCOM CS-8132F

Hardware	
Memory	8GB DDR4
Storage	64GB SSD
Weight	17.32 lbs (7.44 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 (446 x 43.8 x 480 mm > W x H x D) with removable mounting brackets, network connectors on the front
Fans	3 (swappable—replace defective fans within 48 hours to protect device from possible damage / time required for replacement approx. 2 min) Exchange fan “LANCOM SFAN-CS8” optionally available
Power consumption (max., incl. optical transceiver modules)	310 W
Power consumption (idle)	90 W
Acoustic noise (typ)	65 dBa
Heat power (max)	1060 BTU/h

Software	
LCOS version	based on LCOS SX 5.30
Lifecycle Management	After discontinuation (End of Sale), the device is subject to the LANCOM Lifecycle Management. Details can be found at: www.lancom-systems.com/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

LANCOM CS-8132F

Supported IEEE standards	
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
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 802.1ax, incl. 802.3ad	Link Aggregation Control Protocol (LACP)
IEEE 802.3ae	10 Gigabit Ethernet over fiber
IEEE 802.3bz	2.5GBASE-T Ethernet
IEEE 802.3ba, 40G	40GBase-X Ethernet
IEEE 802.3ba, 100G	100GBase-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 CS-8132F

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 CS-8132F

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	2 IEC power cord
Power supply	2 hot-swappable power supplies
Fan units	3 hot-swappable fan units
19" brackets	Two 19" brackets for rackmounting
19" rack rails	Two 19" rack rails for racks of max. 80cm depth

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: www.lancom.de/www.lancom-systems.com/support-conditions and in the LLW info paper at www.lancom-systems.com/infopaper-llw
Security Updates	Up to the End of Life of the device (see www.lancom-systems.com/product-tables)
Software Updates	Regular free updates including new features as part of the LANCOM Lifecycle Management www.lancom-systems.com/lifecycle)
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 CS-8132F

Support	
LANcare Direct 24/7 Advanced XXL	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. 10797, 10798 or 10799)
LANcare Direct 24/7 XXL	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. 10791, 10792 or 10793)
LANcare Direct Advanced 10/5 XXL	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. 10794, 10795 or 10796)
LANcare Direct 10/5 XXL	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. 10788, 10789 or 10790)
LANcare NBD Replacement XXL	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.61324

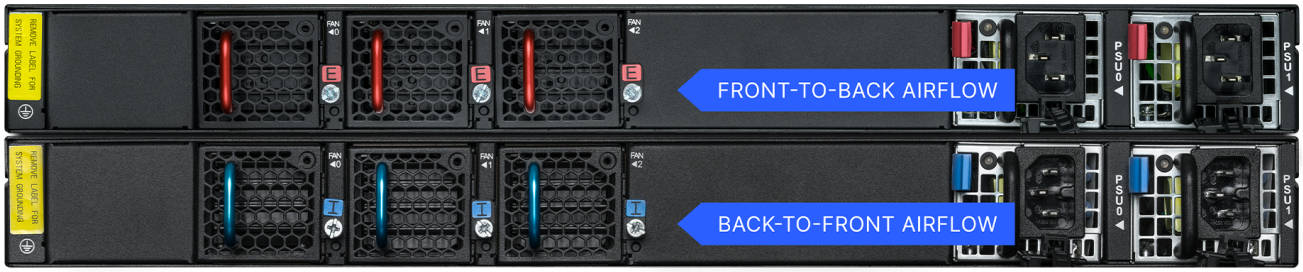
LANCOM Management Cloud	
LANCOM LMC-D-1Y LMC License	LANCOM LMC-D-1Y License (1 Year), enables the management of one category D device for one year via the LANCOM Management Cloud, item no. 50109
LANCOM LMC-D-3Y LMC License	LANCOM LMC-D-3Y License (3 Years), enables the management of one category D device for three years via the LANCOM Management Cloud, item no. 50110
LANCOM LMC-D-5Y LMC License	LANCOM LMC-D-5Y License (5 Years), enables the management of one category D device for five years via the LANCOM Management Cloud, item no. 50111

Accessories*	
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
100GBase-LR4 SFP transceiver module	LANCOM SFP-LR-LC100, Art.-Nr.: 60205
100GBase-SR4 SFP transceiver module	LANCOM SFP-SR-MPO100, Art.-Nr.: 60206
40G Direct Attach Cable 1m	LANCOM SFP-DAC40-1m, Art.-Nr.: 60176
40G Direct Attach Cable 3m	LANCOM SFP-DAC40-3m, Art.-Nr.: 60177
100G Direct Attach Cable 1m	LANCOM SFP-DAC100-1m, Art.-Nr.: 60203

LANCOM CS-8132F

Accessories*	
100G Direct Attach Cable 3m	LANCOM SFP-DAC100-3m, Art.-Nr.: 60204
Power supply (swappable)	LANCOM SPSU-750-F2B or LANCOM SPSU-750-B2F, item no. 61920 , 61921
Fan(swappable)	LANCOM SFAN-CS8-F2B oder LANCOM SFAN-CS8-B2F, item no. 61916 , 61917
LANCOM Power Cord US, AU, UK, CH	IEC power cord for US, AU, UK, CH available on request
*) Note	Support for third-party accessories (SFP and DAC) is excluded and cannot be granted

Item number(s)	
LANCOM CS-8132F-F2B	61909
LANCOM CS-8132F-B2F	61910



LANCOM Systems GmbH
A Rohde & Schwarz Company
Adenauerstr. 20/B2
52146 Wuerselen | Germany
info@lancom.de | www.lancom-systems.com