



Product information MACH1000, Full Gigabit Ethernet switch 16 ports - MAR1040-4C4C4C4C9999SM9HRHH09.0.

Industrial Ethernet:Ruggedized Switches:Fast/Gigabit Ethernet Control Cabinet Switches:Full Gigabit Ethernet Control Cabinet Switches:MACH1000, Full Gigabit Ethernet switch 16 ports

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Name	MACH1000, Full Gigabit Ethernet switch 16 ports
	
	Ethernet/Fast Ethernet/Gigabit Ethernet switch, managed, Industrial Switch 19" rack mount, fanless design
Delivery informations	
Availability	available
Product description	
Description	Ethernet/Fast Ethernet/Gigabit Ethernet switch, managed, Industrial Switch 19" rack mount, fanless design
Port type and quantity	16 x combo ports (10/100/1000BASE TX RJ45 plus related FE/GE-SFP slot)
Type	MAR1040-4C4C4C4C9999SM9HRHH09.0.
Order No.	942 004-002
More Interfaces	
Power supply/signaling contact	power supply 1: power supply, 3 pin plug-in terminal block, signal contact, 2 pin plug-in terminal block;
V.24 interface	1 x RJ11 socket
USB interface	1 x USB to connect the AutoConfiguration Adapter ACA21-USB
Network size - length of cable	
Twisted pair (TP)	0 m ... 100 m
Multimode fiber (MM) 50/125 µm	cf. Gigabit and Fast Ethernet SFP modules
Multimode fiber (MM) 62.5/125 µm	cf. Gigabit and Fast Ethernet SFP modules
Single mode fiber (SM) 9/125 µm	cf. Gigabit and Fast Ethernet SFP modules
Single mode fiber (LH) 9/125 µm (long haul transceiver)	cf. Gigabit and Fast Ethernet SFP modules
Network size - cascading	
Line - / star topology	any
Ring structure (HIPER-Ring) quantity switches	up to 10 ms (10 switches), up to 30 ms (50 switches), up to 40 ms (100 switches), up to 60 ms (200 switches)
Power requirements	
Operating voltage	power supply 1: 120/250 V DC; 110/230 V AC
Current consumption at 24 V DC	power supply 1: n/a;
Current consumption at 230 V AC	power supply 1: 110 mA (26 W) max., if all ports are equipped with SFP (100 W PoE option);
Power output in Btu (IT) h	90 max (350 PoE option)
Software	
Switching	Disable Learning (hub functionality); Independent VLAN Learning; Fast Aging; Static Unicast/Multicast Address Entries; QoS / Port Prioritization (802.1D/p); TOS/DSCP Prioritization; Egress Broadcast Limiter per Port; Flow Control (802.3X); VLAN (802.1Q); GARP VLAN Registration Protocol (GVRP); Double VLAN Tagging (QinQ); Voice VLAN; GARP Multicast Registration Protocol (GMRP); IGMP Snooping/Querier (v1/v2/v3); Jumbo Frames; CoS Queue Management; Protocol-based VLAN
Management	Dual Software Image Support; TFTP; LLDP (802.1AB); LLDP-MED; SSHv1; SSHv2; V.24; HTTP; HTTPS; Traps; SNMP v1/v2/v3; Telnet
Diagnostics	Management Address Conflict Detection; Address Relearn Detection; MAC Notification; Signal Contact; Device Status Indication; TCPDump; LEDs; Syslog; Port Monitoring with Auto-Disable; Link Flap Detection; Overload Detection; Duplex Mismatch Detection; Link Speed and Duplex Monitoring; RMON (1,2,3,9); Port Mirroring 1:1; Port Mirroring 8:1; Port Mirroring N:1; System Information; Self-Tests on Cold Start; Copper Cable Test; SFP Management; Configuration Check Dialog; Switch Dump
Configuration	AutoConfiguration Adapter ACA11; Automatic Configuration Undo (roll-back); Configuration Fingerprint; BOOTP/DHCP Client with Auto-Configuration; DHCP Server: per Port; DHCP Server: Pools per VLAN; DHCP Server: Option 43; AutoConfiguration Adapter ACA21/22 (USB); HiDiscovery; DHCP Relay with Option 82; Command Line Interface (CLI); CLI Scripting; Full-featured MIB Support; Web-based Management; Context-sensitive Help
Routing	Full Wire-Speed Routing; Port-based Router Interfaces; VLAN-based Router Interfaces; Net-directed Broadcasts; OSPFv2; RIP v1/v2; ICMP Router Discovery (IRDP); Equal Cost Multiple Path (ECMP); Proxy ARP; Static Route Tracking
Multicast routing	DVMRP; IGMP v1/v2/v3; PIM-DM (RFC3973); PIM-SM / SSM (RFC4601)

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Security	IP-based Port Security; MAC-based Port Security; Port-based Access Control with 802.1X; Guest/unauthenticated VLAN; RADIUS VLAN Assignment; Multi-Client Authentication per Port; MAC Authentication Bypass; ACL Hit Counter; Access to Management restricted by VLAN; HTTPS Certificate Management; Restricted Management Access; Appropriate Use Banner; SNMP Logging; Local User Management; Remote Authentication via RADIUS; Egress MAC-based ACL; Ingress IPv4-based ACL; Ingress VLAN-based ACL; Traffic Shaping
Redundancy functions	Advanced Ring Configuration for MRP; HIPER-Ring (Manager); HIPER-Ring (Ring Switch); Link Aggregation with LACP; Media Redundancy Protocol (MRP) (IEC62439-2); Redundant Network Coupling; Sub Ring Manager; RSTP 802.1D-2004 (IEC62439-1); MSTP (802.1Q); RSTP Guards; RSTP over MRP; Fast HIPER-Ring; VRRP; VRRP Tracking; HivRRP (VRRP enhancements)
Industrial Profiles	EtherNet/IP Protocol; IEC61850 Protocol (MMS Server, Switch Model); PROFINET IO Protocol
Time synchronisation	Buffered Real Time Clock; SNTP Client; SNTP Server; PTPv2 Transparent Clock two-step; PTPv2 Boundary Clock
Miscellaneous	Manual Cable Crossing
Ambient conditions	
Operating temperature	0 °C ... 60 °C
Storage/transport temperature	-40 °C ... 85 °C
Relative humidity (non-condensing)	5 % ... 95 %
MTBF	13.6 years (MIL-HDBK-217F)
Protective paint on PCB	No
Mechanical construction	
Dimensions (W x H x D)	445 mm x 44 mm x 345 mm
Mounting	19" control cabinet
Weight	5600 g
Protection class	IP30
Mechanical stability	
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks
IEC 60068-2-6 vibration	1 mm, 2 Hz-13.2 Hz, 90 min.; 0.7g, 13.2 Hz-100 Hz, 90 min.; 3.5 mm, 3 Hz-9 Hz, 10 cycles, 1 octave/min.; 1 g, 9 Hz-150 Hz, 10 cycles, 1 octave/min.
EMC interference immunity	
EN 61000-4-2 electrostatic discharge (ESD)	8 kV contact discharge, 15 kV air discharge
EN 61000-4-3 electromagnetic field	35 V/m (80-2700 MHz); 1 kHz, 80% AM
EN 61000-4-4 fast transients (burst)	4 kV power line, 4 kV data line
EN 61000-4-5 surge voltage	power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line, IEEE1613: power line 5 kV (line/earth)
EN 61000-4-16 mains frequency voltage	30 V, 50 Hz continuous; 300 V, 50 Hz 1 s
EMC emitted immunity	
FCC CFR47 Part 15	FCC 47 CFR Part 15 Class A
EN 55022	EN 55022 Class A
Approvals	
Safety of industrial control equipment	cUL 508
Hazardous locations	ISA 12.12.01 Class 1 Div. 2
Shipbuilding	DNV GL
Substation	IEC 61850-3, IEEE 1613
Transportation	EN 50121-4, EN50155, NEMA TS
Scope of delivery and accessories	
Scope of delivery	device, operating manual

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