




## Data sheet MACH1000, Full Gigabit Ethernet switch 16 ports - MAR1040-4C4C4C4C9999SM9HPHH05.0.

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

<b>Name</b>	MACH1000, Full Gigabit Ethernet switch 16 ports
	
<b>Delivery informations</b>	
Document created at	09-08-2010
Availability	available
<b>Product description</b>	
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	MAR1040-4C4C4C4C9999SM9HPHH05.0.
Order No.	942 004-001
<b>More Interfaces</b>	
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
<b>Network size - length of cable</b>	
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
<b>Network size - cascading</b>	
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)
<b>Power requirements</b>	
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)
<b>Software</b>	
Management	Serial interface, web-interface, SNMP V1/V2, HiVision file transfer SW HTTP/TFTP
Diagnostics	LEDs, log-file, syslog, signal contact, RMON, port mirroring, topology discovery 802.1AB, cable diagnostic (TX), disable learning
Configuration	Command line interface (CLI), TELNET, BootP, DHCP, DHCP option 82, HIDiscovery, auto-configuration adapter (ACA21-USB), DHCP server per port
Security	Port Security (IP und MAC), SNMP V3, SSH, Authentication (802.1x), Radius Authentication for SNMPv3 (Web)
Redundancy functions	HIPER-Ring, Fast HIPER-Ring, MRP (IEC-ring functionality), RSTP 802.1w, MRP and RSTP in parallel, link aggregation, multiple rings
Filter	QoS 4 classes, prioritisation (IEEE 802.1D/p), VLAN (IEEE 802.1Q), multicast (IGMP snooping/querier), multicast detection unknown multicast, broadcast-, unicast-, multicast limiter, fast aging, GMRP IEEE 802.1D
Industrial Profiles	EtherNet/IP and PROFINET (2.2 PDEV, GSDML Stand-alone generator, automatic device exchange) profiles included, configuration and diagnostic via automation software tools like e.g. STEP7, or Control Logix
Time synchronisation	SNTP Server, PTP / IEEE 1588, realtime clock with energy buffer
Flow control	Flow Control 802.3x, Port Priority 802.1D/p, Priority (TOS/DIFFSERV), Prio (MAC/IP), Prio Mapping (TOS Layer2), Traffic Shaping (Unicast, Multicast, Broadcast) Ingress / Egress
<b>Ambient conditions</b>	
Operating temperature	0 °C - 60 °C
Storage/transport temperature	-40 °C - 85 °C
Relative humidity (non-condensing)	5 % - 95 %



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<b>MTBF</b>	119540
<b>Protective paint on PCB</b>	No
<b>Mechanical construction</b>	
<b>Dimensions (W x H x D)</b>	445 mm x 44 mm x 345 mm
<b>Mounting</b>	19" control cabinet
<b>Weight</b>	5600 gram
<b>Protection class</b>	IP30
<b>Mechanical stability</b>	
<b>IEC 60068-2-27 shock</b>	15 g, 11 ms duration, 18 shocks
<b>IEC 60068-2-6 vibration</b>	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.
<b>EMC interference immunity</b>	
<b>EN 61000-4-2 electrostatic discharge (ESD)</b>	8 kV contact discharge, 15 kV air discharge
<b>EN 61000-4-3 electromagnetic field</b>	35 V/m (80-2700 MHz); 1 kHz, 80% AM
<b>EN 61000-4-4 fast transients (burst)</b>	4 kV power line, 4 kV data line
<b>EN 61000-4-5 surge voltage</b>	power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line IEEE1613; power line 5 kV (line/earth)
<b>EN 61000-4-6 conducted immunity</b>	30 V, 50 Hz continuous; 300 V, 50 Hz 1 s
<b>EN 61000-4-16 mains frequency voltage</b>	30 V, 50 Hz continuous; 300 V, 50 Hz 1 s
<b>EMC emitted immunity</b>	
<b>FCC CFR47 Part 15</b>	FCC 47 CFR Part 15 Class A
<b>EN 55022</b>	EN 55022 Class A
<b>Approvals</b>	
<b>Safety of industrial control equipment</b>	cUL 508 (pending)
<b>Hazardous locations</b>	cUL 1604 Class1 Div 2 (pending)
<b>Shipbuilding</b>	Germanischer Lloyd (pending)
<b>Railway norm</b>	EN 50121-4, EN50155 (pending), NEMA TS
<b>Substation</b>	IEC 61850-3, IEEE 1613
<b>Transportation</b>	EN 50121-4, EN50155 (pending), NEMA TS
<b>Scope of delivery and accessories</b>	
<b>Scope of delivery</b>	device, operating manual