

The new MACH1000 devices at a glance.

The MACH1000 family

Product name	ETHERNET/Fast-ETHERNET switch	ETHERNET/Fast-/Gigabit-ETHERNET switch
Product description	modular, managed, industrial switch for 19" cabinet, store-and-forward-switching, fanless design, Software Layer 2 Professional	
Description		
Port type and quantity	Fast-ETHERNET ports in total: up to 24 24 x FE modular, granularity 2	Gigabit-ETHERNET ports in total: 2; 2 x combo ports (10/100/1000BASE TX RJ45 plus related FE/GE-SE port) Fast-ETHERNET ports in total: up to 24 24 x FE modular, granularity 2
Type	MAR1020-xx	MAR1030-xx
More interfaces		
V.24 Interface	1x RJ11 socket	
USB interface	1x to connect autoconfiguration adapter ACA21-USB	
Gigabit-ETHERNET Network size – length of cable		
Twisted pair (TP)	0 – 100 m	
Multimode fiber (MM) 50/125 µm	0 – 550 m, 7,5 dB link budget (with M-SFP-8X/LC)	
Multimode fiber (MM) 62.5/125 µm	0 – 275 m, 7,5 dB link budget (with M-SFP-8X/LC)	
Singlemode fiber (SM) 9/125 µm	0 – 20 km, 11 dB link budget (with M-SFP-LH/LC)	
Singlemode fiber (LH) 9/125 µm	16 – 80 km, 6 – 22 dB link budget (with M-SFP-LH/LC) 44 – 120 km, 13 – 32 dB link budget (with M-SFP-LH/LC)	
Fast-ETHERNET Network size – length of cable		
Twisted pair (TP)	0 – 100 m	
Multimode fiber (MM) 50/125 µm	0 – 5000 m, 8 dB link budget	
Multimode fiber (MM) 62.5/125 µm	0 – 4000 m, 11 dB link budget	
Singlemode fiber (SM) 9/125 µm	0 – 32,6 km, 16 dB link budget	
Singlemode fiber (LH) 9/125 µm	24 – 87 km, 7 – 29 dB link budget	
Network size – cascadability		
Line/star topology	any	
Ring structure (H-IPER-Ring)	100 switches	
Fault recovery time	typ. 50 ms (fiber)	
Power requirements		
Current voltage	24/36/48 VDC (9,5 – 60 V), or 120/250 VDC (177 – 300 V) and 110/230 VAC (99 – 265 V)	
Current consumption 24V DC	1250 mA max. if all ports are equipped with fiber	
Current consumption 48V DC	625 mA max. if all ports are equipped with fiber	
Current consumption 230V AC	140 mA (32 W) max. if all ports are equipped with fiber	
Power output in 0.1s IIT/h	110 max	
Software		
Management	Serial interface, web-interface, SNMP V1/V2, Hivision file transfer SW HTTP/FTP	
Diagnostics	LEDs, log-file, syslog, signal relay, RMON, port mirroring, topology discovery 9021AB, cable tester (TX)	
Configuration	Command line interface (CLI), telnet, bootP, DHCP, DHCP option #2, HIDiscovery, autoconfiguration adapter (ACA21-USB, ACA11 read support)	
Security	Port security (IP and MAC), SNMP V3, SSH, authentication (9021x)	
Redundancy functions	H-IPER-Ring (ring structure), RSTP 9021w, redundant network/ring coupling, link aggregation, redundant power supplies	
Filter	QoS 4 classes, port priority (IEEE 802.1D/p), VLAN (IEEE 802.1Q), multicast (IGMP snooping/querier), unknown multicast detection, broadcast-, unicast-, multicast filter, fast aging, GMRP IEEE 802.1D	
Realtime	SNTP server, PTP/IEEE 1588	
Flow control	Flow control 602.3x	
Ambient conditions		
Operating temperature	– 40° up to + 85° C	
Storage/transport temperature	– 40° up to + 85° C	
Protective paint on PCB	optional conformal coating	
Relative humidity (non-condensing)	10 % up to 95 %	
Mechanical construction		
Dimensions (W x H x D)	445 mm x 44 mm x 309 mm	
Mounting	19" cabinet	
Weight	appr. 5 kg	
Protection class	IP 30	
Mechanical construction		
IEC 60086-2-27 shock	15 g, 11 ms duration, 19 shocks	
IEC 60086-2-8 vibration	1 mm, 62 – 112 Hz, 90 min.; 0,7 g, (13,2 – 100 Hz), 90 min.; 2,5 mm, (2 – 9 Hz), 10 cycles, 1 octave/min.; 1 g, (8 – 150 Hz), 10 cycles, 1 octave/min.	
EMC interference immunity		
EN 61000-4-2 electrostatic discharge (ESD)	6 kV contact discharge, 15 kV air discharge	
EN 61000-4-3 electromagnetic field	35 Vpp/m (80 – 2700 MHz); 1 kHz; 80 % AM	
EN 61000-4-4 fast transients (burst)	4 kV power line, 4 kV signal- and data line	
EN 61000-4-5 surge voltage	power line: 2 kV (line/earth), 1 kV (line/line) IEEE 1813; power line: 5 kV (line/earth)	
EN 61000-4-12 damped oscillatory wave	2,5 kV line/earth, 1 kV line/line (1 MHz)	
EN 61000-4-16 mains frequency voltage	30 V; 50 Hz continuous; 300 V, 50 Hz 1s	
EMC emitted immunity		
FCC CFR47 Part 15	FCC CFR47 part 15 class A	
EN 55022	EN 55022 class A	
Approvals		
Safety of industrial control equipment	CUL 508 (pending)	
German LKjD	GL (pending)	
Substation	IEEE 61850-3, IEEE 1613	