

**Product:** MAR1120-99TTTTZZZZZZZZZZZZZZZZZZZZ9999SL9HPHHXX.X.

**Configurator:** MACH1020/30 Switch configurator



### Configurator Description

The MACH1000 is available in a 24 port custom configurable design with 2 or 4 additional Gigabit uplink (RJ45 and/or SFP for fiber) and PoE ports. These switches are available with Layer 2. The fanless design and extremely efficient components are optimized for minimal heat generation and high MTBF (mean time between failure).

### Technical Specifications

#### Product description

Description	Industrial managed Fast Ethernet Switch according to IEEE 802.3, 19" rack mount, fanless Design, Store-and-Forward-Switching, ports on rear
Port type and quantity	In total 20 Fast Ethernet ports \\ FE 1 and 2: 10/100BASE-TX, RJ45 \\ FE 3 and 4: 10/100BASE-TX, RJ45 \\ FE 5 and 6: 100BASE-FX, SFP slot \\ FE 7 and 8: 100BASE-FX, SFP slot \\ FE 9 and 10: 100BASE-FX, SFP slot \\ FE 11 and 12: 100BASE-FX, SFP slot \\ FE 13 and 14: 100BASE-FX, SFP slot \\ FE 15 and 16: 100BASE-FX, SFP slot \\ FE 17 and 18: 100BASE-FX, SFP slot \\ FE 19 and 20: 100BASE-FX, SFP slot

#### More Interfaces

Power supply/signaling contact	Power supply 1: power supply 2-pin plug-in terminal block, signal contact 2-pin plug-in terminal block ; Power supply 2: not assembled
V.24 interface	1 x RJ11 socket
USB interface	1 x USB to connect auto-configuration adapter ACA21-USB

#### Network size - length of cable

Twisted pair (TP)	FE 1 and 2: 0-100 m \\ FE 3 and 4: 0-100 m \\
Single mode fiber (SM) 9/125 µm	FE 5 and 6: cf. SFP modules M-FAST SFP \\ FE 7 and 8: cf. SFP modules M-FAST SFP \\ FE 9 and 10: cf. SFP modules M-FAST SFP \\ FE 11 and 12: cf. SFP modules M-FAST SFP \\ FE 13 and 14: cf. SFP modules M-FAST SFP \\ FE 15 and 16: cf. SFP modules M-FAST SFP \\ FE 17 and 18: cf. SFP modules M-FAST SFP \\ FE 19 and 20: cf. SFP modules M-FAST SFP \\
Single mode fiber (LH) 9/125 µm (long haul transceiver)	FE 5 and 6: cf. SFP modules M-FAST SFP \\ FE 7 and 8: cf. SFP modules M-FAST SFP \\ FE 9 and 10: cf. SFP modules M-FAST SFP \\ FE 11 and 12: cf. SFP modules M-FAST SFP \\ FE 13 and 14: cf. SFP modules M-FAST SFP \\ FE 15 and 16: cf. SFP modules M-FAST SFP \\ FE 17 and 18: cf. SFP modules M-FAST SFP \\ FE 19 and 20: cf. SFP modules M-FAST SFP \\
Multimode fiber (MM) 50/125 µm	FE 5 and 6: cf. SFP modules M-FAST SFP \\ FE 7 and 8: cf. SFP modules M-FAST SFP \\ FE 9 and 10: cf. SFP modules M-FAST SFP \\ FE 11 and 12: cf. SFP modules M-FAST SFP \\ FE 13 and 14: cf. SFP modules M-FAST SFP \\ FE 15 and 16: cf. SFP modules M-FAST SFP \\ FE 17 and 18: cf. SFP modules M-FAST SFP \\ FE 19 and 20: cf. SFP modules M-FAST SFP \\
Multimode fiber (MM) 62.5/125 µm	FE 5 and 6: cf. SFP modules M-FAST SFP \\ FE 7 and 8: cf. SFP modules M-FAST SFP \\ FE 9 and 10: cf. SFP modules M-FAST SFP \\ FE 11 and 12: cf. SFP modules M-FAST SFP \\ FE 13 and 14: cf. SFP modules M-FAST SFP \\ FE 15 and 16: cf. SFP modules M-FAST SFP \\ FE 17 and 18: cf. SFP modules M-FAST SFP \\ FE 19 and 20: cf. SFP modules M-FAST SFP \\

#### Network size - cascading

Line - / star topology	any
Ring structure (HIPER-Ring) quantity switches	10ms (10 switches), 30ms (50 switches), 40ms (100 switches), 60ms (200 switches)

#### Power requirements

Current consumption at 24 V DC	Power supply 1:if all ports are equipped with fiber max. 1600 mA
Operating Voltage	Power supply 1: 24/36/48 VDC ; Power supply 2: not assembled
Power consumption	max. 27.5 W
Power output in BTU (IT)/h	max. 94

#### 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), Jumbo Frames, 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)
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Redundancy	Advanced Ring Configuration for MRP, HIPER-Ring (Manager), HIPER-Ring (Ring Switch), Fast HIPER-Ring, 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
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 Limited Support (RS20/30/40, MS20/30), 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
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, Access to Management restricted by VLAN, HTTPS Certificate Management, Restricted Management Access, Appropriate Use Banner, SNMP Logging, Local User Management, Remote Authentication via RADIUS, Password change on first login
Time synchronisation	SNTP Server, PTP / IEEE 1588 in software, realtime clock with energy buffer
Industrial Profiles	EtherNet/IP Protocol, IEC61850 Protocol (MMS Server, Switch Model), PROFINET IO Protocol
Miscellaneous	Manual Cable Crossing

## Ambient conditions

Operating temperature	0-+60 °C
Storage/transport temperature	-40-+85 °C
Relative humidity (non-condensing)	5-95 %

## Mechanical construction

Dimensions (WxDxH)	448 x 44 x 345 mm
Weight	4.7 kg
Mounting	19" control cabinet
Protection class	IP30

## Mechanical stability

IEC 60068-2-6 vibration	1 mm, 2 Hz-13.2 Hz, 90 min.; 0.7 g, 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
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks

## EMC interference immunity

EN 61000-4-2 electrostatic discharge (ESD)	8 kV contact discharge, 15 kV air discharge
EN 61000-4-3 electromagnetic field	20 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	DC power line: 2 kV (line/earth), 1 kV (line/line); AC power line: 4 kV (line/earth), 2 kV (line/line); 4 kV data line; IEEE1613: power line 5 kV (line/earth)
EN 61000-4-6 Conducted Immunity	10 V (150 kHz - 80 MHz)
EN 61000-4-12 damped oscillatory wave	2.5 kV (line/earth), 1 kV (line/line) (1MHz)
EN 61000-4-16 mains frequency voltage	30 V, 50 Hz continuous; 300 V, 50 Hz 1 s

## EMC emitted immunity

EN 55032	EN 55032 Class A
FCC CFR47 Part 15	FCC 47CFR Part 15, Class A

## Approvals

Basis Standard	CE, FCC, EN61131
Safety of industrial control equipment	cUL 508
Hazardous locations	ISA 12.12.01 Class 1 Div. 2
Shipbuilding	DNVGL
Substation	IEC 61850-3, IEEE 1613
Railway norm	EN50121-4
Transportation	NEMA TS2

## Scope of delivery and accessories

Scope of delivery	Device, terminal blocks, safety instruction
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## Further Instructions

Product Documentation	<a href="https://www.doc.hirschmann.com/index.html">https://www.doc.hirschmann.com/index.html</a>
Certificates	<a href="https://www.doc.hirschmann.com/certificates.html">https://www.doc.hirschmann.com/certificates.html</a>

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