




## Product information MACH1000, Gigabit Ethernet switch 2-20 ports, ports on rear - MAR1130- CCTTTTTTMMMMMMMMMMMM99999999UM9HPHH09.0.

Industrial Ethernet:Ruggedized Switches:Fast/Gigabit Ethernet Control Cabinet Switches:Gigabit Ethernet Control Cabinet Switches:with Firmware Release 9:MACH1000, Gigabit Ethernet switch 2-20

ports, ports on rear

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<b>Name</b>	MACH1000, Gigabit Ethernet switch 2-20 ports, ports on rear
	
	Industrial managed Fast/Gigabit Ethernet Switch, 19" rack mount, fanless design, according to IEEE 802.3, Store-and-Forward-Switching, ports on rear
<b>Delivery informations</b>	
<b>Availability</b>	available
<b>Product description</b>	
<b>Description</b>	Industrial managed Fast/Gigabit Ethernet Switch, 19" rack mount, fanless design, according to IEEE 802.3, Store-and-Forward-Switching, ports on rear
<b>Port type and quantity</b>	Gigabit-Ethernet ports in total: 2; 2 x Combo ports (10/100/1000BASE-TX RJ 45 plus FE/GE-SFP-slot; Fast-Ethernet ports in total: 16 x ports in total: 6 x Twisted Pair; 10 x Multimode SC;
<b>Type</b>	MAR1130-CCTTTTTTMMMMMMMMMMMM99999999UM9HPHH09.0.
<b>Order No.</b>	MAR1130-CCTTTTTTMMMMMMMMMMMM99999999UM9HPHH09.0.
<b>More Interfaces</b>	
<b>Power supply/signaling contact</b>	Power supply 1: power supply 3 pin plug-in terminal block signal contact 2 pin plug-in terminal block; Power supply 2: not assembled
<b>V.24 interface</b>	1 x RJ11 socket
<b>USB interface</b>	1 x to connect auto-configuration adapter ACA21-USB
<b>Network size - length of cable</b>	
<b>Twisted pair (TP)</b>	0 m ... 100 m
<b>Multimode fiber (MM) 50/125 µm</b>	0 - 5000 m, 8 dB Link Budget at 1300 nm, A = 1 dB/km, 3 dB reserve, B = 800 MHz x km and cf. SFP modules M-SFPxx
<b>Multimode fiber (MM) 62.5/125 µm</b>	0 - 4000 m, 11 dB Link Budget at 1300 nm, A = 1 dB/km, 3 dB reserve, B = 500 MHz x km and cf. SFP modules M-SFPxx
<b>Single mode fiber (SM) 9/125 µm</b>	cf. SFP modules M-SFPxx
<b>Single mode fiber (LH) 9/125 µm (long haul transceiver)</b>	cf. SFP modules M-SFPxx
<b>Network size - cascading</b>	
<b>Line - / star topology</b>	Any
<b>Ring structure (HIPER-Ring) quantity switches</b>	100 switches
<b>Power requirements</b>	
<b>Operating voltage</b>	Power supply 1: 120/250 VDC, 110/230V VAC; Power supply 2: not assembled
<b>Current consumption at 230 V AC</b>	Power supply 1 and 2: 150 mA (35W) max, if all ports are equipped with fiber
<b>Software</b>	
<b>Management</b>	Dual Software Image Support; TFTP; LLDP (802.1AB); LLDP-MED; SSHv1; SSHv2; V.24; HTTP; HTTPS; Traps; SNMP v1/v2/v3; Telnet
<b>Diagnostics</b>	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
<b>Configuration</b>	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
<b>Security</b>	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



## Industrial Ethernet:Ruggedized Switches:Fast/Gigabit Ethernet Control Cabinet Switches:Gigabit Ethernet Control Cabinet Switches:with Firmware Release 9:MACH1000, Gigabit Ethernet switch 2-20

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<b>Redundancy functions</b>	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
<b>Filter</b>	PoE (802.3AF); PoE+ (802.3AT); Manual Cable Crossing
<b>Industrial Profiles</b>	EtherNet/IP Protocol; IEC61850 Protocol (MMS Server, Switch Model); PROFINET IO Protocol
<b>Time synchronisation</b>	PTPv2 Transparent Clock two-step; PTPv2 Boundary Clock; Buffered Real Time Clock; SNTP Client; SNTP Server
<b>Switching</b>	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)
<b>Ambient conditions</b>	
<b>Operating temperature</b>	-40 °C ... 85 °C
<b>Storage/transport temperature</b>	-40 °C ... 85 °C
<b>Relative humidity (non-condensing)</b>	10 % ... 95 %
<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 308 mm
<b>Mounting</b>	19" control cabinet
<b>Weight</b>	appr. 5 kg
<b>Protection class</b>	IP30
<b>Mechanical stability</b>	
<b>IEC 60068-2-27 shock</b>	15 g, 11 ms duration, 18 schocks
<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.; 1g, 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); 1kHz, 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 IEC61000-4-5; power line 5kV (line/earth)
<b>EN 61000-4-6 conducted immunity</b>	2,5 kV (line/earth), 1 kV (line/line) (1MHz)
<b>EN 61000-4-16 mains frequency voltage</b>	30V, 50Hz continuous; 300V, 50Hz 1s
<b>EMC emitted immunity</b>	
<b>FCC CFR47 Part 15</b>	FCC CFR47 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>Germanischer Lloyd</b>	Germanischer Lloyd (in preparation)
<b>Substation</b>	IEC 61850-3; IEEE 1613
<b>Transportation</b>	EN 50121-4, NEMA TS
<b>Scope of delivery and accessories</b>	
<b>Scope of delivery</b>	Device, operating manual

For more information please contact:

**Hirschmann Automation and Control GmbH**

Stuttgarter Strasse 45-51

72654 Neckartenzlingen

Germany

Phone: +49 7127/14-1809

E-Mail: [inet-sales@belden.com](mailto:inet-sales@belden.com)

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