

New Product Bulletin

NP 1019HE

Hirschmann™ MACH1040 Full Gigabit Ethernet Switch

Extremely robust network solutions for extreme conditions.



Hirschmann™ Full Gigabit Ethernet Switch MACH1040: High-Voltage Resistant, and Optional Layer 3 Software.

MACH1040 with Layer 3 Wire-speed Technology

The new Layer 3 software makes it now possible to use Hirschmann™ Gigabit Ethernet switches from the MACH1040 family as routers. The non-blocking architecture delivers extremely fast functionality; in addition to static and dynamic routing, this also includes multicast routing and router redundancy.

The switches of the Hirschmann™ MACH1000 family provide users with the highest level of both flexibility and security for the future. Its design features 16 Gigabit combo ports with a temperature range from -40°C to +70°C as well as a fanless cooling system. This allows to build fast data networks under severe EMI conditions using either twisted-pair or fiberoptic cabling.

Not only strong in the Power Zone: the MACH1000 Family

Well proven as substation switches, the robust MACH1000 devices have been specifically

designed to meet the requirements of power generation and distribution. Yet their capabilities are not limited to this sector – they also perform exceptionally well under extreme ambient conditions and high temperatures in the fields of transport and industrial automation a well as in the military sector.

Product Features

- 16 GE ports with non-blocking architecture
- PTP IEEE1588v2 on board, accuracy 30 ns
- Highest flexibility through 16 GE combo ports
- Extensive Layer 2 and Layer 3 software
- Fastest ring recovery times
- Optional 4 PoE ports
- Extremely fast boot time: <10 seconds
- High operational safety through:
 - High vibration resistance
 - Immunity to electrostatic discharge and magnetic fields
 - Fanless cooling
 - Redundant power supply









Managed Gigabit Ethernet-Switch with 16 Ports

Future-proof, highperformance solution for the power generation and distribution industries. This IP30 Layer 2 switch, which is also optionally available with Layer 3 software, is highly vibration-resistant as well as insensitive to electrostatic discharges and magnetic fields. The fanless cooling and redundant power supply systems also contribute to operational safety. Upon request, circuit boards are available with a conformal coating for protection against condensation.

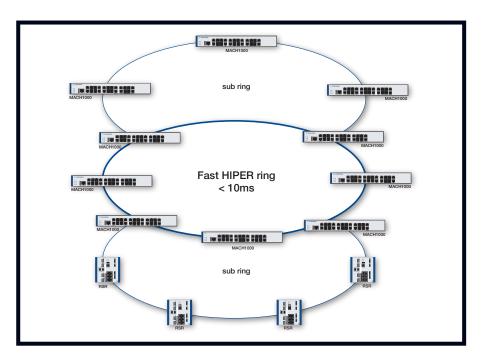
Further features include comprehensive management and redundancy methods for configuration and diagnostics. The high-performance Layer 3 version transmits data in real time (wire-speed). Using a USB interface connected to the auto-configuration adapter ACA 21-USB, it is possible to save and reuse all configuration data and the operating system whenever required.

More Choice through more Versions

1. Design		
MAR1040	Full GE-Switch	
MAR1042	Full GE-Switch, PoE	
MAR1140	Full GE-Switch, backside ports	
MAR1142	Full GE-Switch, backside ports, PoE	
2. Gigabit Ports		
4C4C4C4C9999	16 ports GE combo ports	
3. Temperature Range		
S	0 °C to +60 °C	
T	-40 °C to +70 °C	
Е	-40 °C to +70 °C with conformal coating	
4. Power Supply 1		
L	24/36/48 V/DC	
M	110/250 VDC, 110/230 VAC	
5. Power Supply 2		
9	Empty	
L	24/36/48 V/DC	
M	110/250 VDC, 110/230 VAC	
6. Approvals		
Н	cUL508*, cUL/1604 class 1 DIV* 2, GL*, IEC 61850, IEEE1613, NEMA TS*	
7. Software		
Р	Layer 2 Professional	
R	Layer 3	
* pending		

Example

MAR1042 4C4C4C9999 E L M H P





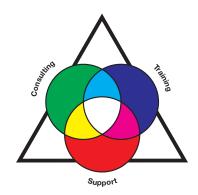
Technical Data

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Additional Interface 1x B.IT -socket 1x B.IT -socket 1x B.IS in torface 1x B.IS in connect auto- configuration adapter ACA 21-USB EC Network Range - Cascadability Line fature (MPER ring) 10/100/200 switches 10/1	Description		
1x B.11 - socket 1x U.S.R interface 1x U.S.R to connect auto- configuration adaptor ACA 21-U.S.R EC	Port type and quantity		
IUS interface 1x USB to connect auto-configuration adapter ACA 21-USB EEC Network Range - Cascadability Line/star topology Any Any Ring structure (PIER Ing) 101/00/200 switches Fault recovery time 2010 ms/-40 ms/-40 ms Power Supply Software Management Serial interface, Web interface, SMMP v1/v2, HW/sion, file transfer via HTTP/TETP Diagnositis 25 ms/-40 ms/-60 ms Software Management Serial interface, web interface, SMMP v1/v2, HW/sion, file transfer via HTTP/TETP Diagnositis 25 ms/-40 ms/-60 ms/-	Additional Interfaces		
Network Range - Gaseadability Line/star topology Any Ing structure (HIPER ring) 10/100/200 switches Fault recovery time 2 10 ms/< 40 ms/< 60 ms Power Supply Operating voltage 24/86/48 VDC (18—60 V) or 120/250 VDC (77—320 V) and 110/230 VAC (80—265 V) Software Software LEDs, log file, syslog, relay contact, RMON, port mirroring, Topology Discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SPP diagnostics (temperature, optical injust/output power) Configuration Configuratio	V.24 interface	1x RJ11-socket	
Line/star topology Ring structure (HIPER ring) 10/100/200 switches Fault recovery time 21/36/48 VDC (18-60 V) or 120/250 VDC (77-320 V) and 110/230 VAC (90-265 V) Forever Supply Forever Supply Serial interface, Web interface, SNMP v1/v2, HiVision, file transfer via HTTP/TFTP Management Serial interface, web interface, SNMP v1/v2, HiVision, file transfer via HTTP/TFTP Diagnostics Command line interface (CAL), TELNET, Booth, DHCC (PICP Option 22, HiDiscovery, 802.1AB, cable tester (TX), address conflict detection, network error detection, SPP diagnostics (temperature, optical input/output power) Security Port Security (P und MMC), SNMP V3, SSH, Authentication (802.1x), Radius Authentication of SNMPy3 (Web) Redundancy HPER-Ring, Fast HIPER-Ring, MRP (ECC-ring functionality), MSTP, RSTP 802.1w, MRP and RSTP in parallel, link aggregation, multipot hings Filer OSS 6 assess, port priority letter 802.10 /p, VLAN (IEEE 802.10), multicast (IGMP snooping/querier), unknown multicast detection, broadcast/unicast/uniticast/multicast limitor, fast aging, 6MMP IEEE 802.10, flow control 802.3x Synchronization Synchronization Synchronization Synchronization Third of the structure of the structure of the structure interfaces. Provy AMP, Static routing with ECMP (Ecual Cost Multipot Path), VLAN Based router interfaces. CDR (Cassess Inter Domain Routing), IOMP Router (OMMP, ISMPH, V2AS, Multicast), IOMP Router (ISMPH, SMITH), VAXA, Multicast (ISMP snooping/querier), unknown multicast detection, IOMP Router (ISMPH, SMITH), VAXA (Isterational Configuration and SMITH), Provy AMP, Static routing with ECMP (Ecual Cost Multipot Path), VLAN Based router interfaces. CDR (Cassess Inter Domain Routing), IOMP Router (ISMPH, SMITH), VAXA, Multicast (ISMP ANA Multicast Routing (ISMPH, PINHP, VAXA, Multicast ISMPH, ANA Multicast Routing (ISMPH, PINHP, VAXA, Multicast ISMPH, ANA Multicast Routing (ISMPH, PINHP, VAXA, Multicast ISMPH, VAXA, Multicast ISMPH, PINHP, ISMPH, PINHP, ISMPH, PINHP, ISMPH, PINHP, ISMPH, PINHP, ISMPH, PINHP, ISMPH	USB interface	1x USB to connect auto-configuration adapter ACA 21-USB EEC	
Ring structure (HIPER ring) 10/100/200 switches 210 ms/< 40 ms/< 60 ms Power Supply Software Management 24/36/48 VDC (18 – 60 V) or 120/250 VDC (77 – 320 V) and 110/230 VAC (90 – 265 V) Software Management 25 serial interface, web interface, SNMP v1/v2, HIVsion, file transfer via HTTP/TFTP Diagnostics 26 LDS, to file, systog, relay contact, RMON, port mirroring, Topology Discovery 802.1AB, cable tester (TX), address contiled detection, responsibility, proposed and season contiled detection, responsibility, proposed and responsibility, address contiled detection, responsibility, proposed and responsibility, address contiled detection, responsibility, making and the proposed and responsibility, making and the proposed and responsibility, making and responsibility, responsibility, making and responsibility, respons	Network Range – Cascadability		
Fault recovery time	Line/star topology	Any	
Power Supply	Ring structure (HIPER ring)	10/100/200 switches	
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Serial interface, web interface, SNMP v1/v2, HiVision, file transfer via HTTP/TFTP Diagnostics LEBs, log file, syslog, relay contact, RMON, port mirroring, Topology Discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SFP diagnostics (temperature, optical input/output power) Configuration Command line interface (CLI), TELNET, Boorp, DHCP, DHCP Option 82, HiDiscovery, auto-configuration adapter (ACA 21-USB), integrated DHCP server, automatic invalid configuration undo Security Port Security (IP und MAC), SNMP V3, SSH, Authentication (802.1x), Radius Authentication for SNMPv3 (Web) Redundancy HiPER-Ring, Fast HIPER-Ring, MRP (EC-ring functionality), MSTP, RSTP 802.1w, MRP and RSTP in parallel, link aggregation, multiple rings Filter Oos 8 classes, port priority (EEE 802.1D/p), VLAN (EEE 802.10), multicast (IGMP snooping/querier), unknown multicast detection, broadcast/ unicast/ multicast limiter, fast aging, GMRP IEEE 802.1D, invo control 802.3x Synchronization SNTP Server, PTP/IEEE 1588, V1/v2 hardware timestamp with accuracy of 30 ns Layer 3 Full wired speed IPv4 routing with lowest latency, Multinetting (Aliasing), Net directed broadcasts, Port based router interfaces, Proxy ARP Static routing with ECMP (Equal Cost hased VAIAN Statics Routing (OMMP) ISMMP1/v2/v3, Multicast oruting and IGMP Unknown Multicast Filtering simultaneously, PIM-DM), Router Redundancy (VRRP, VRRP tracking, HIVRRP, Interface tracking, operating temperature O° to +60°C, or -40°C to +85°C Relative humidity 10% to 95% (non-condensing) Approvals Safety of industrial control equipment OUL 508 (pending) EC 61850-3, IEEE1613	Power Supply		
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LEDs, log file, syslog, relay contact, RMON, port mirroring, Topology Discovery 802.1AB, cable tester (TX), address conflict detection, network error detection, SFP diagnostics (temperature, optical input/output power)	Software		
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Full wired speed IPv4 routing with lowest latency, Multinetting (Aliasing), Net directed broadcasts, Port based router interfaces, Proxy ARP, Static routing with ECMP (Equal Cost Multiple Path), VLAN based router interfaces, CIDR (Classless Inter Domain Routing), ICMP Router Discovery (IRDP), Double VLAN Tagging, Protocol based VLANs, Multicast Routing (DVMRP, IGMPv1/v2/v3, Multicast routing and IgMP Unknown Multicast Filtering simultaneously, PIM-DM), Router Redundancy (VRRP, VRRP tracking, HIVRRP, Interface Tracking, OSPFv2, Ping Tracking, RIPv1, RIPv2, Tracking of static routes Ambient Conditions Operating temperature O° to +60°C, or -40°C to +70°C (IEC 60068-2-2 Dry Heat Test +85°C, 16 Hours), optional conformal coating Storage/transport temperature -40°C to +85°C Relative humidity 10% to 95% (non-condensing) Approvals Safety of industrial control equipment CUL 508 (pending) Germanischer Lloyd GL (pending) Substation IEC 61850-3, IEEE1613	Filter		
Proxy ARP, Static routing with ECMP (Equal Cost Multiple Path), VLAN based router interfaces, CIDR (Classless Inter Domain Routing), ICMP Router Discovery (IRDP), Double VLAN Tagging, Protocol based VLANs, Multicast Routing (DVMRP, IGMPv1/v2/v3, Multicast routing and IGMP Unknown Multicast Filtering simultaneously, PIM-DM), Router Redundancy (VRRP, VRRP tracking, HIVRRP, Interface Tracking, OSPFv2, Ping Tracking, RIPv1, RIPv2, Tracking of static routes Ambient Conditions Operating temperature O° to +60°C, or -40°C to +70°C (IEC 60068-2-2 Dry Heat Test +85°C, 16 Hours), optional conformal coating Storage/transport temperature -40°C to +85°C Relative humidity 10% to 95% (non-condensing) Approvals Safety of industrial control equipment CUL 508 (pending) Germanischer Lloyd GL (pending) Substation EC 61850-3, IEEE1613	Synchronization	SNTP Server, PTP/IEEE 1588, v1/v2 hardware timestamp with accuracy of 30 ns	
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-40°C to +70°C (IEC 60068-2-2 Dry Heat Test +85°C, 16 Hours), optional conformal coating Storage/transport temperature -40°C to +85°C Relative humidity 10% to 95% (non-condensing) Approvals Safety of industrial control equipment CUL 508 (pending) Hazardous location CUL1604 class 1 DIV 2 (pending) Germanischer Lloyd GL (pending) Substation IEC 61850-3, IEEE1613	Ambient Conditions		
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Approvals Safety of industrial control equipment	Storage/transport temperature	-40°C to +85°C	
Safety of industrial control equipment CUL 508 (pending) Hazardous location CUL1604 class 1 DIV 2 (pending) Germanischer Lloyd GL (pending) Substation IEC 61850-3, IEEE1613	Relative humidity	10% to 95% (non-condensing)	
Hazardous location	Approvals		
Germanischer Lloyd GL (pending) Substation IEC 61850-3, IEEE1613	Safety of industrial control equipment	cUL 508 (pending)	
Substation IEC 61850-3, IEEE1613	Hazardous location	cUL1604 class 1 DIV 2 (pending)	
	Germanischer Lloyd	GL (pending)	
Transport NEMA TS2, EN50121-4, EN50155 (pending)	Substation	IEC 61850-3, IEEE1613	
	Transport	NEMA TS2, EN50121-4, EN50155 (pending)	

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Belden® Competence Center



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Belden is one of the world's leading suppliers of signal transmission solutions including cable, connectivity and active components for mission-critical applications ranging from industrial automation and alternative power generation through to professional broadcasting. Belden offers an extensive portfolio of highly specialized products for management, control and field level, which the company produces and markets under its proprietary Belden®, Hirschmann™ and Lumberg Automation™ brands.

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All Belden products are designed to interact seamlessly. For optimum result we recommend the combined use of Hirschmann™ switches and Belden copper cables for Industrial Ethernet. Used together they deliver the highest quality performance and the most reliable connection in any industrial application.

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