

**Product:** [MACH4002-48G+3X-L3P](#) 



**48-port Gigabit Backbone Router with 10G Uplinks, 4 media slots, L3P**

**Product Description**

MACH4000, modular, managed Industrial Backbone-Router, Layer 3 Switch with Software Professional .

**Technical Specifications**

**Product description**

|                         |                                                                                                                                                                                                                               |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description:            | MACH 4000, modular, managed Industrial Backbone-Router, Layer 3 Switch with Software Professional .                                                                                                                           |
| Part Number:            | 943878301                                                                                                                                                                                                                     |
| Port type and quantity: | up to 48 Gigabit-ETHERNET and 3x 10Gigabit-ETHERNET ports, thereof up to 16 Gigabit-ETHERNET ports via media modules practicable, 3x 10Gigabit XFP sockets and 16 Gigabit TP (10/100/1000Mbit/s) ports are integral installed |

**Product Life Cycle**

|                     |                                |
|---------------------|--------------------------------|
| Availability:       | Last Order Date: June 30, 2022 |
| Last Order Date:    | 2022-06-30                     |
| Last Delivery Date: | 2023-06-30                     |

**More Interfaces**

|                                 |                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Power supply/signaling contact: | 1 x plug-in terminal block, 4-pin, 2 x egresses manual or automatic switchable (1 A at max. 60 V DC or max. 30 V) |
| V.24 interface:                 | 1 x RJ11 socket, serial interface for device configuration                                                        |
| USB interface:                  | 1 x USB to connect auto-configuration adapter ACA21-USB                                                           |

**Network size - cascading**

|                                                |                                      |
|------------------------------------------------|--------------------------------------|
| Line - / star topology:                        | any                                  |
| Ring structure (HIPER-Ring) quantity switches: | ring recovery time 50 ms typ. at LWL |

**Power requirements**

|                       |                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------|
| Operating Voltage:    | power supply unit M4-S-xx or M4-Power Chassis with power supply unit please order separately |
| Power consumption:    | 125 W (without media modules)                                                                |
| Redundancy functions: | redundant 24 V power supply by M4-Power basic device, redundant signal contact               |

**Software**

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Switching:     | Traffic Shaping, Disable Learning (hub functionality), Independent VLAN Learning, Fast Aging, Static Unicast/Multicast Address Entries, QoS / Port Prioritization (802.1D/p), TOS/DSCP Prioritization, CoS Queue Management, Egress Broadcast Limiter per Port, Flow Control (802.3X), VLAN (802.1Q), Protocol-based VLAN, GARP VLAN Registration Protocol (GVRP), Double VLAN Tagging (QinQ), Voice VLAN, GARP Multicast Registration Protocol (GMRP), IGMP Snooping/Querier (v1/v2/v3) |
| Redundancy:    | Advanced Ring Configuration for MRP, HIPER-Ring (Manager), HIPER-Ring (Ring Switch), HIPER-Ring over Link Aggregation, 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, VRRP, VRRP Tracking, HiVRRP (VRRP enhancements)                                                                                                |
| 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, 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, Ingress MAC-based ACL, Ingress IPv4-based ACL, Ingress VLAN-based ACL, Access to Management restricted by VLAN, HTTPS Certificate Management, Restricted Management Access, Appropriate Use Banner, SNMP Logging, Local User Management, Remote Authentication via RADIUS |
| Time synchronisation: | Buffered Real Time Clock, SNTP Client, SNTP Server                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Industrial Profiles:  | EtherNet/IP Protocol, PROFINET IO Protocol                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Miscellaneous:        | PoE (802.3AF), Manual Cable Crossing                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Routing:              | Full Wire-Speed Routing, Port-based Router Interfaces, VLAN-based Router Interfaces, Net-directed Broadcasts, OSPFv2, RIPv1/v2, ICMP Router Discovery (IRDP), Equal Cost Multiple Path (ECMP), Proxy ARP, Static Route Tracking                                                                                                                                                                                                                                                        |
| Multicast routing:    | DVMRP, IGMP v1/v2/v3, PIM-DM (RFC3973), PIM-SM / SSM (RFC4601)                                                                                                                                                                                                                                                                                                                                                                                                                         |

Ambient conditions

|                                     |          |
|-------------------------------------|----------|
| Operating temperature:              | 0-+60 °C |
| Relative humidity (non-condensing): | 10-95 %  |

Mechanical construction

|                     |                         |
|---------------------|-------------------------|
| Dimensions (WxHxD): | 480 mm x 88 mm x 435 mm |
| Weight:             | 7.5 kg                  |
| Mounting:           | 19" control cabinet     |
| Protection class:   | IP20                    |

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): | 6 kV contact discharge, 8 kV air discharge                      |
| EN 61000-4-3 electromagnetic field:         | 10 V/m (80-1000 MHz)                                            |
| EN 61000-4-4 fast transients (burst):       | 2 kV power line, 1 kV data line                                 |
| EN 61000-4-5 surge voltage:                 | power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line |
| EN 61000-4-6 Conducted Immunity:            | 3 V (10 kHz-150 kHz), 10 V (150 kHz-80 MHz)                     |

EMC emitted immunity

|                    |                            |
|--------------------|----------------------------|
| EN 55022:          | EN 55022 Class A           |
| FCC CFR47 Part 15: | FCC 47CFR Part 15, Class A |

Approvals

|                                             |             |
|---------------------------------------------|-------------|
| Safety of industrial control equipment:     | cUL 508     |
| Safety of information technology equipment: | cUL 60950-1 |
| Shipbuilding:                               | DNV         |
| Railway norm:                               | EN 50121-4  |

Scope of delivery and accessories

|                                  |                                                                                                                                          |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Accessories to Order Separately: | SFP transceiver (100/1000Mbit/s), Power supply unit, auto-configuration adapter (ACA21-USB), network management with Industrial HiVision |
| Scope of delivery:               | device, terminal block, operating manual, fan M4-AIR installed                                                                           |

Further Instructions

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

History

|                      |                                                  |
|----------------------|--------------------------------------------------|
| Update and Revision: | Revision Number: 0.141 Revision Date: 05-02-2023 |
|----------------------|--------------------------------------------------|

Variants

| Item #    | Type                |
|-----------|---------------------|
| 943878301 | MACH4002-48G+3X-L3P |

© 2023 Belden, Inc

All Rights Reserved.

Although Belden makes every reasonable effort to ensure their accuracy at the time of this publication, information and specifications described here in are subject to error or omission and to change without notice, and the listing of such information and specifications does not ensure product availability.

Belden provides the information and specifications herein on an "ASIS" basis, with no representations or warranties, whether express, statutory or implied. In no event will Belden be liable for any damages (including consequential, indirect, incidental, special, punitive, or exemplary damages) whatsoever, even if Belden has been advised of the possibility of such damages, whether in an action under contract, negligence or any other theory, arising out of or in connection with the use, or inability to use, the information or specifications described herein.

All sales of Belden products are subject to Belden's standard terms and conditions of sale.

Belden believes this product to be in compliance with all applicable environmental programs as listed in the data sheet. The information provided is correct to the best of Belden's knowledge, information and belief at the date of its publication. This information is designed only as a general guide for the safe handling, storage, and any other operation of the product itself or the one that it becomes a part of. The Product Disclosure is not to be considered a warranty or quality specification. Regulatory information is for guidance purposes only. Product users are responsible for determining the applicability of legislation and regulations based on their individual usage of the product.