Leading Networking Solutions for Industrial & Mission Critical Applications

Hirschmann™ Networking Equipment Maximizes Throughput, Simplifies Installation, and Reduces Total Cost of Ownership
Belden combines the strength of Hirschmann™ switches and Belden Ethernet cables for a complete end-to-end connectivity solution. You can depend on us to keep your mission-critical systems up and running.
More Convenience and More Solutions for Networks in Harsh Environments and Large-scale Infrastructures

Belden Industrial Solutions

Belden has brought together a comprehensive line of industrial cabling, connectivity and networking devices, offering the most reliable communications solutions for your application. Whether you are networking your devices to the controllers, connecting the controllers to the control room, relaying data between the control room, the engineering department, and remote manufacturing sites — or all of the above — Belden has the products you need to seamlessly connect your communications.

From the petrochemical, automotive, pharmaceutical, power generation, pulp and paper, metals, food and beverage, or general manufacturing plant to the corporate headquarters — and everywhere in between — Belden has your signal transmission solution. Belden offers the most dependable network and communications system performance in tough and mission-critical environments.

Our Synergy Ensures Continuous Performance

With the Hirschmann™ and Lumberg Automation™ product line additions to the Belden offering, our line of Complete Industrial Solutions is uniquely positioned to provide the best network and communications infrastructure possible. Belden products and systems expertise means that you can maintain ongoing operations without interruption and costly downtime — in any environment. Here are a few more good reasons why Belden is your best choice for industrial networking, communications and control:

- We have the expertise to integrate your industrial and commercial networks.
- Our products are engineered to perform in the harshest and most demanding environments.
- We offer the broadest selection of products, for a complete, end-to-end Ethernet solution.
- Our sales and engineering professionals can audit, recommend/design, configure and assemble the products and systems to your specific requirements.
- Our global manufacturing, distribution and support network make our products and services available to you globally.

Offering Comprehensive Service & Support

Belden recognizes that comprehensive know-how is necessary to ensure an optimized, homogenous solution. We also know that consultation, support and training requires more than just a general understanding of the products, technologies and market trends. It requires a solid understanding of the application and the ability to provide the type of support that is needed — when and where it is needed. It requires the four key service and support areas that are critical to success:

- Network Design
- Training
- Technical Support
- System Performance

Network Design

Belden eliminates your design challenges because we understand the issues surrounding the design and operation of networks in industrial and mission-critical environments. Our engineers are available to work with you to deliver high-availability networks that meet your enterprise-wide IT needs. Whether it's designing systems for Greenfield facilities, or integrating into existing IT environments, our highly-trained staff lifts the design burden from your shoulders to ours.

We'll consult with you to develop a strategy — or we'll develop and implement your full design — either way our staff is available to you.

Training

Backed by years of meeting and exceeding the needs of a broad range of end-user applications, Belden is ideally suited to offer beginners and networking experts alike the opportunity to expand their understanding of mission-critical networks.

Belden has developed a series of training programs that are given by Belden-certified individuals — all experts in industrial networking and cabling.

Technical Support

At Belden, our personnel are poised to assist our customers — ensuring maximum uptime and reliability. And with offices in North America, Asia and Europe, Belden can respond globally.

System Performance

If Belden designs it, we guarantee performance — period. We are committed to ensuring world-class signal connectivity and to significantly improve your operational up-time. All Belden components are "designed" to deliver optimum performance: from cable, to connectors, to switches and routers. Based on this comprehensive product portfolio, we have the necessary industrial solutions DNA to deliver reliability.

For more information on our service and support offering, including our warranties, please go to the Belden web site at www.belden.com to locate a Belden sales representative near you.
The Hirschmann Brand of Ethernet Switches and Connectivity Products Set the Standard for Quality, Reliability and Service.

Robust
Hirschmann’s years as a networking leader and pioneer, the use of premium electronic components and effective (fan-less) thermal management translates to superior performance and the highest MTBF (mean time between failure) values possible – even at operational temperatures as high as +85°C.

Easy to Configure
Our managed switches are easy to configure with an integrated password controlled web interface, via SNMP or CLI (command line interface), providing secure remote configuration through the network. Configuration data and device OS/firmware can be saved and stored on an external flash-based configuration storage device, simplifying and automating commissioning and device replacement.

Assured Enterprise Interoperability
All switches have IT-compatible managed-switch functionality with SNMP and RMON and are compatible with industry standard network management tools and other name brand switches.

Media Redundancy Options
By using HIPER-Ring protocol, redundant network topologies are simplified – resulting in recovery from media failure within 50 ms (Gigabit ring) or 300 ms (100 Mbps ring). RSTP (Rapid Spanning Tree Protocol) and trunk/link aggregation is also available.

EtherNet/IP and PROFINET Profiles Permits switch management and configuration from within RSLogix 5000 and Step 7. Examples include: displaying switch core temperature, redundancy, and link status, and security violations.

Fault Contact(s) and SNMP Trap
97% of Hirschmann switches include a minimum of one configurable fault contact and all managed switches offer the ability to send a SNMP Trap, which enables clear indication when one or both power inputs are lost, a link is down, an unauthorized device is connected to the switch, or a predetermined temperature range has been breached, etc.

Broad Product Line
The breadth of our product line is un-matched and includes serial to fiber optic converters, fieldbus repeaters for all major fieldbus protocols, managed and unmanaged Ethernet switches (3-52 ports) with an almost limitless mix of copper/fiber ports, Layer 3 switches, media converters, wireless Access Points/Clients/Bridges, firewalls with VPN tunneling and deep packet inspection and network management software (SNMP and OPC).

Network Software
Monitoring and visualizing your network is made easy with the use of our Industrial HiVision network management software. Requiring little or no IT knowledge, Industrial HiVision allows users to monitor alarms, bandwidth utilization, and availability of networked devices – not just switches. Industrial HiVision allows the user to configure a single switch or multiple switches at the same time, significantly simplifying commissioning.

Design Innovation
Continuous product innovations to meet expanding customer needs. This includes Gigabit (even 10 Gigabit speeds) industrial profiles, software tools, various form factors, e.g. IP67 industrial watertight switches, and the integration of a USB port to facilitate quick recovery of a switch and the network.
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Ethernet Products at a Glance

**Unmanaged DIN Rail Mount Switches**

**SPIDER, SPIDER II**
- Cost-effective, plug & play unmanaged switches
  - SPIDER 2, 3 and 5 ports
  - SPIDER 2 and 5 ports with PoE PD
  - SPIDER II 8, 9 and 10 ports
  - SPIDER II PoE 4 PoE and 4 standard ports
  - SPIDER II GIGA 5 and 7 ports, all Gigabit

**RS2, RS20, RS30**
- Feature-rich unmanaged switches with selectable port types, features and approvals
  - RS2 5 and 8 ports
  - RS20 4, 8, 9, 16, 17, 24 or 25 ports
  - RS30 10, 18, or 26 ports, two of which are Gigabit

**Managed DIN Rail Mount Switches**

**RS20, RS30, RS40, RSB20**
- Managed switches with selectable features and approvals
  - RS20 4, 8, 9, 16, 17, 24 or 25 ports
  - RS30 10, 18, or 26 ports, two of which are Gigabit
  - RS40 9 ports, all Gigabit
  - RSB20 8 or 9 ports

**RS22, RS32**
- Managed PoE switches with selectable features and approvals
  - RS22 4, 8, 9, 16, 17, 24 or 25 ports, four ports are PoE and two are Gigabit
  - RS32 10, 18, or 26 ports, four of which are PoE and two are Gigabit

**RSR20, RSR30**
- Ultra-hardened switches w/ -40°C to +85°C operating range, DC or mains/AC power input
  - RSR20: 8 or 9 ports
  - RSR30: 9 or 10 ports, two or three of which are Gigabit

**MS20, MS30, MS4128**
- Managed modular switches with selectable features and approvals as well as user hot-swappable Media modules for almost limitless copper/fiber combinations.
  - MS20 up to 24 ports
  - MS30 up to 26 ports, two of which can be Gigabit
  - MS4128 optional Layer 3/routing, up to 28 ports, four of which can be Gigabit

**RSP Series**
- Hardened managed switches. Uninterrupted data communication thanks to new technologies PRP and HSR.
  - RSP20: 3 x FE SFP slots, 4 x FE SFP and 4 x 10/100 TX ports, or 8 x 10/100 TX ports
  - RSP30: 3 x FE/GE SFP slots, 4 x FE SFP/4 x 10/100 TX ports, or 8 x 10/100 TX ports
  - RSP25: 3 x FE SFP slots, 4 x FE SFP/4 x 10/100 TX ports, or 8 x 10/100 TX ports - Fast MRP, PRP, HSR (pending)
  - RSP35: 3 x FE/GE SFP slots, 4 x FE SFP/4 x 10/100 TX ports, or 8 x 10/100 TX ports - Fast MRP, PRP, HSR (pending)

**IP67 Waterproof Switches**

**OCTOPUS**
- OCTOPUS STX unmanaged, 5-ports, 12 D-code
  - OCTOPUS 8M/16M/24M managed, 8, 16 and 24 ports, M12 D-code
  - OCTOPUS 8M-6POE and 8M-8POE managed, 8 ports, M12 D-code, 6 and 8 of which are PoE
  - OCTOPUS 16M-8POE and 24M-8POE managed, 16 and 24 ports, M12 D-code, 8 of which are PoE
  - OCTOPUS OS20, 8 ports of M12 D-code and 2 multimode or singlemode ports
  - OCTOPUS OS30, 8 ports of M12 D-code and 2 Gigabit multimode or singlemode ports
  - OCTOPUS OS24, unmanaged or basic managed, 10 or 9 ports, 8 of which are PoE, 24 V DC or 110 V DC powered
  - OCTOPUS OS20, unmanaged or basic managed, 10 or 9 ports, M12 D-code, 24 V DC or 110 V DC powered
  - OCTOPUS OS32, 8 or 16 FE-ports, M12 D-code, 8 of which are PoE, 2 Gigabit M12 X-code or FO IEC V1

**Ethernet Cord Sets**

- Hardened pre-terminated and factory tested cordsets using Belden’s patented Bonded-Pair technology complement the active hardware
  - RJ45-RJ45, RJ45-M12, M12-M12
  - Unshielded and Shielded Versions
  - PVC, TPE and TPE High-Flex Cat 5e UTP
  - 17 lengths – from 0.3 to 50 meters
  - M12 bulkhead termination also available

**19” Rack Mount Switches**

**MACH100**
- Hardened Enterprise-grade switches with Hirschmann™ interface and MTBF
  - MACH102-8TP modular switch, up to 26 ports, 10 fixed ports, two of which are Gigabit (modules available for MM/SM fiber, RJ45, PoE/PoE+ and SFP)
  - MACH102-8TP-F 10 fixed ports, two of which are Gigabit
  - MACH102-24TP-F 26 fixed ports, two of which are Gigabit
  - MACH104 – All Gigabit, 4 RJ45/SFP combo ports and 20 RJ45 ports (4 of which can be PoE)
  - MACH104 – All Gigabit, 4 RJ45/SFP combo ports, 16 RJ45 PoE+ ports (optional with 2 XFP 10G uplink ports)

**Ethernet Cord Sets**

- OCTOPUS OS20, 8 ports of M12 D-code and 2 multimode or singlemode ports
- OCTOPUS OS30, 8 ports of M12 D-code and 2 Gigabit multimode or singlemode ports
- OCTOPUS OS24, unmanaged or basic managed, 10 or 9 ports, 8 of which are PoE, 24 V DC or 110 V DC powered
- OCTOPUS OS20, unmanaged or basic managed, 10 or 9 ports, M12 D-code, 24 V DC or 110 V DC powered
- OCTOPUS OS32, 8 or 16 FE-ports, M12 D-code, 8 of which are PoE, 2 Gigabit M12 X-code or FO IEC V1

**IP67 Waterproof Switches**

**OCTOPUS**
- OCTOPUS STX unmanaged, 5-ports, 12 D-code
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  - MACH102-8TP-F 10 fixed ports, two of which are Gigabit
  - MACH102-24TP-F 26 fixed ports, two of which are Gigabit
  - MACH104 – All Gigabit, 4 RJ45/SFP combo ports and 20 RJ45 ports (4 of which can be PoE)
  - MACH104 – All Gigabit, 4 RJ45/SFP combo ports, 16 RJ45 PoE+ ports (optional with 2 XFP 10G uplink ports)
Be Certain with Belden

19" Rack Mount Switches

MACH1000 29

Ultra-hardened switches w/-40°C to +85°C operating range
- MAR1020, up to 24 ports, optionally 4 can be PoE (MAR1022)
- MAR1030, up to 28 ports, up to four of which are Gigabit, optionally 4 of the 10/100 ports can be PoE (MAR1032)
- MAR1120, up to 20 ports on rear of switch, with 4 being optional PoE (MAR1122)
- MAR1130, up to 24 ports on rear of switch, with 4 being optional PoE (MAR1132) plus 2 or 4 ports Gigabit
- MAR1040, 16 Gigabit RJ45/SFP combo

MACH4000 43

High density and high speed backbone switch w/Layer 3/routing and speeds up to 10 Gigabit
- MACH4002-24G up to 24 Gigabit ports
- MACH4002-24G+3X, up to 24 Gigabit ports and three 10 Gigabit XFP ports
- MACH4002-48G up to 48 Gigabit ports
- MACH4002-48G+3X up to 48 Gigabit ports and three 10 Gigabit XFP ports

Wireless Ethernet

BAT Access Point/Client/Bridge 47

- OpenBAT Rugged wireless LAN access point and/or client for use in industrial environments.
- BAT-C WLAN client
- BAT54 DIN Rail or IP67 mount Access Point/Client/Bridge, one or two integrated radios, 802.11 a/b/g

• BAT300 DIN Rail or IP67 mount Access Point/Client/Bridge, one integrated radio, 802.11 a/b/g/n
• Extensive antenna and accessory offering
• BAT-Planner software suite
• Wireless Local Area Network (WLAN) Controllers

Security, Firewall and VPN Appliance

EAGLE/EAGLE Tofino 54

Network segmentation, VPN and deep packet inspection.
- EAGLE20: Transparent or router firewall with VPN functionality. Configurable by web interface or Industrial HiVision
- EAGLE Tofino: Graphical drag and drop device management enables configuration with little IT knowledge. Supports deep packet inspection for major industrial protocols
- EAGLE20-0400 and EAGLE30-0402: Multi-port firewalls in convection-cooled metal DIN Rail housings which support six LAN ports - two of which are Gigabit

Fiber Transceivers/Modems

FiberINTERFACES 62

Extending the reach of copper for serial and fieldbus protocols via fiber.

Embedded Ethernet

Modules and Switches 66

- EEM Profinet IO, EtherNet/IP, EtherCAT
- EEM Development Kit
- EES Embedded Ethernet Switches
- EES Development Kit

Modular Industrial Patch Panel

MIPP – Modular Industrial Patch Panel 67

• Single Modules:
  - 6 x SC Duplex, 6x LC Duplex, 12x LC Duplex, 4 x RJ45 Keystone Jack unshielded or shielded
• Double Modules:
  - 12 x SC Duplex and 12 x LC Duplex
• Accessories: Pigtauls

Network Management Software

Industrial HiVision 70

Network visualization and configuration software with integrated OPC server.
• Supports 32 and 64 bit Windows and Linux operating systems
• Optimized for Hirschmann™ devices
• Integration of third-party devices
• Enhanced Auto-Topology Discovery
• Path availability calculator
• User-defined menus
• Configuration check
• Client/Server architecture
• Asset Management
• OPC read/write
• Configurable scan rate
• Supports multiple languages
• MultiConfig™ for simultaneous configuration of multiple devices
• Password-protected remote access
• Reporting Tools (PDF or Microsoft® Excel)
• Licenses are available for multiple user nodes: 25, 50, 100, 250, and 500
• Node count licenses are cumulative – they can be combined to obtain the optimum fit for your application

www.hirschmann.com 1.510.438.9071
SPIDER Series Unmanaged DIN Rail Mount Ethernet Switches

Entry-level Industrial Unmanaged Switches

The SPIDER family of switches provides users with an economical, yet highly reliable hardened Ethernet switch. Models are available with Gigabit and PoE ports.

All copper/RJ45 ports are auto-negotiating and auto-crossing -- the SPIDERS will work with either patch or cross-over cables. The 100 Mbps fiber ports are available in multimode (MM) and singlemode (SM) with either SC or ST sockets (Gigabit fiber is via SFPs - see page 65). All SPIDER switches are extremely compact and have LED indicators that provide information on power status, link status, and data rate.

Technical Information

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<thead>
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<th>Product Description</th>
<th>SPIDER Series 1TX-x</th>
<th>SPIDER Series 1TX/1FX-x</th>
<th>SPIDER Series 4TX/1FX-x</th>
<th>SPIDER Series 8TX-x</th>
<th>SPIDER Series STX-Giga</th>
<th>SPIDER Series 8TX-PoE</th>
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<td>Operating Temperature</td>
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<td>Storage/Transport Temperature</td>
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<td>-20°C to +70°C</td>
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<td>PoE (802.3af) Ports Supported</td>
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<td>Yes (Powered Device)</td>
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<td>Yes</td>
<td>n/a</td>
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<td>PoE Plus (802.3at) Ports Supported</td>
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<td>MTBF Range</td>
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<td>138 to 265 years</td>
<td>129 to 184 years</td>
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<td>Warranty</td>
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NOTE: These are the prominent technical specifications. For complete technical specifications visit: www.hirschmann.com
## SPIDER Series Unmanaged DIN Rail Mount Ethernet Switches

### All Copper/RJ45

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports</th>
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<tbody>
<tr>
<td>SPIDER 3TX-TAP</td>
<td>943 899-001</td>
<td>3 x RJ45</td>
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<tr>
<td>SPIDER 5TX</td>
<td>943 824-002</td>
<td>5 x RJ45</td>
</tr>
<tr>
<td>SPIDER 5TX EEC</td>
<td>943 824-102</td>
<td>5 x RJ45</td>
</tr>
<tr>
<td>SPIDER II 8TX</td>
<td>943 957-001</td>
<td>8 x RJ45</td>
</tr>
<tr>
<td>SPIDER II 8TX EEC</td>
<td>943 958-001</td>
<td>8 x RJ45</td>
</tr>
<tr>
<td>SPIDER II 8TX POE</td>
<td>942 008-001</td>
<td>8 x RJ45 and 4 x PoE, with metal housing and 24 V DC input</td>
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</tbody>
</table>

### All Copper/RJ45 and FIBER

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<th>Part No.</th>
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<td>SPIDER 1TX/1FX</td>
<td>943 890-001</td>
<td>1 x RJ45 and 1 x MM, SC</td>
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<tr>
<td>SPIDER 1TX/1FX EEC</td>
<td>943 927-101</td>
<td>1 x RJ45 and 1 x MM, SC</td>
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<td>SPIDER 1TX/1FX-SM</td>
<td>943 891-001</td>
<td>1 x RJ45 and 1 x MM, SC</td>
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<tr>
<td>SPIDER 1TX/1FX SM EEC</td>
<td>943 928-001</td>
<td>1 x RJ45 and 1 x SM, SC</td>
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<tr>
<td>SPIDER 4TX/1FX</td>
<td>943 821-001</td>
<td>4 x RJ45 and 1 x MM, SC</td>
</tr>
<tr>
<td>SPIDER 4TX/1FX EEC</td>
<td>943 921-101</td>
<td>4 x RJ45 and 1 x MM, SC</td>
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<tr>
<td>SPIDER 4TX/1FX ST EEC</td>
<td>943 914-001</td>
<td>4 x RJ45 and 1 x MM, ST</td>
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<td>SPIDER 4TX/1FX SM EEC</td>
<td>943 889-001</td>
<td>4 x RJ45 and 1 x SM, SC</td>
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<td>SPIDER II 8TX/1FX EEC</td>
<td>943 958-111</td>
<td>8 x RJ45 and 1 x MM, SC</td>
</tr>
<tr>
<td>SPIDER II 8TX/1FX-ST EEC</td>
<td>943 958-121</td>
<td>8 x RJ45 and 1 x MM, ST</td>
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<tr>
<td>SPIDER II 8TX/2FX EEC</td>
<td>943 958-211</td>
<td>8 x RJ45 and 2 x MM, SC</td>
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<tr>
<td>SPIDER II 8TX/2FX-ST EEC</td>
<td>943 958-221</td>
<td>8 x RJ45 and 2 x MM, ST</td>
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<tr>
<td>SPIDER II 8TX/1FX-SM EEC</td>
<td>943 958-131</td>
<td>8 x RJ45 and 1 x SM, SC</td>
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<td>SPIDER II 8TX/2FX-SM EEC</td>
<td>943 958-231</td>
<td>8 x RJ45 and 2 x SM, SC</td>
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### FAST Ethernet Switches via PoE

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<tr>
<td>SPIDER 5TX PD EEC</td>
<td>942 051-001</td>
<td>5 x 10/100BaseTX Ports, one of which is 1 x PoE PD integrated port</td>
</tr>
<tr>
<td>SPIDER 1TX/1FX-MM PD EEC</td>
<td>942 051-002</td>
<td>1 x 10/100BaseTX PoE PD Port and 1 x 100BaseFX multimode SC</td>
</tr>
<tr>
<td>SPIDER 1TX/1FX-SM PD EEC</td>
<td>942 051-003</td>
<td>1 x 10/100BaseTX PoE PD Port and 1 x 100BaseFX singlemode SC</td>
</tr>
</tbody>
</table>

### FULL GIGABIT

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports</th>
</tr>
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<tbody>
<tr>
<td>SPIDER II Giga ST EEC</td>
<td>943 962-002</td>
<td>5 x RJ45 (10/100/1000)</td>
</tr>
<tr>
<td>SPIDER II Giga ST/2S EEC</td>
<td>943 963-002</td>
<td>5 x RJ45 (10/100/1000) and 2 x SFP Socket (1000)</td>
</tr>
<tr>
<td>SPIDER II Giga ST EEC Pro</td>
<td>943 962-102</td>
<td>5 x RJ45 (10/100/1000), QoS support IEEE 802.1D</td>
</tr>
<tr>
<td>SPIDER II Giga ST/2S EEC Pro</td>
<td>943 963-102</td>
<td>5 x RJ45 (10/100/1000) and 2 x SFP Socket (1000), QoS support IEEE802.1D</td>
</tr>
<tr>
<td>SPIDER II Giga ST EEC Jumbo</td>
<td>943 962-202</td>
<td>5 x RJ45 (10/100/1000), Jumbo Frame support with up to 9014 Byte user data</td>
</tr>
<tr>
<td>SPIDER II Giga ST/2S EEC Jumbo</td>
<td>943 963-202</td>
<td>5 x RJ45 (10/100/1000) and 2 x SFP Socket (1000), Jumbo Frame support with up to 9014 Byte user data</td>
</tr>
</tbody>
</table>

**NOTE:** EEC stands for extended environmental conditions (-40°C to +70°C).
RS2 Unmanaged DIN Rail Mount Ethernet Switches

Feature-rich Unmanaged Switches

The RS2 Series of switches offer advanced features such as redundant power inputs and most offer fault relay (triggerable by loss of power and/or port-link).

Standard features include 10/100 auto-negotiating and auto-crossing (either patch or cross-over cables will work in the ports), a 0°C to +60°C operating range (−40 to +70 deg C available), a 24 VDC power input and an average MTBF exceeding 100 years.

All of the multimode (MM) and singlemode (SM) fiber optic ports are 100 Mbps and are available in a variety of connector options.

<table>
<thead>
<tr>
<th>All Copper/RJ45 – RS2</th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Part No.</td>
<td>Order No.</td>
<td>Ports/Features</td>
</tr>
<tr>
<td>RS2-4TX EEC</td>
<td>943 819-001</td>
<td>4 x 10/100 Mbit/s RJ45, link loss alarm, power loss alarm, fault relay output, ext. temp. -40°C to +70°C</td>
</tr>
<tr>
<td>RS2-5TX</td>
<td>943 732-003</td>
<td>5 x 10/100 Mbit/s RJ45, rugged die-cast metal housing offering wall-mount option</td>
</tr>
<tr>
<td>RS2-TX</td>
<td>943 686-003</td>
<td>8 x 10/100 Mbit/s RJ45, link loss alarm, power loss alarm, fault relay output</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Copper/RJ45 and FIBER Mix</th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>Part No.</td>
<td>Order No.</td>
<td>Ports/Features</td>
</tr>
<tr>
<td>RS2-3TX/2FX EEC</td>
<td>943 771-001</td>
<td>3 x 10/100 Mbit/s RJ45 and 2 x 100 Mbit/s MM-SC, link loss alarm, power loss alarm, fault relay output, ext. temp. -40°C to +70°C</td>
</tr>
<tr>
<td>RS2-3TX/2FX-SM EEC</td>
<td>943 772-001</td>
<td>3 x 10/100 Mbit/s RJ45 and 2 x 100 Mbit/s SM-SC, link loss alarm, power loss alarm, fault relay output, ext. temp. -40°C to +70°C</td>
</tr>
<tr>
<td>RS 2-5TX/FX</td>
<td>943 732-103</td>
<td>4 x 10/100 Mbit/s RJ45 and 1 x 100 Mbit/s MM-MTRJ, rugged die-cast metal housing offering wall-mount option</td>
</tr>
<tr>
<td>RS 2-4TX/1FX EEC</td>
<td>943 773-001</td>
<td>4 x 10/100 Mbit/s RJ45 and 1 x 100 Mbit/s MM-SC, link loss alarm, power loss alarm, fault relay output, ext. temp. -40°C to +70°C</td>
</tr>
<tr>
<td>RS 2-4TX/1FX-ST EEC</td>
<td>943 119-002</td>
<td>4 x 10/100 Mbit/s RJ45 and 1 x 100 Mbit/s MM-ST, link loss alarm, power loss alarm, fault relay output, ext. temp. -40°C to +70°C</td>
</tr>
<tr>
<td>RS 2-4TX/1FX-SM EEC</td>
<td>943 774-001</td>
<td>4 x 10/100 Mbit/s RJ45 and 1 x 100 Mbit/s SM-SC, link loss alarm, power loss alarm, fault relay output, ext. temp. -40°C to +70°C</td>
</tr>
</tbody>
</table>
### RS20 Unmanaged DIN Rail Mount Ethernet Switches

#### Standard and Customizable Unmanaged Switches

The RS20 Unmanaged Ethernet switches are ideal for applications that are less dependent upon the features of switch management while maintaining the highest feature-set for an unmanaged switch.

Features include: 8 x, 9 x, 16 x, 17 x, 24 x and 25 x ports in a 4.25” or less footprint, up to 3 x fiber ports, redundant power inputs via dual 24 V DC, fault relay (triggerable by loss of one power input and/or the loss of the link(s) specified), 10/100 auto-negotiating and auto crossing, variety of connector options for Multimode (MM) and Singlemode (SM) fiber optic ports, choice of operating temperatures and conformal coating (standard is 0°C to +60°C, with -40°C to +70°C also available), and variety of approvals including IEC 61850-3, IEEE 1613, EN 50121-4 and ATEX 100a Zone 2.

#### All Copper/RJ45

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Features</th>
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<tbody>
<tr>
<td>RS20-1600T1T1SDAU</td>
<td>943 434-047</td>
<td>16 x 10/100 Mbit/s RJ45</td>
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#### Multimode (MM)

<table>
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<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Features</th>
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<tr>
<td>RS20-0900NM4TDAU</td>
<td>943 434-058</td>
<td>3 x 100 Mbit/s MM fiber (ST) and 6 x 10/100 Mbit/s RJ45</td>
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<tr>
<td>RS20-0900MM2TDAU</td>
<td>943 434-059</td>
<td>3 x 100 Mbit/s MM fiber (SC) and 6 x 10/100 Mbit/s RJ45</td>
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<tr>
<td>RS20-1600M2T1SDAU</td>
<td>943 434-049</td>
<td>1 x 100 Mbit/s MM fiber (SC) and 15 x 10/100 Mbit/s RJ45</td>
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<tr>
<td>RS20-1600M2M2SDAU</td>
<td>943 434-048</td>
<td>2 x 100 Mbit/s MM fiber (SC) and 14 x 10/100 Mbit/s RJ45</td>
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<tr>
<td>RS20-1600S2M2SDAU</td>
<td>943 434-052</td>
<td>1 x 100 Mbit/s SM fiber (SC) and 14 x 10/100 Mbit/s RJ45</td>
</tr>
<tr>
<td>RS20-1600L2M2SDAU</td>
<td>943 434-053</td>
<td>1 x 100 Mbit/s Long Haul SM fiber (SC) and 14 x 10/100 Mbit/s RJ45</td>
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#### Singlemode (SM)

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<tr>
<th>Part No.</th>
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<td>RS20-0900VM2TDAU</td>
<td>943 434-060</td>
<td>3 x 100 Mbit/s SM fiber (SC) and 6 x 10/100 Mbit/s RJ45</td>
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<td>RS20-1600S2T1SDAU</td>
<td>943 434-051</td>
<td>1 x 100 Mbit/s Long Haul SM fiber (SC) and 15 x 10/100 Mbit/s RJ45</td>
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<td>RS20-1600S2S2SDAU</td>
<td>943 434-053</td>
<td>2 x 100 Mbit/s SM fiber (SC) and 14 x 10/100 Mbit/s RJ45</td>
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<td>RS20-1600L2T1SDAU</td>
<td>943 434-054</td>
<td>1 x 100 Mbit/s Long Haul SM fiber (SC) and 15 x 10/100 Mbit/s RJ45</td>
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<tr>
<td>RS20-1600L2S2SDAU</td>
<td>943 434-056</td>
<td>1 x 100 Mbit/s Long Haul SM fiber (SC) and 14 x 10/100 Mbit/s RJ45</td>
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<tr>
<td>RS20-1600L2L2SDAU</td>
<td>943 434-057</td>
<td>2 x 100 Mbit/s Long Haul SM fiber (SC) and 14 x 10/100 Mbit/s RJ45</td>
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<td>943 434-052</td>
<td>1 x 100 Mbit/s SM fiber (SC) and 14 x 10/100 Mbit/s RJ45</td>
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<td>RS20-1600L2M2SDAU</td>
<td>943 434-055</td>
<td>1 x 100 Mbit/s Long Haul SM fiber (SC) and 14 x 10/100 Mbit/s RJ45</td>
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</tbody>
</table>
RS20 Compact OpenRail Managed Ethernet Switches

Fast Ethernet Uplink Ports with/without PoE, All Copper, 1-2 Fiber Ports, or 3 Fiber Ports

The RS20 compact OpenRail managed Ethernet switches can accommodate from 4- to 25-port densities and are available with Fast Ethernet Uplink Ports, All Copper, or 1- to 2-Fiber Ports, or 3-Fiber ports. The fiber ports are available in multimode and/or singlemode.

### Technical Information

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Type</th>
<th>Available Ports</th>
<th>RS20 Series 4 Ports</th>
<th>RS20 Series 8 and 9 Ports</th>
<th>RS20 Series 16, 17, 24 and 25 Ports</th>
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<td>IP20</td>
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<td>Operating Voltage</td>
<td>12/24/48 V DC (9.6 to 60 V) and 24 V AC (18 to 30 V) (redundant)</td>
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<td>Transportation</td>
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<td>Railway (track)</td>
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<td>Substation</td>
<td>IEC 61850-3, IEEE 1613</td>
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<tr>
<td>Reliability</td>
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<tr>
<td>MTBF Range</td>
<td>65.5 to 74.9 years</td>
<td>43.9 to 62.5 years</td>
<td>22.1 to 44.8 years</td>
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<td>Warranty</td>
<td>5 years standard</td>
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</tbody>
</table>

NOTE: These are the prominent technical specifications. For complete technical specifications visit: [www.hirschmann.com](http://www.hirschmann.com)
RS30 Compact OpenRail Managed Ethernet Switches

Gigabit Ethernet Uplink Ports with/without PoE and Full Gigabit Ethernet Ports

The RS30 compact OpenRail managed Ethernet switches can accommodate from 8- to 24-port densities with 2 Gigabit Ports and 8- 16- or 24- Fast Ethernet Uplink Ports. The Full Gigabit configuration includes 9 Gigabit ports, 2 x SFP Combo GE Type 1 Uplink Ports and 2 x SFP Combo GE Type 2 Uplink Ports.

Technical Information

<table>
<thead>
<tr>
<th>Product Description</th>
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<tbody>
<tr>
<td>Type</td>
<td>RS30 Series 8 Ports</td>
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<td>Available Ports</td>
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<th></th>
</tr>
</thead>
<tbody>
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<td>DIN Rail</td>
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<tr>
<td>Protection Class</td>
<td>IP20</td>
</tr>
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<td>Dimensions (WxHxD)</td>
<td>74 x 131 x 111 mm</td>
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<td>Weight</td>
<td>410 g</td>
</tr>
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<table>
<thead>
<tr>
<th>Ambient Conditions</th>
<th></th>
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<tbody>
<tr>
<td>Operating Temperature</td>
<td>0°C to +60°C, -40°C to +70°C, or -40°C to +70°C (optional Conformal Coating)</td>
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<tr>
<td>Storage/Transport Temperature</td>
<td>-40°C to +70°C</td>
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<tr>
<td>Relative Humidity (non-condensing)</td>
<td>10% to 95%</td>
</tr>
<tr>
<td>Conformal Coating</td>
<td>Yes (variant dependent)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interfaces</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>V.24 Interface</td>
<td>1 x RJ11 Socket</td>
</tr>
<tr>
<td>USB Interface</td>
<td>1 x USB (ACA21-USB Adaptor)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power Requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Voltage</td>
<td>12/24/48 V DC (9.6 to 60 V) and 24 V AC (18 to 30 V) (redundant)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regulatory Approvals</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety of Industrial Control Equipment</td>
<td>cUL508</td>
</tr>
<tr>
<td>Hazardous Locations</td>
<td>ISA12.12.01 Class 1 Div 2</td>
</tr>
<tr>
<td>Germanischer Lloyd</td>
<td>Germanischer Lloyd</td>
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<tr>
<td>Transportation</td>
<td>NEMA TS2</td>
</tr>
<tr>
<td>Railway (track)</td>
<td>EN 50121-4</td>
</tr>
<tr>
<td>Substation</td>
<td>IEC 61850-3, IEEE 1613</td>
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</table>

<table>
<thead>
<tr>
<th>Reliability</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>MTBF Range</td>
<td>30.6 to 51.9 years</td>
</tr>
<tr>
<td>Warranty</td>
<td>5 years standard</td>
</tr>
</tbody>
</table>

NOTE: These are the prominent technical specifications. For complete technical specifications visit: [www.hirschmann.com](http://www.hirschmann.com)
RS20/RS22/RS30/RS32 Compact OpenRail Managed Ethernet Switch Configurations

Fast Ethernet Uplink Ports/Fast Ethernet Uplink Ports with PoE
Gigabit Ethernet Uplink Ports/Gigabit Ethernet Uplink Ports with PoE

Design/Models
RS20 = Fast-Ethernet Uplink Ports
RS22 = Fast-Ethernet Uplink Ports with PoE
RS30 = Gigabit Ethernet Uplink Ports
RS32 = Gigabit Ethernet Ports with PoE

Fast Ethernet Port Configurations
04 = 04 x 10/100 Mbit/s
08 = 08 x 10/100 Mbit/s
09 = 09 x 10/100 Mbit/s
16 = 16 x 10/100 Mbit/s
17 = 17 x 10/100 Mbit/s
24 = 24 x 10/100 Mbit/s
25 = 25 x 10/100 Mbit/s

Gigabit Ethernet Ports
00 = none (not present)
02 = 02 x 1000 Mbit/s

Type 1 Uplink Port
T1 = 1 x Twisted-Pair RJ45
M2 = 1 x Multimode SC
M4 = 1 x Multimode ST
S2 = 1 x Singlemode SC
S4 = 1 x Singlemode ST
L2 = 1 x Long Haul SC
G2 = 1 x Long Haul + SC
O6 = 1 X SFP-Slot GE
MM = 2 x Multimode SC
NN = 2 x Multimode ST
VV = 2 x Singlemode S
UU = 2 x Singlemode ST

Type 2 Uplink Port
T1 = 1 x Twisted-Pair RJ45
M2 = 1 x Multimode SC
M4 = 1 x Multimode ST
S2 = 1 x Singlemode SC
S4 = 1 x Singlemode ST
G2 = 1 x Long Haul + SC
Z2 = 2 X SFP-Slot FE

Temperature Range Options
S = 0°C up to +60°C
T = -40°C up to +70°C
E = -40°C up to +70°C (+60°C PoE)
inclusive Conformal Coating

Power Supply
D = 9.6 to 60 V DC and 18 to 30 V AC
P = 47 to 52 V DC (PoE)

Appraisals
A = cUL508, cUL1604 Class 1 Div 2
H = cUL508, cUL1604, Class 1 Div 2, GL: German Lloyd, IEC 61850-3: Substation, IEEE 1613: Substation – EN 50121-4: Railway (track)
B = cUL508, cUL1604, Class 1 Div 2, GL: German Lloyd, IEC 61850-3: Substation, IEEE 1613: Substation – EN 50121-4: Railway (track)/ATEX100a, Zone 2: Hazardous Location

Software Version (see page 43 for additional Management Software Functionality details)
E = Enhanced, additional filters and redundancy
P = Professional, DHCP server, additional security and diagnostics, advanced filtering and redundancy

Configuration
H = Standard
E = Ethernet/IP Pre Settings
P = PROFINET Pre Settings

OEM Type
H = Standard
F = Steel Cabinet (PoE)

Software Release
XX.X = Current Software Release

NOTE: The last three part number categories (Configuration, OEM Type and Software Release) are optional.
RS40 Compact OpenRail Managed Ethernet Switches

All Ports are Gigabit

The RS40 compact OpenRail managed ethernet switch has 9 Gigabit ports. The switch offers 5 x 10/100/1000 RJ45 and 4 x 100/1000 RJ45/SFP combo ports (function of one RJ45 combo port is lost for each SFP utilized). Fiber uplink ports are available in multimode and/or singlemode by using Gigabit or 100 Mbit/s SFP transceivers.

Technical Information

<table>
<thead>
<tr>
<th>Product Description</th>
<th>RS40 Series Standard Temperature</th>
<th>RS40 Series Extended Temperature</th>
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</thead>
<tbody>
<tr>
<td>Type</td>
<td>Software Version Layer 2</td>
<td></td>
</tr>
<tr>
<td>Available Ports</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting</td>
<td>DIN Rail</td>
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<tr>
<td>Protection Class</td>
<td>IP20</td>
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<tr>
<td>Dimensions (WxHxD)</td>
<td>74 x 131 x 111 mm</td>
<td>110 x 131 x 111 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>530 g</td>
<td>600 g</td>
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<tr>
<td>Ambient Conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0°C to +60°C, -40°C to +70°C</td>
<td>-40°C to +70°C (optional Conformal Coating)</td>
</tr>
<tr>
<td>Storage/Transport Temperature</td>
<td>-40°C to +70°C</td>
<td></td>
</tr>
<tr>
<td>Relative Humidity (non-condensing)</td>
<td>10% to 95%</td>
<td></td>
</tr>
<tr>
<td>Conformal Coating</td>
<td>Yes (variant dependent)</td>
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</tr>
<tr>
<td>Interfaces</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V.24 Interface</td>
<td>1 x RJ11 Socket</td>
<td></td>
</tr>
<tr>
<td>USB Interface</td>
<td>1 x USB (ACA21-USB Adaptor)</td>
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</tr>
<tr>
<td>Power Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Voltage</td>
<td>12/24/48 V DC (9.6 to 60 V) and 24 V AC (18 to 30 V) (redundant)</td>
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</tr>
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<td>Regulatory Approvals</td>
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</tr>
<tr>
<td>Germanischer Lloyd</td>
<td>Germanischer Lloyd</td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td>n/a</td>
<td></td>
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<tr>
<td>Railway (track)</td>
<td>n/a</td>
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<tr>
<td>Substation</td>
<td>IEC 61850-3</td>
<td></td>
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<tr>
<td>Reliability</td>
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<td></td>
</tr>
<tr>
<td>MTBF Range</td>
<td>25.8 to 27.1 years</td>
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<tr>
<td>Warranty</td>
<td>5 years standard</td>
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</tbody>
</table>

NOTE: These are the prominent technical specifications. For complete technical specifications visit: www.hirschmann.com
RS40 Compact OpenRail Managed Ethernet Switch Configurations

Full Gigabit Ethernet Switches RS40

Design/Model

RS40 = Full Gigabit Ethernet Switch

Fast Ethernet Port Configurations

00 = 00 x 10/100 Mbit/s

Gigabit Ethernet Ports

09 = 09 x 1000 Mbit/s

Type 1 Uplink Port

CC = 2 x SFP Combo Port GE

Type 2 Uplink Port

CC = 2 x SFP Combo Port GE

Temperature Range Options

S = 0°C up to +60°C
T = -40°C up to +70°C
E = -40°C up to +70°C inclusive Conformal Coating

Power Supply

D = 9.6 to 60 V DC and 18 to 30 V AC

Approvals

A = cUL508, cUL1604 Class 1 Div 2
H = cUL508, cUL1604, Class 1 Div 2, GL: German Lloyd, IEC 61850-3: Substation/IEEE 1613: Substation – EN 50121-4: Railway (track)
B = cUL508, cUL1604, Class 1 Div 2, GL: German Lloyd, IEC 61850-3: Substation IEEE 1613: Substation – EN 50121-4: Railway (track), ATEX100a, Zone 2: Hazardous Location

Software Version (see page 43 for additional Management Software Functionality details)

E = Enhanced, additional filters and redundancy
P = Professional, DHCP server, additional security and diagnostics, advanced filtering and redundancy

Configuration

H = Standard
E = Ethernet/IP Pre Settings
P = PROFINET Pre Settings

OEM Type

H = Standard

Software Release

XX.X = Current Software Release

NOTE: The last three part number categories (Configuration, OEM Type and Software Release) are optional.
RSB20 Series Basic Managed DIN Rail-Mount Switches

Fast Ethernet Uplink Ports

The RSB20 series of managed switches consists of 8 core models, each of which are optionally available in high temperature configurations and/or preconfigured with IGMP Snooping initially active (multicast filtering) for EtherNet/IP use. These switches offer redundant DC power inputs and a variety of multimode (SC), singlemode (SC), and SFP socket options.

The RSB20 portfolio offers users a quality, hardened, reliable communications solution that provides an economically attractive entry into the segment of managed switches.

Technical Information

<table>
<thead>
<tr>
<th>Product Description</th>
<th>RSB20 Series</th>
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<tbody>
<tr>
<td>Type</td>
<td>RA20 Series</td>
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<td>Switching/Routing</td>
<td>Software Version Layer 2</td>
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<td>Available Ports</td>
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<thead>
<tr>
<th>Construction</th>
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<tbody>
<tr>
<td>Mounting</td>
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<td>Protection Class</td>
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<tr>
<td>Dimensions (WxHxD)</td>
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<tr>
<td>Weight</td>
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<table>
<thead>
<tr>
<th>Ambient Conditions</th>
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<tr>
<td>Operating Temperature</td>
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<tr>
<td>Storage/Transport Temperature</td>
</tr>
<tr>
<td>Relative Humidity (non-condensing)</td>
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<tr>
<td>Conformal Coating</td>
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<thead>
<tr>
<th>Interfaces</th>
</tr>
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<tbody>
<tr>
<td>V.24 Interface</td>
</tr>
<tr>
<td>USB Interface</td>
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<table>
<thead>
<tr>
<th>Power Requirements</th>
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<tbody>
<tr>
<td>Operating Voltage</td>
</tr>
<tr>
<td>PoE (802.3at) Ports Supported</td>
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<tr>
<td>PoE Plus (802.3at) Ports Supported</td>
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<thead>
<tr>
<th>Regulatory Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety of Industrial Control Equipment</td>
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<tr>
<td>Hazardous Locations</td>
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<tr>
<td>Germanischer Lloyd</td>
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<tr>
<td>Transportation</td>
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<tr>
<td>Railway (norm)</td>
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<tr>
<td>Substation</td>
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</table>

<table>
<thead>
<tr>
<th>Reliability</th>
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</thead>
<tbody>
<tr>
<td>MTBF Range</td>
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<tr>
<td>Warranty</td>
</tr>
</tbody>
</table>

NOTE: These are the prominent technical specifications. For complete technical specifications visit: www.hirschmann.com
RSB20 Series Basic Managed DIN Rail-Mount Switch Configurations

### Fast Ethernet Uplink Ports

#### All Copper/RJ45

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSB20-0800T1T1SAAB</td>
<td>942 014-001</td>
<td>8TX</td>
</tr>
<tr>
<td>RSB20-0800T1T1SAABE</td>
<td>942 014-017</td>
<td>8TX E, pre-configured MC filtering for EtherNet/IP</td>
</tr>
<tr>
<td>RSB20-0800T1T1TAABE</td>
<td>942 014-025</td>
<td>8TX EEC E, pre-configured MC filtering for EtherNet/IP</td>
</tr>
<tr>
<td>RSB20-0800T1T1TAAB</td>
<td>942 014-009</td>
<td>8TX EEC</td>
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#### Multimode (MM)

<table>
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<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSB20-0800M2M2SAAB</td>
<td>942 014-002</td>
<td>6TX/2FX MM</td>
</tr>
<tr>
<td>RSB20-0800M2M2SAABE</td>
<td>942 014-018</td>
<td>6TX/2FX MM E, pre-configured MC filtering for EtherNet/IP</td>
</tr>
<tr>
<td>RSB20-0800M2M2TAABE</td>
<td>942 014-026</td>
<td>6TX/2FX MM EEC E, pre-configured MC filtering for EtherNet/IP</td>
</tr>
<tr>
<td>RSB20-0800M2M2TAAB</td>
<td>942 014-010</td>
<td>6TX/2FX MM EEC</td>
</tr>
<tr>
<td>RSB20-0900M2TTSAAB</td>
<td>942 014-005</td>
<td>8TX/1FX MM</td>
</tr>
<tr>
<td>RSB20-0900M2TTSAABE</td>
<td>942 014-021</td>
<td>8TX/1FX MM E, pre-configured MC filtering for EtherNet/IP</td>
</tr>
<tr>
<td>RSB20-0900M2TTTAABE</td>
<td>942 014-029</td>
<td>8TX/1FX MM EEC E, pre-configured MC filtering for EtherNet/IP</td>
</tr>
<tr>
<td>RSB20-0900M2TTTAAB</td>
<td>942 014-013</td>
<td>8TX/1FX MM EEC</td>
</tr>
<tr>
<td>RSB20-0900MMM2SAAB</td>
<td>942 014-007</td>
<td>6TX/3FX MM</td>
</tr>
<tr>
<td>RSB20-0900MMM2SAABE</td>
<td>942 014-023</td>
<td>6TX/3FX MM E, pre-configured MC filtering for EtherNet/IP</td>
</tr>
<tr>
<td>RSB20-0900MMM2TAABE</td>
<td>942 014-031</td>
<td>6TX/3FX MM EEC E, pre-configured MC filtering for EtherNet/IP</td>
</tr>
<tr>
<td>RSB20-0900MMM2TAAB</td>
<td>942 014-015</td>
<td>6TX/3FX MM EEC</td>
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</tbody>
</table>

#### Singlemode (SM) Fiber and Copper

<table>
<thead>
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<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSB20-0800S2S2SAAB</td>
<td>942 014-003</td>
<td>6TX/2FX SM</td>
</tr>
<tr>
<td>RSB20-0800S2S2SAABE</td>
<td>942 014-019</td>
<td>6TX/2FX SM E, pre-configured MC filtering for EtherNet/IP</td>
</tr>
<tr>
<td>RSB20-0800S2S2TAABE</td>
<td>942 014-027</td>
<td>6TX/2FX SM EEC E, pre-configured MC filtering for EtherNet/IP</td>
</tr>
<tr>
<td>RSB20-0800S2S2TAAB</td>
<td>942 014-011</td>
<td>6TX/2FX SM EEC</td>
</tr>
<tr>
<td>RSB20-0900S2TTSAAB</td>
<td>942 014-006</td>
<td>8TX/1FX SM</td>
</tr>
<tr>
<td>RSB20-0900S2TTSAABE</td>
<td>942 014-022</td>
<td>8TX/1FX SM E, pre-configured MC filtering for EtherNet/IP</td>
</tr>
<tr>
<td>RSB20-0900S2TTTAABE</td>
<td>942 014-030</td>
<td>8TX/1FX SM EEC E, pre-configured MC filtering for EtherNet/IP</td>
</tr>
<tr>
<td>RSB20-0900S2TTTAAB</td>
<td>942 014-014</td>
<td>8TX/1FX SM EEC</td>
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#### Singlemode (SM)/Multimode (MM) Fiber and Copper

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Features</th>
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<tbody>
<tr>
<td>RSB20-0900VM2S2SAAB</td>
<td>942 014-008</td>
<td>6TX/2FX SM/1 FX MM</td>
</tr>
<tr>
<td>RSB20-0900VM2S2SAABE</td>
<td>942 014-024</td>
<td>6TX/2FX SM/1 FX MM E, pre-configured MC filtering for EtherNet/IP</td>
</tr>
<tr>
<td>RSB20-0900VM2S2TAABE</td>
<td>942 014-032</td>
<td>6TX/2FX SM/1 FX MM EEC E, pre-configured MC filtering for EtherNet/IP</td>
</tr>
<tr>
<td>RSB20-0900VM2TAAB</td>
<td>942 014-016</td>
<td>6TX/2FX SM/1 FX MM EEC</td>
</tr>
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#### SFP

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Features</th>
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</thead>
<tbody>
<tr>
<td>RSB20-0900ZZZ6SAAB</td>
<td>942 014-004</td>
<td>6TX/3SFP</td>
</tr>
<tr>
<td>RSB20-0900ZZZ6SAABE</td>
<td>942 014-020</td>
<td>6TX/3SFP E, pre-configured MC filtering for EtherNet/IP</td>
</tr>
<tr>
<td>RSB20-0900ZZZ6TAABE</td>
<td>942 014-028</td>
<td>6TX/3SFP EEC E, pre-configured MC filtering for EtherNet/IP</td>
</tr>
<tr>
<td>RSB20-0900ZZZ6TAAB</td>
<td>942 014-012</td>
<td>6TX/3SFP EEC</td>
</tr>
</tbody>
</table>
MS20 Managed Modular DIN Rail Mount Ethernet Switches

The MS20 series of Ethernet switches have eight to twenty-four 100 Mbit/s max ports. Fully managed (web, SNMP and CLI) IGMP snooping (multicast filtering), VLAN, port mirroring, port control, port security, link alarms, broadcast limiter, traffic diagnostics, HIPER-Ring redundancy, RSTP, etc.

Features include: available in a 2- and 4-slot version (4-slot can be expanded to a 6 slot using MB-2T), requires the use of hot-swappable media modules for any combination of copper/fiber ports, dual power inputs and dual fault relay outputs, USB configuration backup/restore and fast device replacement), standard 0°C to +60°C (~40°C to +70°C and conformal coating available), differentiator between similar switches listed is the firmware level/features.

(E = Enhanced, P = Professional). Last digit in part number category software version (see page 43 for additional Management Software Functionality details).

All Ports are 10/100 Mbit/s

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Features</th>
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<tbody>
<tr>
<td>MS20-0800SAAE</td>
<td>943 435-001</td>
<td>2 x any MM2/MM3 (2 slots, max. 8 x 10/100 Mbit/s ports)</td>
</tr>
<tr>
<td>MS20-0800SAP</td>
<td>943 435-002</td>
<td>2 x any MM2/MM3 (2 slots, max. 8 x 10/100 Mbit/s ports)</td>
</tr>
<tr>
<td>MS20-0800ECCP</td>
<td>943 956-001</td>
<td>2 x any MM2/MM3 (2 slots, max. 8 x 10/100 Mbit/s ports), -40°C to +70°C, conformal coated, 24/48 V DC, EN 50155</td>
</tr>
<tr>
<td>MS20-1600SAAE</td>
<td>943 435-003</td>
<td>4 x any MM2/MM3 (6 slots max., 16 x 10/100 Mbit/s ports/24 ports w/ MB-2T)</td>
</tr>
<tr>
<td>MS20-1600SAP</td>
<td>943 435-004</td>
<td>4 x any MM2/MM3 (6 slots max., 16 x 10/100 Mbit/s ports/24 ports w/ MB-2T)</td>
</tr>
<tr>
<td>MS20-1600ECCP</td>
<td>943 956-002</td>
<td>4 x any MM2/MM3 (6 slots max., 16 x 10/100 Mbit/s ports/24 ports w/ MB-2T), -40°C to +70°C, conformal coated, 24/48 V DC, EN 50155</td>
</tr>
</tbody>
</table>

www.hirschmann.com
MS30 Managed Modular DIN Rail Mount Ethernet Switches

The MS30 series of Ethernet switches have the same functionality and features as the MS20 series, with the exception of an added slot for a Gigabit Media Module (for 2 x 10/100/1000 RJ45/Gigabit SFP combo ports).

Features include: uplink ports are 10/100/1000 Mbit/s, all other ports are 10/100 Mbit/s, MS30-08 can have a max of 8 x 10/100 Mbit/s ports and 2 x 10/100 RJ45/Gigabit SFP combo port, ports can be any combination of copper and/or fiber, and Gigabit RJ45/SFP combo ports compatible with Gigabit SFPs).

<table>
<thead>
<tr>
<th>All Ports are 10/100 Mbit/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part No. Order No.</td>
</tr>
<tr>
<td>MS30-0802SAAE 943 435-005</td>
</tr>
<tr>
<td>MS30-0802SAAP 943 435-006</td>
</tr>
<tr>
<td>MS30-1602SAAE 943 435-007</td>
</tr>
</tbody>
</table>

MS Backplane Extensions

MICE 2-slot backplane extensions are used for MS20-16, MS30-16 and MS4128, Only one per switch may be used for a maximum of six total slots.

<table>
<thead>
<tr>
<th>Backplane Extensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part No.</td>
</tr>
<tr>
<td>MB-2T 943 733-102</td>
</tr>
<tr>
<td>MB20-2TAHH 943 435-002</td>
</tr>
</tbody>
</table>
Managed Modular DIN Rail Mount Switches

PowerMICE Gigabit Layer 2/3 Switches

For applications that require a more powerful and feature-rich switch, Hirschmann™ offers its MS4128 modular switches. Similar in functionality and features to the MS30-16. The MS4128 offers up to 24 ports of any copper/fiber mix, but adds two additional Gigabit ports (for a total of four) and an option to have Layer 3 routing capabilities.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Layer/Management</th>
<th>Ports</th>
<th>Configurations</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS4128-L2P</td>
<td>943 009-102</td>
<td>Layer 2/Professional</td>
<td>20–28</td>
<td>4 x any MM2/MM3 (6 x w/MB-2T) and 1 x any MM4 (max 28 ports)</td>
</tr>
<tr>
<td>MS4128-L2P EEC</td>
<td>943 009-103</td>
<td>Layer 2/Professional</td>
<td>20–28</td>
<td>Same as 002 except extended temperature range</td>
</tr>
<tr>
<td>MS4128-L3E</td>
<td>943 009-202</td>
<td>Layer 3/Enhanced</td>
<td>20–28</td>
<td>4 x any MM2/MM3 (6 x w/MB-2T) and 1 x any MM4 (max 28 ports)</td>
</tr>
<tr>
<td>MS4128-L3E EEC</td>
<td>943 009-203</td>
<td>Layer 3/Enhanced</td>
<td>20–28</td>
<td>Same as 202 except extended temperature range</td>
</tr>
<tr>
<td>MS4128-L3P</td>
<td>943 009-302</td>
<td>Layer 3/Professional</td>
<td>20–28</td>
<td>4 x any MM2/MM3 (6 x w/MB-2T) and 1 x any MM4 (max 28 ports)</td>
</tr>
<tr>
<td>MS4128-L3P EEC</td>
<td>943 009-303</td>
<td>Layer 3/Professional</td>
<td>20–28</td>
<td>Same as 302 except extended temperature range</td>
</tr>
<tr>
<td>MS4128-L2P ATEX</td>
<td>943 009-101</td>
<td>Layer 2/Professional</td>
<td>20–28</td>
<td>4 X 1000 BASE-SX with SFP modules or 4 x 10/100/1000 BASE-TX and 24 Fast ETHERNET (100 Mbit/s) ports (with MB-2T)</td>
</tr>
<tr>
<td>MS4128-L3E ATEX</td>
<td>943 009-201</td>
<td>Layer 3/Enhanced</td>
<td>20–28</td>
<td>Same as 101 except Layer 3 enhanced software</td>
</tr>
<tr>
<td>MS4128-L3P ATEX</td>
<td>943 009-301</td>
<td>Layer 3/Professional</td>
<td>20–28</td>
<td>Same as 201 except professional software</td>
</tr>
</tbody>
</table>

MICE Media Modules

Any combination of the following hot-swappable media modules may be used to attain the desired port density/type on a MS switch. The only restriction is the number of slots that the MS backplane has (one media module per slot).

<table>
<thead>
<tr>
<th>Modules: All Copper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part No.</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>MM2-4TX1</td>
</tr>
<tr>
<td>MM2-4TX1-EEC</td>
</tr>
</tbody>
</table>
## Managed Modular DIN Rail Mount Switches

### Modules: Multimode

<table>
<thead>
<tr>
<th>Type</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM</td>
<td>MM2-2FXM2</td>
<td>943 716-101</td>
<td>2 x 100 Mbit/s MM SC</td>
</tr>
<tr>
<td>MM</td>
<td>MM3-4FXM2</td>
<td>943 764-101</td>
<td>4 x 100 Mbit/s MM SC</td>
</tr>
<tr>
<td>MM</td>
<td>MM3-4FXM4</td>
<td>943 835-101</td>
<td>4 x 100 Mbit/s MM ST</td>
</tr>
<tr>
<td>MM</td>
<td>MM3-1FXM2/3TX1</td>
<td>943 839-101</td>
<td>1 x 100 Mbit/s MM SC, 3 x RJ45</td>
</tr>
<tr>
<td>MM</td>
<td>MM3-2FXM4/2TX1</td>
<td>943 837-101</td>
<td>2 x 100 Mbit/s MM ST, 2 x RJ45</td>
</tr>
<tr>
<td>MM</td>
<td>MM3-4FLM4</td>
<td>943 760-101</td>
<td>4 x 10 Mbit/s MM ST</td>
</tr>
<tr>
<td>MM</td>
<td>MM3-2FXM2/2TX1</td>
<td>943 761-101</td>
<td>2 x 100 Mbit/s MM SC, 2 x RJ45</td>
</tr>
<tr>
<td>MM</td>
<td>MM3-2FXM2/2TX1-EEC</td>
<td>943 761-151</td>
<td>2 x 100 Mbit/s MM SC, 2 x RJ45, ext. temperature range</td>
</tr>
<tr>
<td>MM</td>
<td>MM3-1FXM2/1FXS2/2TX1</td>
<td>943 929-101</td>
<td>2 x 100 Mbit/s SC (1 x MM and 1 x SM), 2 x RJ45</td>
</tr>
<tr>
<td>MM</td>
<td>MM2-4FXM3</td>
<td>943 721-101</td>
<td>4 x 100 Mbit/s MM MTRJ</td>
</tr>
<tr>
<td>MM</td>
<td>MM2-2FXM3/2TX1</td>
<td>943 720-101</td>
<td>2 x 100 Mbit/s MM MTRJ, 2 x RJ45</td>
</tr>
<tr>
<td>SFP</td>
<td>MM20-Z6Z6Z6Z6SAHH</td>
<td>943 938-001</td>
<td>4 x 100 Mbit/s SFP sockets (SFPs are sold separately), for MS20, MS30 and MS4128</td>
</tr>
</tbody>
</table>

### Modules: Singlemode

<table>
<thead>
<tr>
<th>Type</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM</td>
<td>MM2-2FXS2</td>
<td>943 719-101</td>
<td>2 x 100 Mbit/s SM SC</td>
</tr>
<tr>
<td>SM</td>
<td>MM3-2FXS2/2TX1</td>
<td>943 762-101</td>
<td>2 x 100 Mbit/s SM SC, 2 x RJ45</td>
</tr>
<tr>
<td>SM</td>
<td>MM3-2FXS2/2TX1-EEC</td>
<td>943 762-151</td>
<td>2 x 100 Mbit/s SM SC, 2 x RJ45, ext. temperature range</td>
</tr>
<tr>
<td>SM</td>
<td>MM3-1FXS2/3TX1</td>
<td>943 838-101</td>
<td>1 x 100 Mbit/s SM SC, 3 x RJ45</td>
</tr>
<tr>
<td>SM</td>
<td>MM3-4FXS2</td>
<td>943 836-101</td>
<td>4 x 100 Mbit/s SM SC</td>
</tr>
<tr>
<td>SM</td>
<td>MM3-1FXL2/3TX1</td>
<td>943 763-101</td>
<td>1 x 100 Mbit/s SM, SC Long Haul, 3 x RJ45</td>
</tr>
<tr>
<td>SM</td>
<td>MM3-1FXLH/3TX1</td>
<td>943 930-101</td>
<td>1 x 100 Mbit/s SM SC Long Haul+, 3 x RJ45</td>
</tr>
<tr>
<td>SM</td>
<td>MM3-1FXS2/3TX1-EEC</td>
<td>943 838-151</td>
<td>1 x 100 Mbit/s SM SC, 3 x RJ45, ext. temperature range</td>
</tr>
<tr>
<td>SFP</td>
<td>MM20-Z6Z6Z6Z6SAHH</td>
<td>943 938-001</td>
<td>4 x 100 Mbit/s SFP sockets (SFPs are sold separately), for MS20, MS30 and MS4128</td>
</tr>
</tbody>
</table>

### Modules: Gigabit

<table>
<thead>
<tr>
<th>Type</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gigabit</td>
<td>MM4-2TX/SFP</td>
<td>943 622-001</td>
<td>2 x Gigabit RJ45/SFP combo ports for use with MS30 and MS4128</td>
</tr>
<tr>
<td>Gigabit</td>
<td>MM4-4TX/SFP</td>
<td>943 010-001</td>
<td>4 x Gigabit RJ45/SFP combo ports for use with MS4128 only</td>
</tr>
</tbody>
</table>

### Modules: Special Purpose

<table>
<thead>
<tr>
<th>Type</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realtime</td>
<td>MM23-T1T1T1T1SAAH PTPv2</td>
<td>–</td>
<td>IEEE1588 Version 2 PTP module, 4 x 10/100 RJ45, replacement for 943 117-001</td>
</tr>
<tr>
<td>Realtime</td>
<td>MM23-M2M2T1T1SAAH PTPv2</td>
<td>–</td>
<td>IEEE1588 Version 2 PTP module, 2 x multimode, SC sockets, replacement for 943 117-002</td>
</tr>
<tr>
<td>Realtime</td>
<td>MM23-S2S2T1T1SAAH PTPv2</td>
<td>–</td>
<td>IEEE1588 Version 2 PTP module, 2 x singemode, SC sockets, replacement for 943 117-003</td>
</tr>
<tr>
<td>Realtime</td>
<td>MM23-F4F4T1T1SAAH PTPv2</td>
<td>–</td>
<td>IEEE1588 Version 2 PTP module, 2 x multimode, ST sockets, replacement for 943 117-004</td>
</tr>
<tr>
<td>Realtime</td>
<td>MM33-070799999SA PTPv2</td>
<td>–</td>
<td>IEEE1588 Version 2 PTP module, SFP sockets</td>
</tr>
<tr>
<td>Realtime</td>
<td>MM3-4TX1-RT-EEC</td>
<td>943 955-001</td>
<td>4 x RJ45, railway certifications EN 50155, EN 50121-4, IEEE 1588 Version 1</td>
</tr>
<tr>
<td>Realtime</td>
<td>MM3-2FXM2/2TX1-RT-EEC</td>
<td>943 955-002</td>
<td>2 x 100 Mbit/s MM SC, 2 x RJ45, IEEE 1588 Version 1, railway certifications EN 50155, EN 50121-4</td>
</tr>
<tr>
<td>Realtime</td>
<td>MM3-2FXS2/2TX1-RT-EEC</td>
<td>943 955-003</td>
<td>2 x 100 Mbit/s SM SC, 2 x RJ 45, IEEE 1588 Version 1, railway certifications EN 50155, EN 50121-4</td>
</tr>
<tr>
<td>AUI</td>
<td>MM20-A8A899999SAHH</td>
<td>943 840-101</td>
<td>2 x AUI SUB-D 15-pin male D-sub</td>
</tr>
<tr>
<td>M12</td>
<td>MM3-4TX5</td>
<td>943 841-101</td>
<td>4 x M12 socket (D-code), for connectors see OCTOPUS family</td>
</tr>
<tr>
<td>PoE</td>
<td>MM22-T1T1T1T1SAAH</td>
<td>943 938-002</td>
<td>4 x RJ45 PoE (external PoE power supply)</td>
</tr>
<tr>
<td>SFP</td>
<td>MM20-Z6Z6Z6Z6SAHH</td>
<td>943 938-001</td>
<td>4 x 100 Mbit/s SFP sockets (SFPs are sold separately), for MS20, MS30 and MS4128</td>
</tr>
</tbody>
</table>
**Managed Modular DIN Rail Mount Switches**

<table>
<thead>
<tr>
<th>Fast Ethernet MICE Media Modules, Digital I/O</th>
<th>Order No.</th>
<th>Ports</th>
</tr>
</thead>
</table>
| MM24-I0I0I0I5ZH HH                        | MM24-I0I0I0I5ZH HH | Port 1: 1 x digital input, 1 x digital output  
Port 2: 1 x digital input, 1 x digital output  
Port 3: 1 x digital input, 1 x digital output  
Port 4: 1 x digital input, 1 x digital output |
| MM24-I0I0I0TZH HH                        | MM24-I0I0I0TZH HH | Same as above, except with extended temperature range  
-40˚C to +70˚C |
| MM24-I0I0I0EZH HH                        | MM24-I0I0I0EZH HH | Same as above, except with extended temperature range and conformal coating |

Example of media redundancy utilizing a ring topology. Hirschmann™ switches support Spanning Tree, Rapid Spanning Tree, HiPer-Ring, MRP-Ring, PRP, and HSR (high-availability seamless redundancy) ring redundancy protocols.

**NOTE:** All of Hirschmann™’s managed switches have the ability of being designed into a redundant ring with 300 ms resiliency at 100 Mbit/s and 30 ms at 1000 Mbit/s (each with 100 switches in the ring).
RSR Series Über-Rugged™
Managed DIN Rail Mount Ethernet Switches

Fast Ethernet Uplink Ports and Gigabit Ethernet Uplink Ports

RSR series switches are available with optional gigabit ports and an extended temperature range of -40°C to +85°C. Ultra-fast ring recovery times under 10 ms are possible using HIPER-Ring redundancy protocol and the switch's robust metal housing offers extended RFI/EMI and vibration immunity.

The term “Über-Rugged” is the only way to describe a switch that goes above and beyond the already rugged capabilities of Hirschmann™ switches by being extremely immune to noise and able to provide maximum uptime in extreme environmental conditions.

Technical Information

<table>
<thead>
<tr>
<th>Product Description</th>
<th>RSR20 Series</th>
<th>RSR30 Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>RSR20 Series</td>
<td>RSR30 Series</td>
</tr>
<tr>
<td>Switching/Routing</td>
<td>Software Version Layer 2</td>
<td>Software Version Layer 2</td>
</tr>
<tr>
<td>Available Ports</td>
<td>8 to 9</td>
<td>9 to 10</td>
</tr>
<tr>
<td>Construction</td>
<td>DIN Rail</td>
<td>DIN Rail</td>
</tr>
<tr>
<td>Mounting</td>
<td>DIN Rail</td>
<td>DIN Rail</td>
</tr>
<tr>
<td>Protection Class</td>
<td>IP30</td>
<td>IP30</td>
</tr>
<tr>
<td>Dimensions (WxHxD)</td>
<td>120 x 145 x 115 mm</td>
<td>120 x 145 x 115 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>appr. 1 kg</td>
<td>appr. 1 kg</td>
</tr>
<tr>
<td>Ambient Conditions</td>
<td>Operating Temperature</td>
<td>0°C to +60°C, -40°C to +85°C, or -40°C to +85°C (optional Conformal Coating)</td>
</tr>
<tr>
<td></td>
<td>Storage/Transport Temperature</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td></td>
<td>Relative Humidity (non-condensing)</td>
<td>10% to 95%</td>
</tr>
<tr>
<td></td>
<td>Conformal Coating</td>
<td>Yes (variant dependent)</td>
</tr>
<tr>
<td>Interfaces</td>
<td>V.24 Interface</td>
<td>1 x RJ11 Socket</td>
</tr>
<tr>
<td></td>
<td>USB Interface</td>
<td>1 x USB (ACA21-USB Adaptor)</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>Operating Voltage</td>
<td>24/36/48 V DC or 60/120/250 V DC, 110/230 V AC</td>
</tr>
<tr>
<td></td>
<td>PoE (802.3af) Ports Supported</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>PoE Plus (802.3at) Ports Supported</td>
<td>n/a</td>
</tr>
<tr>
<td>Regulatory Approvals</td>
<td>Safety of Industrial Control Equipment</td>
<td>cUL508</td>
</tr>
<tr>
<td></td>
<td>Hazardous Locations</td>
<td>Class 1 Div 2 (cUL1604)</td>
</tr>
<tr>
<td></td>
<td>Germanischer Lloyd</td>
<td>Germanischer Lloyd</td>
</tr>
<tr>
<td></td>
<td>Transportation</td>
<td>NEMA TS2</td>
</tr>
<tr>
<td></td>
<td>Railway (norm)</td>
<td>EN 50121-4</td>
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<tr>
<td></td>
<td>Substation</td>
<td>IEC 61850-3, IEEE 1613</td>
</tr>
<tr>
<td>Reliability</td>
<td>MTBF Range</td>
<td>45.6 to 61.8 years</td>
</tr>
<tr>
<td></td>
<td>Warranty</td>
<td>5 years standard</td>
</tr>
</tbody>
</table>

NOTE: These are the prominent technical specifications. For complete technical specifications visit: www.hirschmann.com
RSR20/RSR30 Über-Rugged™ Managed DIN Rail Mount Ethernet Switch Configurations

Fast Ethernet DIN Rail Switch RSR20 and Gigabit Ethernet DIN Rail Switch RSR30

Design/Models
- **RSR20** = Rail Switch Rugged Fast Ethernet
- **RSR30** = Rail Switch Rugged Gigabit Ethernet

Fast Ethernet Port Configurations
- 06 = 6 x 10/100 Mbit/s
- 07 = 7 x 10/100 Mbit/s
- 08 = 8 x 10/100 Mbit/s
- 09 = 9 x 10/100 Mbit/s

Gigabit Ethernet Ports
- 00 = 0 x 1000 Mbit/s
- 02 = 2 x 1000 Mbit/s (only RSR30-08)
- 03 = 3 x 1000 Mbit/s

Type 1 Uplink Port
- T1 = 1 x Twisted-Pair RJ45
- M2 = 1 x Multimode SC
- M4 = 1 x Multimode ST
- S2 = 1 x Singlemode SC
- S4 = 1 x Singlemode ST
- L2 = 1 x Long Haul SC
- G2 = 1 x Long Haul + SC
- CC = 2 x Combo Port Gigabit
- O0 = 2 x SFP Slot Gigabit
- **S** = 1 x Singlemode SC (only if T1 is selected for Type 1 Uplink Port)
- **M** = 1 x Multimode SC
- **G** = 1 x SFP Slot Gigabit (only if JJ selected above)
- **Z** = SFP Slot (100 Mbit/s) (only RSR30-07)

Type 2 Uplink Port
- T1 = 1 x Twisted-Pair RJ45
- M2 = 1 x Multimode SC
- M4 = 1 x Multimode ST
- S2 = 1 x Singlemode SC
- S4 = 1 x Singlemode ST
- L2 = 1 x Long Haul SC
- G2 = 1 x SFP Slot Gigabit
- CC = 2 x Combo Port Gigabit
- **Z** = 2 x SFP Slot Gigabit (only RSR30-08)

Remaining Ports
- T1 = 1 x Twisted-Pair RJ45
- Z6 = SFP Slot (100 Mbit/s) (only RSR30-07)

Temperature Range Options
- S = 0°C up to +60°C
- F = -40°C up to +85°C
- U = -40°C up to +85°C inclusive Conformal Coating

Voltage Range 1
- C = 24/36/48 V DC
- **K** = 60/120/250 V DV and 110/230 V AC

Voltage Range 2
- C = 24/36/48 V DC
- **K** = 60/120/250 V DC and 110/230 V AC
- 9 = None (only if K is selected above) (only if K is selected for Voltage Range 1)

Approvals
- **H** = cUL508, GL, IEC 61850, IEEE 1613, EN 50121

Software Version (see page 43 for additional Management Software Functionality details)
- **P** = Professional

Configuration
- **H** = Standard

OEM Type
- **H** = Standard

Software Release
- **XX.X** = Current Software Release

NOTE: The last three part number categories (Configuration, OEM Type and Software Release) are optional.
RSP Series Managed Industrial DIN Rail Switch with Fanless Design

Fast and Gigabit Ethernet Networks

The new RSP family of switches with robust hardware and a powerful operating system, are able to withstand extremely harsh environmental conditions. For the first time, the integration of new redundancy protocols allows uninterrupted data communication. These new techniques, PRP (Parallel Redundancy Protocol) and HSR (High-availability Seamless Redundancy), are based on the international IEC 62439 standard and therefore guarantee future security and interoperability. Precision time synchronization in accordance with IEEE 1588v2, synchronizes sensors, drives, and measuring equipment. Gigabit ethernet provides for a fast connection to the backbone, while connections to terminal equipment use 100 BASE-TX – either alone or in combination with 100 BASE-FX.

Technical Information

<table>
<thead>
<tr>
<th>Product Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
</tr>
<tr>
<td>Switching/Routing</td>
</tr>
<tr>
<td>Available Ports</td>
</tr>
<tr>
<td>Enhanced Redundancy Functions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting</td>
</tr>
<tr>
<td>Protection Class</td>
</tr>
<tr>
<td>Dimensions (WxHxD)</td>
</tr>
<tr>
<td>Weight</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ambient Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
</tr>
<tr>
<td>Storage/Transport Temperature</td>
</tr>
<tr>
<td>Relative Humidity (non-condensing)</td>
</tr>
<tr>
<td>Conformal Coating</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interfaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>V.24 Interface</td>
</tr>
<tr>
<td>USB Interface</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Voltage</td>
</tr>
<tr>
<td>PoE (802.3af) Ports Supported</td>
</tr>
<tr>
<td>PoE Plus (802.3at) Ports Supported</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regulatory Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety of Industrial Control Equipment</td>
</tr>
<tr>
<td>Hazardous Locations</td>
</tr>
<tr>
<td>Germanischer Lloyd</td>
</tr>
<tr>
<td>Transportation</td>
</tr>
<tr>
<td>Railway (norm)</td>
</tr>
<tr>
<td>Substation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTBF Range</td>
</tr>
<tr>
<td>Warranty</td>
</tr>
</tbody>
</table>

NOTE: These are the prominent technical specifications. For complete technical specifications visit: www.hirschmann.com
RSP Series Managed Industrial DIN Rail Switch Configurations

Fast and Gigabit Ethernet Networks

Design/Model
RSP = Rail Switch Power

Data Rates
2 = 10/100 Mbit/s Ports
3 = 10/100 Mbit/s and 10/100/1000 Mbit/s Ports

Hardware Type
0 = Standard
5 = Enhanced Redundancy (PRP, Fast MRP, HSR), Hardware IEEE 1588 v2

Number of 10/100 Mbit/s Ethernet Ports
08 = 8 x 10/100 Mbit/s
11 = 11 x 10/100 Mbit/s

Number of 10/100/1000 Mbit/s Ethernet Ports
00 = None
03 = 3 x 10/100/1000 Mbit/s

Uplink Ports
3Z6 = 1 x 3 x SFP slot (100 Mbit/s)
3O6 = 3 x SFP slot (1000 Mbit/s)

Port Configuration
TT = All Twisted Pair/RJ45
ZT = 4 x SFP slot (100 Mbit/s), 4 x (100 Mbit/s) Twisted Pair/RJ45

Temperature Range
S = Standard 0°C to 60°C
T = Extended -40°C to +70°C
E = Extended -40°C to +70°C including Conformal Coating

Voltage Range
CC = 2 x 24/36/48 V DC (18 to 60 V DC)
K9 = 1 x 60/110/125/220/250 V DC (48 V to 320 V DC) and 110/120/220/230 V AC (88 to 265 V AC)

Approvals
Z9 = CE, FCC, EN 61131
Y9 = CE, FCC, EN 61131, cULus
V9 = CE, FCC, EN 61131, IEC 61850, IEEE 1613
VY = CE, FCC, EN 61131, IEC 61850, IEEE 1613, cULus

Factory Default Redundancy Configuration
HS = Standard
HM = Fast MRP
HP = PRP

Configuration
H = Standard
E = Enhanced Encryption

Software Level
2R = Layer 2 Rail Switch Power Software

Software Release
01.0 = Software Release 01.0
XX.X = Current Software Release

NOTE: The part number categories (Configuration and Software Release) are optional.
OCTOPUS IP67/IP54 Industrial Ethernet Switches

The OCTOPUS family of switches meets all relevant industry standards and provide the most robust switches in the market. With Power over Ethernet, Professional firmware standard on most models and Gigabit connectivity for where a higher bandwidth connection is required.

All products in the OCTOPUS family can be mounted on the wall or directly on the machine. The IP67 variants offer 8/16/24 Twisted Pair ports (each with up to 8 PoE ports), using standardized 4-pin M12 D-code technology. As the switches are freely cascadable, it is simple to build decentralized structured networks with the shortest possible patch cables to the end devices. The OS20 and OS30 switches utilize IP67 fiber connections per the IEC 61076-3-106 standard – variant 1 is approved by ODVA for use with EtherNet/IP, variant 4 is approved for use with PROFINET.

Standard features include: totally enclosed IP67 design, standardized 4-pin M12 D-code IP67 Ethernet connector, OCTOPUS M is the industry's first managed IP67 switch, management via SNMP v1, v2, v3, web GUI or Telnet, redundancy via HiPER-Ring, MRP and Rapid Spanning Tree, redundant power supply for high availability, operating temperatures as low as -40°C to +70°C, and external signaling of alarms via signal contact or network messaging.

### OCTOPUS Fast Ethernet Unmanaged Waterproof IP67/IP54 Switches

<table>
<thead>
<tr>
<th>Product</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCTOPUS STX EEC</td>
<td>943 892-001</td>
<td></td>
<td>5 x 10/100 Mbit/s M12-coding, Unmanaged</td>
</tr>
<tr>
<td>OCTOPUS OS20-001000T5T5TAFUHB</td>
<td>942 025-001</td>
<td></td>
<td>10 x 10/100 BASE-TX, M12 D coding, 4-pole</td>
</tr>
<tr>
<td>OCTOPUS OS20-001000T5T5TNEUHB</td>
<td>942 025-004</td>
<td></td>
<td>10 x 10/100 BASE-TX, M12 D coding, 4-pole (110 V version)</td>
</tr>
</tbody>
</table>

### OCTOPUS PoE Fast Ethernet Unmanaged Waterproof IP67/IP54 Switches

<table>
<thead>
<tr>
<th>Product</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCTOPUS OS24-081000T5T5TFFUHB</td>
<td>942 025-003</td>
<td></td>
<td>8 x 10/100 Base-TX PoE (Phantom Power) and 2 x 10/100 Base-TX (24 V version)</td>
</tr>
<tr>
<td>OCTOPUS OS24-081000T5T5TNEUHB</td>
<td>942 025-004</td>
<td></td>
<td>8 x 10/100 Base-TX PoE (Phantom Power) and 2 x 10/100 Base-TX (110 V version)</td>
</tr>
</tbody>
</table>
## OCTOPUS IP67/IP54 Industrial Ethernet Switches

### OCTOPUS Fast Ethernet Managed Waterproof IP67/IP54 Switches

<table>
<thead>
<tr>
<th>Product</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCTOPUS 8M</td>
<td>943 931-001</td>
<td>8 x 10/100 BASE-TX, M12 D-coding, 4-pole</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 8M-Train</td>
<td>943 983-001</td>
<td>8 x 10/100 BASE-TX, M12 D-coding, 4-pole (EN 50155)</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 8M-Train-BP</td>
<td>942 091-001</td>
<td>8 x 10/100 BASE-TX, M12 D-coding, 4-pole (EN 50155), Bypass-Relais</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 0520-000900T5TSTAFBHH</td>
<td>942 025-005</td>
<td>9 x 10/100 BASE-TX, M12 D-coding, 4-pole</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 0520-000900T5TSTNEBHH</td>
<td>942 025-006</td>
<td>9 x 10/100 BASE-TX, M12 D-coding, 4-pole (110 V version)</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 0520-00100001M1MTREP PHH</td>
<td>943 988-001</td>
<td>8 x 10/100 BASE-TX, M12 D coding, 4-pole, 2 x 100 BASE FX Multimode Ports IAW IEC 63076-3-106, Version 1</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 0520-00100004M1MTREP PHH</td>
<td>943 988-003</td>
<td>8 x 10/100 BASE-TX, M12 D coding, 4-pole, 2 x 100 BASE FX Multimode Ports IAW IEC 63076-3-106, Version 4</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 0520-00100001S1STREP PHH</td>
<td>943 988-002</td>
<td>8 x 10/100 BASE-TX, M12 D coding, 4-pole, 2 x 100 BASE FX Singlemode Ports IAW IEC 63076-3-106, Version 1</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 0520-00100004S1STREP PHH</td>
<td>943 988-004</td>
<td>8 x 10/100 BASE-TX, M12 D coding, 4-pole, 2 x 100 BASE FX Singlemode Ports IAW IEC 63076-3-106, Version 4</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 16M</td>
<td>943 912-001</td>
<td>16 x 10/100 BASE-TX, M12 D-coding, 4-pole</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 16M-Train</td>
<td>943 984-001</td>
<td>16 x 10/100 BASE-TX, M12 D-coding, 4-pole (EN 50155)</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 16M-Train-BP</td>
<td>942 092-001</td>
<td>16 x 10/100 BASE-TX, M12 D-coding, 4-pole (EN 50155), Bypass-Relais</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 24M</td>
<td>943 923-001</td>
<td>24 x 10/100 BASE-TX, M12 D coding, 4-pole</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 24M-Train</td>
<td>943 985-001</td>
<td>24 x 10/100 BASE-TX, M12 D coding, 4-pole (EN 50155)</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 24M-Train-BP</td>
<td>942 093-001</td>
<td>24 x 10/100 BASE-TX, M12 D-coding, 4-pole (EN 50155), Bypass-Relais</td>
<td></td>
</tr>
</tbody>
</table>

### OCTOPUS PoE Fast Ethernet Managed Waterproof IP67/IP54 Switches

<table>
<thead>
<tr>
<th>Product</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCTOPUS 8M-6PoE</td>
<td>943 967-101</td>
<td>6 x 10/100 BASE-TX PoE (phantom power) and 2 x 10/100 BASE-TX, M12 D coding, 4-pole</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 8M-8PoE</td>
<td>943 967-001</td>
<td>8 x 10/100 BASE-TX PoE (phantom power), M12 D coding, 4-pole</td>
<td></td>
</tr>
</tbody>
</table>
**OCTOPUS IP67/IP54 Industrial Ethernet Switches**

### OCTOPUS PoE Fast Ethernet Managed Waterproof IP67/IP54 Switches

<table>
<thead>
<tr>
<th>Product</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCTOPUS OS24-080900T5T5TFBHH</td>
<td>942 025-007</td>
<td>8 x 10/100 Base-TX PoE-Plus (Phantom Power) and 1 x 10/100 Base-TX (24 V version)</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS OS24-080900T5T5TNEBHH</td>
<td>942 025-008</td>
<td>8 x 10/100 Base-TX PoE-Plus (Phantom Power) and 1 x 10/100 Base-TX (110 V version)</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 16M-8PoE</td>
<td>943 960-001</td>
<td>8 x 10/100 BASE-TX PoE (phantom power) and 8 x 10/100 BASE-TX, M12 D coding, 4-pole</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS 24M-8 PoE</td>
<td>942 063-001</td>
<td>8 x 10/100 BASE-TX PoE (phantom power) and 16 x 10/100 BASE-TX, M12 D-coding, 4 pole</td>
<td></td>
</tr>
</tbody>
</table>

### OCTOPUS Gigabit Ethernet Managed Waterproof IP67/IP54 Switches

<table>
<thead>
<tr>
<th>Product</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCTOPUS OS30-0008021A1ATREPHH</td>
<td>943 988-005</td>
<td>8 x 10/100 BASE-TX, 2 x Gigabit Multimode Ports IAW IEC 63076-3-106, Version 1</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS OS30-0008024A4ATREPHH</td>
<td>943 988-007</td>
<td>8 x 10/100 BASE-TX, 2 x Gigabit Multimode Ports IAW IEC 63076-3-106, Version 4</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS OS30-0008021B1BTREPHH</td>
<td>943 988-006</td>
<td>8 x 10/100 BASE-TX, 2 x Gigabit Singlemode Ports IAW IEC 63076-3-106, Version 1</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS OS30-0008024B4BTREPHH</td>
<td>943 988-008</td>
<td>8 x 10/100 BASE-TX, 2 x Gigabit Singlemode Ports IAW IEC 63076-3-106, Version 4</td>
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</tr>
</tbody>
</table>

### OCTOPUS PoE Gigabit Ethernet Managed Waterproof IP67/IP54 Switches

<table>
<thead>
<tr>
<th>Product</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCTOPUS OS32-080802T6T6TPEPHH</td>
<td>942 069-002</td>
<td>8 x 10/100 BASE-TX PoE (phantom power) and 2 x 1000 BASE-TX</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS OS32-081802T6T6TPEPHH</td>
<td>942 069-001</td>
<td>8 x 10/100 BASE-TX PoE (phantom power) and 2 x 1000 BASE-TX</td>
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</tr>
<tr>
<td>OCTOPUS OS32-0808020606TPEPHH</td>
<td>942 069-004</td>
<td>8 x 10/100 BASE-TX PoE (phantom power) and 2 x SFP- sockets for 10/100 BASE-FX and 1000, BASE-X housing IEC 63076-3106 v1</td>
<td></td>
</tr>
<tr>
<td>OCTOPUS OS32-0818020606TPEPHH</td>
<td>942 069-003</td>
<td>8 x 10/100 BASE-TX PoE (phantom power) and 2 x SFP- sockets for 10/100 BASE-FX and 1000, BASE-X housing IEC 63076-3106 v1</td>
<td></td>
</tr>
</tbody>
</table>

**Contact:**

1.510.438.9071  
www.hirschmann.com
## OCTOPUS IP67/IP54 Connectivity Solutions

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF12RJ45 OCTOPUS</td>
<td>934 498-001</td>
<td>Bulkhead M12 to RJ45</td>
</tr>
<tr>
<td>ACA21-M12 EEC</td>
<td>943 913-002</td>
<td>ACA 21 auto configuration adapter for OCTOPUS managed switches</td>
</tr>
<tr>
<td>OCTOPUS Terminal Cable</td>
<td>943 902-001</td>
<td>M12 4-pin to Sub-D 9-pin terminal cable</td>
</tr>
<tr>
<td>EM12S 001L0200 OCTOPUS</td>
<td>934 578-001</td>
<td>2 m Fast Ethernet patch cord 2 x M12 D-code</td>
</tr>
<tr>
<td>EM12S 001L0500 OCTOPUS</td>
<td>934 578-002</td>
<td>5 m Fast Ethernet patch cord 2 x M12 D-code</td>
</tr>
<tr>
<td>EM12S 001L1000 OCTOPUS</td>
<td>934 578-003</td>
<td>10 m Fast Ethernet patch cord 2 x M12 D-code</td>
</tr>
<tr>
<td>EM12G 001L0100 OCTOPUS</td>
<td>942 081-001</td>
<td>1 m Gigabit Ethernet patch cord 2 x M12 X-code</td>
</tr>
<tr>
<td>EM12G 001L0200 OCTOPUS</td>
<td>942 081-002</td>
<td>2 m Gigabit Ethernet patch cord 2 x M12 X-code</td>
</tr>
<tr>
<td>EM12G 001L0500 OCTOPUS</td>
<td>942 081-003</td>
<td>5 m Gigabit Ethernet patch cord 2 x M12 X-code</td>
</tr>
<tr>
<td>EM12S OCTOPUS</td>
<td>934 445-001</td>
<td>Field attachable FE M12 connector D-code</td>
</tr>
<tr>
<td>EM12G OCTOPUS</td>
<td>942 083-001</td>
<td>Field attachable GE M12 connector X-code</td>
</tr>
</tbody>
</table>

## Railway Approved Ethernet Data Cables

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet Rail Transit Cable BE43769</td>
<td>942 037-001</td>
<td>500 m Railway Approved Ethernet Data Cable 100 Mbit/s, Cat 5e, AWG 22/19 Stranded</td>
</tr>
<tr>
<td>Ethernet Rail Gigabit Cable BE43800</td>
<td>942 075-500</td>
<td>500 m Railway Approved Ethernet Data Cable 1000 Mbit/s, Cat 5e, AWG 26/19 Stranded</td>
</tr>
</tbody>
</table>

- Waterproof metal housing
- Vibration-resistant connections
- Comprehensive switching functions
- PoE+ connections
- Industry-specific approvals
- Security at port level
- Redundant power supply
- Redundant Ethernet communication
- Local status displays
- Autoconfiguration adapter
- Potential-free signaling contact

www.hirschmann.com
Industrial Ethernet Media Cord Sets

Prior to the advent of Industrial Ethernet (standardized Ethernet communications via hardened networking infrastructure), office grade Ethernet cabling and connectors were the only available options. Unfortunately, these traditional media solutions proved unable to withstand the harsh environment of the factory floor or other industrial applications.

The Hirschmann product family of Industrial Ethernet Media Solutions eliminates these issues by combining standard RJ45 connection technology with the proven industrial Micro (M12) connection technology typically found in sensor/actuator machine applications - also available on all OCTOPUS, MICE, and MACH1000 Switches.

With the integration of Bonded-Pair technology by Belden, these industrial ethernet media cordsets have the highest level of signal quality making them one-of-a-kind.

### TPE - Bonded-Pair, CAT 5e, 24 AWG Unshielded, 2- and 4-Pair

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Configuration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J424TPSTJT,...M</td>
<td>RJ45 to RJ45</td>
<td>Industrial Ethernet CAT 5E, TPE unshielded, 2- and 4-pair, 24 AWG cable, bonded-pairs, stranded (7x32) tinned copper conductors, polyolefin insulation, and industrial grade sunlight and oil-resistant, teal jacket.</td>
</tr>
<tr>
<td>M224TPSTJT,...M</td>
<td>RJ45 to M12</td>
<td>M224TPSTM<code>,</code>T...M</td>
</tr>
<tr>
<td>J224TPSTPT,...M</td>
<td>RJ45 to M12 (Panel Receptacle)</td>
<td></td>
</tr>
</tbody>
</table>

Example of completed part number: J424TPSTJT00.3M is a 00.3 meter cable.

### TPE High-Flex - Bonded-Pair, CAT 5e, 24 AWG Unshielded, 2- and 4-Pair

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Configuration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J424THFSTJT,...M</td>
<td>RJ45 to RJ45</td>
<td>Industrial Ethernet High-Flex CAT 5E, TPE High-Flex, unshielded, 2- and 4 pair, 24 AWG cable, stranded copper alloy conductors, polyolefin insulation, teal jacket. Warranted to 10 million flex cycles @ 20X OD and 1M flex cycles @ 10X OD.</td>
</tr>
<tr>
<td>M224THFSTJT,...M</td>
<td>RJ45 to M12</td>
<td>M224THFSTM`,T...M</td>
</tr>
<tr>
<td>J224THFSTPT,...M</td>
<td>RJ45 to M12 (Panel Receptacle)</td>
<td></td>
</tr>
</tbody>
</table>

Example of completed part number: J424THFSTJT00.3M is a 00.3 meter cable.

### PVC - Bonded-Pair, CAT 5e, 24 AWG Unshielded, 2- and 4-Pair

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Configuration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J424PVCSTJT,...M</td>
<td>RJ45 to RJ45</td>
<td>Industrial Ethernet CAT 5E, PVC unshielded, 2- and 4-pair, 24 AWG cable, bonded-pairs, stranded (7x32) tinned copper conductors, polyolefin insulation, and industrial grade sunlight and oil-resistant, teal jacket.</td>
</tr>
<tr>
<td>M224PVCSTJT,...M</td>
<td>RJ45 to M12</td>
<td>M224PVCSTM`,T...M</td>
</tr>
<tr>
<td>J224PVCSTPT,...M</td>
<td>RJ45 to M12 (Panel Receptacle)</td>
<td></td>
</tr>
</tbody>
</table>

Example of completed part number: J424PVCSTJT00.3M is a 00.3 meter cable.

### TPE - Bonded-Pair, CAT 5e, 24 AWG Shielded, 2-Pair

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Configuration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J224TPETLTJ,...M</td>
<td>RJ45 to RJ45</td>
<td>Industrial Ethernet CAT 5E, TPE Shielded, 2-pair, 24 AWG cable, bonded-pairs, stranded (7x32) tinned copper conductors, polyolefin insulation, and industrial grade sunlight and oil-resistant, teal jacket.</td>
</tr>
<tr>
<td>M224TPETLTJ,...M</td>
<td>RJ45 to M12</td>
<td>M224TPETLM<code>,</code>T...M</td>
</tr>
<tr>
<td>J224TPETLP,T,...M</td>
<td>RJ45 to M12 (Panel Receptacle)</td>
<td></td>
</tr>
</tbody>
</table>

Example of completed part number: J224TPETLT00.3M is a 00.3 meter cable.

### TPE High-Flex - Bonded-Pair, CAT 5e, 24 AWG Shielded, 2- and 4-Pair

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Configuration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J424THFTLTJ,...M</td>
<td>RJ45 to RJ45</td>
<td>Industrial Ethernet CAT 5E, TPE, High-Flex shielded, 2- and 4-pair, 24 AWG cable, bonded-pairs, stranded (7x32) tinned copper conductors, polyolefin insulation, and industrial grade sunlight and oil-resistant, teal jacket.</td>
</tr>
<tr>
<td>M224THFTLTJ,...M</td>
<td>RJ45 to M12</td>
<td>M224THFTLM`,T...M</td>
</tr>
<tr>
<td>J224THFTLP,T,...M</td>
<td>RJ45 to M12 (Panel Receptacle)</td>
<td></td>
</tr>
</tbody>
</table>

Example of completed part number: J424THFTLT00.3M is a 00.3 meter cable.
**Industrial Ethernet Media Cord Set Configurator**

**Hirschmann by Belden**

**Connector Type 1**

<table>
<thead>
<tr>
<th>J</th>
<th>M</th>
<th>Number of Conductors (Pairs)</th>
<th>Wire Gauge</th>
<th>Cable Type</th>
<th>Stranding/Shielding</th>
<th>Connector Type 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2 = 2 pair</td>
<td>24</td>
<td>PVC</td>
<td>ST</td>
<td>J = RJ45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 = 4 pair</td>
<td></td>
<td>TPE</td>
<td></td>
<td>M = M12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>THF</td>
<td></td>
<td>P = M12 Panel Mount Receptacle</td>
</tr>
</tbody>
</table>

**Wire Gauge**

- 24 = 24 AWG cable

**Cable Type**

- PVC = PVC cable type - Bonded-Pair
- TPE = TPE cable type - Bonded-Pair
- THF = TPE High-Flex cable type - Bonded-Pair

**Stranding/Shielding**

- ST = Stranded, Unshielded
- TL = Stranded, Shielded

**Connector Type 2**

<table>
<thead>
<tr>
<th>J</th>
<th>M</th>
<th>P = M12 Panel Mount Receptacle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Cable Jacket Color**

- T = Teal
- B = Black*
- G = Grey*
- R = Red*
- U = Blue*
- N = Orange*

**Cable Lengths**

- 0.3M = 0.3 meters
- 0.5M = 0.5 meters
- 0.7M = 0.7 meters
- 1.0M = 1 meter
- 1.5M = 1.5 meters
- 2.0M = 2 meters
- 3.0M = 3 meters
- 4.0M = 4 meters
- 5.0M = 5 meters
- 6.0M = 6 meters
- 7.0M = 7 meters

- 10.0M = 10 meters
- 12.0M = 12 meters
- 15.0M = 15 meters
- 20.0M = 20 meters
- 25.0M = 25 meters
- 30.0M = 30 meters
- 40.0M = 40 meters
- 50.0M = 50 meters
- 55.0M = 55 meters
- 60.0M = 60 meters
- 65.0M = 65 meters
- 70.0M = 70 meters
- 75.0M = 75 meters
- 80.0M = 80 meters
- 90.0M = 90 meters

* Denotes special order. Minimum quantities apply.
About Belden Bonded-Pair Cable

Cable Designed for Maximum Durability
The cable itself is also designed for maximum durability. We chose the finest technology on the market for our products – Bonded-Pairs from Belden. This patented technology absolutely ensures that Hirschmann media is the most rugged and dependable product available. A wide variety of cable and jacket construction is also available, including:

- Copper 2- and 4-pair, 24 AWG Bonded-Pairs
- Stranded construction
- Polyolefin insulation
- PVC or ultra-rugged TPE jackets

Non-Bonded-Pair versus Bonded-Pair Cable for Mission Critical Industrial Ethernet Applications

What is Bonded-Pair Technology?
Bonded-Pair technology was developed to ensure superior electrical performance in twisted pair Ethernet cable installations. This design physically bonds the individual insulated conductors together along their longitudinal axes which assure uniform conductor-to-conductor spacing and electrical integrity.

How Does Bonded-Pair Cable Help You?

1) Bonded-Pairs are less susceptible to noise. Cables with nonbonded-pairs tend to separate due to movement during installation, flexing or handling. Each pair can be pictured as an antenna that can receive or transmit signals.

Variations in non-bonded conductor-to-conductor spacing are cumulative and result in susceptibility to EMI and RFI that degrades signal transmission and network performance.

In addition, the cable will emit more noise that can adversely affect surrounding instrumentation. Bonded-Pairs lock conductor-to-conductor spacing in place. “Physicals Equals Electricals” is a statement that describes why Bonded-Pairs are critical.

2) Bonded-Pairs improve impedance and return loss performance. Impedance irregularities, due to non-bonded-pair separation, cause signal reflections (return loss). Any impedance variation is cumulative along the length of the cable. Bonded-Pairs maintain conductor-to-conductor spacing, thus improving impedance stability and return loss performance.

3) Minimizes pair-to-pair crosstalk. All twisted pair Ethernet cables have crosstalk or pair-to-pair coupling. Each pair has different twists/inch (lay length) to minimize crosstalk. Lay length variation can increase the crosstalk that is cumulative down the length of the cable. Bonded-Pairs reduce crosstalk by minimizing lay length variation.

4) Improved termination quality. Bonded-Pairs maintain the electrical characteristics all the way into the connector. Bonded-Pairs increase installation consistency and signal integrity while reducing maintenance calls.

5) Superior mechanical robustness. Bonded-Pairs improve the pulling strength of a cable by up to 60% over non-bonded designs by equalizing the tension on each conductor. This is especially critical during the installation process, flexing or handling where the conductors may be severed due to the pulling forces.

TPE - High Flex (THF) Applications
Hirschmann by Belden is the first to offer High Flex Industrial Ethernet Cordsets with bonded pairs.

We warrantee these products (THF) to no less than 10 million flex cycles @ 20X OD and 1M flex cycles @ 10X OD.
MACH100 19” Industrial Workgroup Rack-Mount Switches

Fast Ethernet Uplink Ports, Gigabit Ethernet Uplink Ports, and 10 Gigabit Uplink Ports

The MACH100 series of switches are offered in versions with 8, 20, or 24 permanently installed 10/100 Mbit/s RJ45 Ethernet ports, or as modular switches with 8 permanent ports and slots for 2 additional 8-port media modules that are hot-swappable. All versions offer RJ45/SFP combo ports for connection to the network backbone. An all-Gigabit version with 24 10/100/1000 ports is also available.

The MACH104-16TX-PoEP models offer 16 TX ports that support PoE and PoE Plus. Versions of this switch are also available with two 10-Gigabit XFP uplinks or a redundant power supply as well as a fanless variant with an external power supply unit.

Technical Information

<table>
<thead>
<tr>
<th>Product Description</th>
<th>MACH102 Series 102-8TP-x</th>
<th>MACH102 Series 102-24TP-x</th>
<th>MACH102 Series 104-20TX-x</th>
<th>MACH102 Series 104-16TX-PoEP-x</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Available Ports</strong></td>
<td>10–26</td>
<td>26</td>
<td>24</td>
<td>20–22</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting</td>
<td>19” Control Cabinet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection Class</td>
<td>IP20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (WxHxD)</td>
<td>448 x 44 x 310 mm</td>
<td>448 x 44 x 345 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>appr. 3.75 kg</td>
<td>appr. 4 kg</td>
<td>appr. 4.4 kg</td>
<td>appr. 4.5 kg</td>
</tr>
<tr>
<td><strong>Ambient Conditions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0°C to +50°C</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Storage/Transport Temperature</td>
<td>-20°C to +85°C</td>
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<td></td>
</tr>
<tr>
<td>Relative Humidity (non-condensing)</td>
<td>10% to 95%</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Conformal Coating</td>
<td>n/a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interfaces</strong></td>
<td>1 x RJ11 Socket</td>
<td>1 x USB (ACA21-USB Adapter)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V.24 Interface</td>
<td>1 x RJ11 Socket</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USB Interface</td>
<td>1 x USB (ACA21-USB Adapter)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Power Requirements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Voltage</td>
<td>110 to 240 V AC</td>
<td>110 to 240 V AC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoE (802.3at) Ports Supported</td>
<td>Yes (variant applicable)</td>
<td>Yes (variant applicable)</td>
<td>16 ports</td>
<td></td>
</tr>
<tr>
<td>PoE Plus (802.3at) Ports Supported</td>
<td>Yes (variant applicable)</td>
<td></td>
<td>8 ports</td>
<td></td>
</tr>
<tr>
<td><strong>Regulatory Approvals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Safety of Industrial Control Equipment</td>
<td>cUL508</td>
<td></td>
<td></td>
<td>Pending</td>
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<tr>
<td>Hazardous Locations</td>
<td>n/a</td>
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<tr>
<td>Germanischer Lloyd</td>
<td>n/a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td>n/a</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Railway (norm)</td>
<td>n/a</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Substation</td>
<td>n/a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reliability</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTBF Range</td>
<td>21.6 to 26.5 years</td>
<td>19.1 to 22.8 years</td>
<td>13.7 to 24 years</td>
<td>14.6 to 21.4 years</td>
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<tr>
<td>Warranty</td>
<td>5 years standard</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

NOTE: These are the prominent technical specifications. For complete technical specifications visit: [www.hirschmann.com](http://www.hirschmann.com)
# MACH100 19” Industrial Workgroup Rack-Mount Switch Configurations

## Fast Ethernet Uplink Ports, Gigabit Ethernet Uplink Ports, and 10 Gigabit Uplink Ports

### Modular: MACH100 Fast/Gigabit Industrial Workgroup Switches

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACH102-8TP</td>
<td>943 969-001</td>
<td>8 x 10/100 BASE-TX RJ45 ports, 2 x GE combo ports (100 or 1000 Mbit/s SFPs) and 2 x 8 port media module slots</td>
</tr>
<tr>
<td>MACH102-8TP-R</td>
<td>943 969-101</td>
<td>Same as 943 969-001, but with redundant 110/220 V AC power supply</td>
</tr>
</tbody>
</table>

### Fixed Ports: MACH100 Fast/Gigabit Industrial Workgroup Switches

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACH102-8TP-F</td>
<td>943 969-201</td>
<td>8 x 10/100 BASE-TX RJ45 ports and 2 x GE combo ports (100 or 1000 Mbit/s SFPs)</td>
</tr>
<tr>
<td>MACH102-8TP-FR</td>
<td>943 969-301</td>
<td>Same as 943 969-201, but with redundant 110/220 V AC power supply</td>
</tr>
<tr>
<td>MACH102-24TP-F</td>
<td>943 969-401</td>
<td>24 x 10/100 BASE-TX RJ45 ports and 2 x GE combo ports (100 or 1000 Mbit/s SFPs)</td>
</tr>
<tr>
<td>MACH102-24TP-FR</td>
<td>943 969-501</td>
<td>Same as 943 969-401, but with redundant 110/220 V AC power supply</td>
</tr>
</tbody>
</table>

### Fixed Ports: MACH100 Gigabit Industrial Workgroup Switches

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACH104-20TX-F</td>
<td>942 003-001</td>
<td>20 x GE TX Ports, 4 x GE RJ45/SFP combo ports (100 or 1000 Mbit/s SFPs)</td>
</tr>
<tr>
<td>MACH104-20TX-FR</td>
<td>942 003-101</td>
<td>Same as 942 003-001, but with redundant power supply</td>
</tr>
</tbody>
</table>

### Fixed Ports: MACH100 Gigabit Industrial Workgroup Switches with PoE

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACH104-20TX-F-4PoE</td>
<td>942 003-201</td>
<td>Same as MACH104-20TX-F, 4 of the 20 10/100/1000 ports are 802.11af PoE</td>
</tr>
</tbody>
</table>

### Fixed Ports: MACH100 Gigabit Industrial Workgroup Switches with PoE-Plus

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACH104-16TX-PoEP</td>
<td>942 030-001</td>
<td>20 Ports in total; 16 x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP)</td>
</tr>
<tr>
<td>MACH104-16TX-PoEP -R</td>
<td>942 026-001</td>
<td>Same as MACH104-16TX-PoEP but with redundant power supply</td>
</tr>
<tr>
<td>MACH104-16TX-PoEP -E</td>
<td>942 027-001</td>
<td>Same as MACH104-16TX-PoEP but fanless without power supply</td>
</tr>
<tr>
<td>MACH104-16TX-PoEP +2X</td>
<td>942 031-001</td>
<td>22 Ports in total; 16 x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP) and 2 x 10GE XFP</td>
</tr>
<tr>
<td>MACH104-16TX-PoEP +2X -R</td>
<td>942 033-001</td>
<td>Same as MACH104-16TX-PoEP +2X but with redundant power supply</td>
</tr>
<tr>
<td>MACH104-16TX-PoEP +2X -E</td>
<td>942 032-001</td>
<td>Same as MACH104-16TX-PoEP +2X but fanless without power supply</td>
</tr>
</tbody>
</table>

### Media Modules

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports/Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1-8TP-RJ45</td>
<td>943 970-001</td>
<td>8 x 10/100BASE-TX, RJ45 media module</td>
</tr>
<tr>
<td>M1-8TP-RJ45 PoE</td>
<td>943 970-028</td>
<td>8 x 10/100BASE-TX, RJ45 media module PoEPlus</td>
</tr>
<tr>
<td>M1-8MM-SC</td>
<td>943 970-101</td>
<td>8 x 100BASE-FX MM, SC media module</td>
</tr>
<tr>
<td>M1-8SM-SC</td>
<td>943 970-201</td>
<td>8 x 100BASE-FX SM, SC media module</td>
</tr>
<tr>
<td>M1-8SFP</td>
<td>943 970-301</td>
<td>8 x 100BASE-X SFP media module</td>
</tr>
</tbody>
</table>

**NOTE:** SFPs need to be purchased separately.
MACH1000 19” Über-Rugged™ Rack-Mount Switches

Fast Ethernet Uplink Ports, Gigabit Ethernet Uplink Ports, and Full Gigabit Uplink Ports

The MACH1000 is available in a 24-port custom configurable design with two or four additional Gigabit uplink (RJ45 and/or SFP for fiber) and PoE ports. The MACH1000 is also available in an all-Gigabit version, offering 16 10/100/1000 RJ45/SFP combo ports to provide countless copper/fiber combinations. These Über-Rugged™ switches are available with Layer 2 or Layer 3 capabilities. The fan-less design and extremely efficient components are optimized for minimal heat generation and high MTBF (mean time between failure). The switches offer sub-10 second boot times and select variants offer PTP IEEE 1588V2 with BC and TC, precision 30 ns.

Technical Information

<table>
<thead>
<tr>
<th>Product Description</th>
<th>MAR1020 Series 1x2x</th>
<th>MAR1030 Series 1x3x</th>
<th>MAR1040 Series 1x4x</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Software Version Layer 2</td>
<td>Software Version Layer 2</td>
<td>Software Version Layer 2 or 3</td>
</tr>
<tr>
<td>Available Ports</td>
<td>2-24</td>
<td>2-28</td>
<td>16 (Full Gigabit)</td>
</tr>
</tbody>
</table>

**Construction**

- Mounting: 19” Control Cabinet
- Protection Class: IP30
- Dimensions (WxHxD): 445 x 44 x 308 mm
- Weight: appr. 5 kg

**Ambient Conditions**

- Operating Temperature: 0°C to +60°C, -40°C to +85°C, or -40°C to +85°C (inclusive Conformal Coating)
- Storage/Transport Temperature: -40°C to +85°C
- Relative Humidity (non-condensing): 10% to 95%
- Conformal Coating: Yes (variant dependent)

**Interfaces**

- V.24 Interface: 1 x RJ11 Socket
- USB Interface: 1 x USB (ACA21-USB Adapter)

**Power Requirements**

- Operating Voltage: 24/36/49 V DC or 110/250 V DC/110/230 V AC
- PoE (802.3at) Ports Supported: Yes (variant applicable)
- PoE Plus (802.3bt) Ports Supported: n/a

**Regulatory Approvals**

- Safety of Industrial Control Equipment: cUL508
- Hazardous Locations: Pending
- Germanischer Lloyd: Germanischer Lloyd
- Transportation: NEMA TS2 (non-PoE models)
- Railway: EN 50121-4, 50155 (non-PoE models) | EN 50121-4, 50155 (non-PoE models) | EN 50121-4
- Substation: IEC 61850-3, IEEE 1613 (non-PoE models)

**Reliability**

- MTBF Range: 21.5 to 38.9 years | 20 to 47.6 years | 27.1 to 27.8 years
- Warranty: 5 years standard

**NOTE:** These are the prominent technical specifications. For complete technical specifications visit: [www.hirschmann.com](http://www.hirschmann.com)
MACH1000 19” Über-Rugged™ Rack-Mount Switch Configurations

Fast Ethernet Uplink Ports: MAR1020- | MAR1022- | MAR1120- | MAR1122

<table>
<thead>
<tr>
<th>Design/Models</th>
<th>MAR1020</th>
<th>MAR1022</th>
<th>MAR1120</th>
<th>MAR1122</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAR1020</td>
<td>Fast Ethernet uplink</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAR1022</td>
<td>Fast Ethernet uplink with 4 ports PoE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAR1120</td>
<td>Fast Ethernet uplink with ports at the back (20 ports max. 100 meg)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAR1122</td>
<td>Fast Ethernet uplink with ports at the back and 4 ports PoE (20 ports max. 100 meg)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Gigabit Ethernet Ports

- 99 = none (not present)

Fast Ethernet Port Configurations (1 to 24 Ports)

| MM | 2 x Multimode 100 Mbit/s SC |
| VV | 2 x Singlemode 100 Mbit/s SC |
| ZZ | 2 x SFP Slot 100 Mbit/s SFP |
| TT | 2 x Twisted Pair (TX) |
| 99 | none (not present) |

Temperature Range Options

| S  | 0°C up to +60°C |
| U  | -40°C up to +85°C |
| F  | -40°C up to +85°C |

Power Supply 1 (options)

| C  | 24/36/48 VDC (spring clip) |
| G  | 110/250 V DC, 110/230 V AC (spring clip) |

Power Supply 2 (options)

| C  | 24/36/48 V DC (spring clip) |
| G  | 110/250 V DC/110/230 V AC (spring clip) |
| 99 | none (not present) |

Approvals

H = cUL508, cUL1604 Class 1 Div2, German Lloyd, IEC 61850-3, IEEE 1613, EN 50121

Software Version [see page 43 for additional Management Software Functionality details]

P = Layer 2 Professional: extended diagnostics, redundancy and security features

Configuration

H = Standard P = PROFINET (pre-setting)
E = Ethernet/IP (pre-setting)

OEM Type

H = Standard X = Customer Specific

Software Release

XX.X = Current Software Release

NOTE: The last three part number categories (Configuration, OEM Type and Software Release) are optional.
MACH1000 19" Über-Rugged™ Rack-Mount Switch Configurations

**Gigabit Ethernet Uplink Ports:** MAR1030- | MAR1032- | MAR1130- | MAR1132

**Design/Models**
- **MAR1030** = Gigabit Ethernet uplink
- **MAR1032** = Gigabit Ethernet uplink with 4 ports PoE
- **MAR1130** = Gigabit Ethernet uplink with ports at the back (20 ports max.100 meg)
- **MAR1132** = Gigabit Ethernet uplink with ports at the back and 4 ports PoE (20 ports max.100 meg)

**Gigabit Ethernet Ports**
- **CC** = 2 ports combo (2 x 10/100/1000TX or 2 x GE SFP)
- **4O** = 4 ports GE SFP
- **4T** = 4 ports 10/100/1000TX
- **0T** = 2 ports GE SFP and 2 ports 10/100/1000TX

**Fast Ethernet Port Configurations (1 to 24 Ports)**
- **MM** = 2 x Multimode 100 Mbit/s SC
- **VV** = 2 x Singlemode 100 Mbit/s SC
- **ZZ** = 2 x SFP Slot 100 Mbit/s SFP
- **TT** = 2 x Twisted Pair (TX)
- **99** = none (not present)

**Temperature Range Options**
- **S** = 0°C up to +60°C
- **U** = -40°C up to +85°C
- **F** = -40°C up to +85°C inclusive Conformal Coating

**Power Supply 1 (options)**
- **C** = 24/36/48 V DC (spring clip)
- **G** = 110/250 V DC/110/230 V AC (spring clip)
- **L** = 24/36/48 V DC (plug-in connector)
- **M** = 110/250 V DC/110/230 V AC (plug-in connector)

**Power Supply 2 (options)**
- **C** = 24/36/48 V DC (spring clip)
- **G** = 110/250 V DC/110/230 V AC (spring clip)
- **9** = none (not present)

**Approvals**
- **H** = cUL508, cUL1604 Class 1 Div2, German Lloyd, IEC 61850-3, IEEE 1613, EN 50121

**Software Version (see page 43 for additional Management Software Functionality details)**
- **P** = Layer 2 Professional: extended diagnostics, redundancy and security features

**Configuration**
- **H** = Standard
- **E** = Ethernet/IP (pre-setting)
- **P** = PROFINET (pre-setting)

**OEM Type**
- **H** = Standard
- **X** = Customer Specific

**Software Release**
- **XX.X** = Current Software Release

**NOTE:** The last three part number categories (Configuration, OEM Type and Software Release) are optional.
# MACH1000 19” Über-Rugged™ Rack-Mount Switch Configurations

**Full Gigabit Ethernet Switches:** MAR1040- | MAR1042- | MAR1140- | MAR1142

### Design/Models
- **MAR1040** = Full Gigabit Ethernet Switch
- **MAR1042** = Full Gigabit Ethernet Switch with PoE
- **MAR1140** = Full Gigabit Ethernet Switch with Ports on the rear
- **MAR1142** = Full Gigabit Ethernet Switch with Ports on the rear, PoE

### Gigabit Ethernet Ports
- **4C4C4C4C999** = 16 RJ45/SFP combo ports (supports 100 and 1000 Mbit/s SFPs)

### Temperature Range Options
- **S** = Standard, 0°C up to +60°C
- **T** = Extended, -40°C up to +70°C
- **E** = Extended, -40°C up to +70°C inclusive Conformal Coating

### Power Supply 1 (options)
- **L** = 24/36/48 V DC (plug-in connector)
- **M** = 110/250 V DC, 110/230 V AC (plug-in connector)

### Power Supply 2 (options)
- **L** = 24/36/48 V DC (plug-in connector)
- **M** = 110/250 V DC, 110/230 V AC (plug-in connector)
- **9** = none (not present)

### Approvals
- **H** = cUL508 (pending), cUL1604 Class 1 Div 2 (pending), GL (pending), EN 50121-4, EN 50155 (pending), NEMA TS, IEC 61850-3, IEEE 1613

### Software Version (see page 43 for additional Management Software Functionality details)
- **P** = Layer 2 Professional: extended diagnostics, redundancy and security features
- **R** = Layer 3 Professional: Routing capabilities

### Configuration
- **H** = Standard

### OEM Type
- **H** = Standard

### Software Release
- **XX.X** = Current Software Release

**NOTE:** The last three part number categories (Configuration, OEM Type and Software Release) are optional.
MACH4000 Gigabit Backbone Layer 2/3 Rack-Mount Switches

Fast Ethernet Ports, Gigabit Ethernet Uplink Ports, and 10 Gigabit Uplink Ports

The MACH4000 series of high density managed switches is capable of providing as many as 48 Gigabit ports and 3 10-Gigabit ports. Each model comes standard with over 8–16 ports and can be configured with as many as 32 additional ports. Choose from 5 MACH4000 models that allow either 2 or 4 hot-swappable media modules.

NOTE: A fan module is included in each chassis. For a complete switch, please be sure to specify media modules and power supply separately.

Technical Information

<table>
<thead>
<tr>
<th>Product Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>MACH4000 Series</td>
</tr>
<tr>
<td>Switching/Routing</td>
<td>Software Version Layer 2 or 3</td>
</tr>
<tr>
<td>Available Ports</td>
<td>8 to 51</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Construction</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting</td>
<td>19&quot; Control Cabinet</td>
</tr>
<tr>
<td>Protection Class</td>
<td>IP20</td>
</tr>
<tr>
<td>Dimensions (WxHxD)</td>
<td>480 x 88 x 435 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>7.5 kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ambient Conditions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>0°C to +60°C</td>
</tr>
<tr>
<td>Storage/Transport Temperature</td>
<td>-25°C to +70°C</td>
</tr>
<tr>
<td>Relative Humidity (non-condensing)</td>
<td>10% to 95%</td>
</tr>
<tr>
<td>Conformal Coating</td>
<td>n/a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interfaces</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>V.24 Interface</td>
<td>1 x RJ11 Socket</td>
</tr>
<tr>
<td>USB Interface</td>
<td>1 x USB (ACA21-USB Adapter)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power Requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Voltage</td>
<td>24 V DC or 48 V DC or 110-240 V AC (variant applicable)</td>
</tr>
<tr>
<td>PoE (802.3af) Ports Supported</td>
<td>Yes (variant applicable)</td>
</tr>
<tr>
<td>PoE Plus (802.3at) Ports Supported</td>
<td>n/a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regulatory Approvals</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety of Industrial Control Equipment</td>
<td>cUL508</td>
</tr>
<tr>
<td>Hazardous Locations</td>
<td>n/a</td>
</tr>
<tr>
<td>Germanischer Lloyd</td>
<td>Germanischer Lloyd</td>
</tr>
<tr>
<td>Transportation</td>
<td>n/a</td>
</tr>
<tr>
<td>Railway (norm)</td>
<td>n/a</td>
</tr>
<tr>
<td>Substation</td>
<td>n/a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reliability</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MTBF Range</td>
<td>11.1 to 18.9 years</td>
</tr>
<tr>
<td>Warranty</td>
<td>5 years standard</td>
</tr>
</tbody>
</table>

NOTE: These are the prominent technical specifications. For complete technical specifications visit: www.hirschmann.com
# MACH4000 Gigabit Backbone Layer 2/3 Rack-Mount Switch Configurations

## Fast Ethernet Ports, Gigabit Ethernet Uplink Ports, and 10 Gigabit Uplink Ports

### MACH4000 – High Density Layer 2/3 Gigabit Backbone Switch Chassis

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Layer/Software</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACH4002-24G-L2P</td>
<td>943 916-101</td>
<td>Layer 2, Professional Management</td>
<td>Fixed ports: 8 x Gigabit Ethernet combo ports* (SFP dual speed socket or TP 10/100/1000 Mbit/s)</td>
</tr>
<tr>
<td>MACH4002-24G-L3E</td>
<td>943 916-201</td>
<td>Layer 3, Enhanced Management</td>
<td>Media modules: 2 x sockets (8 ports max each) for total 16 ports 10/100/1000 Mbit/s (Media modules sold separately – see Media modules below. For software functionality – see page 43)</td>
</tr>
<tr>
<td>MACH4002-24G-L3P</td>
<td>943 916-301</td>
<td>Layer 3, Professional Management</td>
<td>Media modules: 2 x sockets (8 ports max each) for total 16 ports 10/100/1000 Mbit/s (Media modules sold separately – see Media modules below. For software functionality – see page 43)</td>
</tr>
<tr>
<td>MACH4002-24G+3X-L2P</td>
<td>943 915-101</td>
<td>Layer 2, Professional Management</td>
<td>Fixed ports: 3 x 10Gigabit Ethernet XFP socket and 8 Gigabit Ethernet ports, TP/RJ45 10/100/1000 Mbit/s</td>
</tr>
<tr>
<td>MACH4002-24G+3X-L3E</td>
<td>943 915-201</td>
<td>Layer 3, Enhanced Management</td>
<td>Media modules: 2 x sockets (8 ports max each) for total 16 ports 10/100/1000 Mbit/s (Media modules sold separately – see Media modules below. For software functionality – see page 43)</td>
</tr>
<tr>
<td>MACH4002-24G+3X-L3P</td>
<td>943 915-301</td>
<td>Layer 3, Professional Management</td>
<td>Media modules: 2 x sockets (8 ports max each) for total 16 ports 10/100/1000 Mbit/s (Media modules sold separately – see Media modules below. For software functionality – see page 43)</td>
</tr>
<tr>
<td>MACH4002-48G-L2P</td>
<td>943 911-101</td>
<td>Layer 2, Professional Management</td>
<td>Fixed ports: 16 Gigabit Ethernet (8 Gigabit Ethernet combo ports* 100/1000 Mbit/s, SFP dual speed socket or 10/100/1000 Mbit/s + 8 Gigabit 10/100/1000 Mbit/s RJ45)</td>
</tr>
<tr>
<td>MACH4002-48G-L3E</td>
<td>943 911-201</td>
<td>Layer 3, Enhanced Management</td>
<td>Media modules: Four sockets (8 ports max each) for total 32 ports 10/100/1000 Mbit/s (Media modules sold separately – see Media modules below. For software functionality – see page 43)</td>
</tr>
<tr>
<td>MACH4002-48G-L3P</td>
<td>943 911-301</td>
<td>Layer 3, Professional Management</td>
<td>Media modules: Four sockets (8 ports max each) for total 32 ports 10/100/1000 Mbit/s (Media modules sold separately – see Media modules below. For software functionality – see page 43)</td>
</tr>
<tr>
<td>MACH4002-48G+3X-L3E</td>
<td>943 878-201</td>
<td>Layer 3, Enhanced Management</td>
<td>Media modules: Four sockets (8 ports max each) for total 32 ports 10/100/1000 Mbit/s (Media modules sold separately – see Media modules below. For software functionality – see page 43)</td>
</tr>
<tr>
<td>MACH4002-48G+3X-L3P</td>
<td>943 878-301</td>
<td>Layer 3, Professional Management</td>
<td>Media modules: Four sockets (8 ports max each) for total 32 ports 10/100/1000 Mbit/s (Media modules sold separately – see Media modules below. For software functionality – see page 43)</td>
</tr>
</tbody>
</table>

**NOTE:** *Fan module is included in each chassis. Please purchase media modules and power supply separately. See Accessories for SFPs + XFP. Configuration will dictate final port count and media type.

### MACH4000 Media Modules

<table>
<thead>
<tr>
<th>Product Media Modules</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Ports</th>
</tr>
</thead>
<tbody>
<tr>
<td>M4-8TP-RJ45</td>
<td>943 863-001</td>
<td>8 x 10/100/1000 Mbit/s RJ45 (no 1000 Mbit/s with MACH4002 48+4G)</td>
<td></td>
</tr>
<tr>
<td>M4-FAST 8-SFP</td>
<td>943 864-001</td>
<td>8 x 100 Mbit/s SFP sockets*</td>
<td></td>
</tr>
<tr>
<td>M4-FAST 8TP-RJ45-PoE</td>
<td>943 873-001</td>
<td>8 x 10/100 Mbit/s RJ45 ports with Power over Ethernet</td>
<td></td>
</tr>
<tr>
<td>M4-GIGA 8-SFP</td>
<td>943 879-001</td>
<td>8 x 100/1000 Mbit/s SFP sockets* (not for MACH4002 48+4G)</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** *SFP/XFP Fiberoptic transceivers sold separately (see Accessories on page 61 for SFPs).*
# MACH4000 Power Supplies and Accessories

## MACH4000 Internal Power Supplies

<table>
<thead>
<tr>
<th>Product</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>M4-S-AC/DC 300W</td>
<td>943 870-001</td>
<td>110 – 240 V AC internal power module (redundancy in combination with M4-POWER chassis and power supply)</td>
<td></td>
</tr>
<tr>
<td>M4-S-24VDC 300W</td>
<td>943 871-001</td>
<td>24 V DC internal power module (redundancy power input)</td>
<td></td>
</tr>
<tr>
<td>M4-S-48VDC 300W</td>
<td>943 872-001</td>
<td>48 V DC internal power module (redundancy power input)</td>
<td></td>
</tr>
</tbody>
</table>

## MACH4000 External Power Supplies

<table>
<thead>
<tr>
<th>Product</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>M4-POWER</td>
<td>943 874-001</td>
<td>110 – 240 V AC power module for use with external M4-POWER chassis</td>
<td></td>
</tr>
<tr>
<td>M4-P AC/DC 300W</td>
<td>943 875-001</td>
<td>24 V DC power module for use with external M4-POWER chassis (redundancy power input)</td>
<td></td>
</tr>
<tr>
<td>M4-P DC 48V 300W</td>
<td>943 877-001</td>
<td>48 V DC power module for use with external M4-POWER chassis (redundancy power input)</td>
<td></td>
</tr>
</tbody>
</table>

## MACH4000 Accessories

<table>
<thead>
<tr>
<th>Product</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>M4-AIR</td>
<td>943 869-001</td>
<td>Fan module (included with chassis), has 4 redundant fans with fault notification</td>
<td></td>
</tr>
<tr>
<td>M4-AIR-L</td>
<td>942 005-001</td>
<td>Fan module for MACH4002 chassis, four redundant fans with reduced speed, lower noise level, only for 0°C to +40°C</td>
<td></td>
</tr>
<tr>
<td>M4-RACKMOUNT-50mm</td>
<td>943 951-001</td>
<td>19” fixing brackets offer 50 mm more space in the front of the switch for cables</td>
<td></td>
</tr>
<tr>
<td>M4-RACKMOUNT</td>
<td>943 951-101</td>
<td>19” spare fixing brackets</td>
<td></td>
</tr>
</tbody>
</table>


## Management Software Functionality

<table>
<thead>
<tr>
<th>L2 Basic</th>
<th>L2 Enhanced</th>
<th>L2 Professional</th>
<th>L3 Enhanced</th>
<th>L3 Professional</th>
</tr>
</thead>
<tbody>
<tr>
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<td>●</td>
<td>●</td>
</tr>
<tr>
<td>DHCP server per port</td>
<td>Port monitor</td>
<td>Multiple stored firmware versions</td>
<td>Automatic configuration</td>
<td>IP address conflict detection</td>
</tr>
<tr>
<td>IEEE 802.1x</td>
<td>SSH</td>
<td>SNMP v2c, v3 encryption</td>
<td>Port security IP/MAC, multiple addresses</td>
<td>Telnet</td>
</tr>
<tr>
<td>GVRP</td>
<td>Multicast GMRP – 802.1Q</td>
<td>Optimized for video multicasting</td>
<td>Voice VLAN</td>
<td>LLDP MED</td>
</tr>
</tbody>
</table>
| Broadcast, unicast, multicast limiter | Static VLAN, Q-MIB – 802.3ac, 802.1Q | Multicast IGMP querier | Multicast IGMP snooping | Port priority – 802.1D(p)
| Link aggregation – 802.3ad | MSTP | Redundant network coupling | RSTP and MRP in parallel | HIPER-Ring redundancy manager |
| HIPER-Ring | HIPER-Ring | RSTP – 802.1w | PROFINET Profile | EtherNet/IP Profile |
| OSPF | RIP v1/v2 | Static routing | VRRP, HiVRRP (<500 ms) router redundancy | Layer 3 ACL |
| DVMRP/PM DM/PM SM multicast routing | Text configuration file | Cable diagnostics TX | Automatic configuration check | Error Diagnostics: Port Wizard |
| Hub functionality (disable learning) | Synting | Log file | Port mirroring | Topology discovery 802.1ad |
Wireless Ethernet Access Point/Clients

OpenBAT Series

The new family of OpenBAT hardware is the latest generation of WLAN devices, representing a new evolutionary stage in WLAN technology, increasing WLAN network speed by up to 50% compared to the BAT300 devices. Designed, developed and patented by Hirschmann™, the OpenBAT platform allows you to select the device you need from a nearly unlimited range of interfaces, power supplies, housing types and specific certifications. The platform offers additional flexibility by allowing you to design a wireless network by either using the OpenBAT devices as standalone Access Point or managing the network centrally by the BAT-Controller.

The new BAT generation delivers up to 30% cost savings and reduces the installation complexity and time as formerly external accessories, including ESD protection, power supply and fibre ports are now directly integrated into the OpenBAT hardware. Furthermore, the ESD discharge protection guarantees a longer lifetime of radios, delivering further cost savings.

Clear Space® Wireless

The application of bandpass filters helps to eliminate all interference caused by competing radio signals. The resulting Clear Space® wireless delivers greater transmission stability over longer distances without interruptions. The highest performance speed of 450 Mbit/s facilitates new applications such as HD video streaming.

Product Features

- Extended temperature range
- Enhanced shock and vibration stability
- New CPU platform with Gigabit Ethernet support
- Selectable type of power supply fits the device to the application
- Supporting all types of certifications needed for vertical applications
- Newest technology designed for harsh and demanding industrial environment
- Long lasting devices, high MTBF guarantee low failure rate
- Best radio technology enabling new applications and reliable connections
- Redundant design enables high availability and network stability
- Flexibility to either run with or without the BAT-Controller
- Powerful operating system that guarantees solutions in every application
- Supporting highest security standards for guaranteed safe and reliable networking
Wireless Ethernet Access Point/ Clients

### Technical Information

<table>
<thead>
<tr>
<th><strong>Product Description</strong></th>
<th><strong>OpenBAT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Rugged wireless LAN access point and/or client for use in industrial environments. Robust metal housing for mounting on DIN rails.</td>
</tr>
<tr>
<td><strong>Available Ports</strong></td>
<td>One or two WLAN interfaces, IEEE 802.11a/b/g/n, one or two Gigabit LAN ports, Power over Ethernet, GigabitCombo Port with optional SFP</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Construction</strong></th>
<th><strong>Mounting</strong></th>
<th>DIN Rail (BAT-R), Wall and Mast (BAT-F)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Protection Class</strong></td>
<td>IP30, IP67</td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions (WxHxD)</strong></td>
<td>120/150 x 136 x 120 mm (BAT-R), ~ 311 x 322 x 75 mm (BAT-F)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ambient Conditions</strong></th>
<th><strong>Operating Temperature</strong></th>
<th>0°C to +60°C, -40°C to +70°C (with and without conformal coating) selectable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Storage/Transport Temperature</strong></td>
<td>-40°C to +85°C</td>
<td></td>
</tr>
<tr>
<td><strong>Relative Humidity (non-condensing)</strong></td>
<td>mind. 10% to 95%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Radio Technology</strong></th>
<th><strong>Antenna Connector</strong></th>
<th>3 x MiMo antenna connectors, Reverse SMA socket (BAT-R), N-socket (BAT-F)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency Band</strong></td>
<td>Supports 2.4 GHz and 5 GHz: 2400 to 2483.5 MHz (ISM) and 5170 to 5850 MHz</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Power Requirements</strong></th>
<th><strong>Operating Voltage</strong></th>
<th>Different types of power supplies selectable, 24 V DC, 48 V DC, 90 to 230 V AC, 48 to 320 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Consumption at 24 V DC</strong></td>
<td>9 W</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Regulatory Approvals</strong></th>
<th><strong>Safety of Industrial Control Equipment</strong></th>
<th>EN 60950-1, EN 6950-22</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Radio</strong></td>
<td>EN 300 328 (2.4 GHz), EN 301 893 (5 GHz), EN 301 489-1, EN 301 489-17</td>
<td></td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td>EN 50155, EN 61850, Atex Zone II, Class 1 Div 2</td>
<td></td>
</tr>
<tr>
<td><strong>For Use in Vehicles and Cars</strong></td>
<td>E1</td>
<td></td>
</tr>
</tbody>
</table>

| **Reliability** | **Warranty** | 5 years standard |

**NOTE:** These are the prominent technical specifications. For complete technical specifications visit: [www.hirschmann.com](http://www.hirschmann.com)
OpenBAT Configurations

BAT-R DIN Rail Mountable/BAT-F IP65/67 Housing

Design/Models
BAT-R = DIN rail mountable
BAT-F = IP65/67 housing

Country-Approval
EU = Europe (CE)
US = USA/Canada (FCC/IC)

Slot 1
W = WLAN module

Slot 2
W = WLAN module
9 = not mounted

Slot 3
9 = not mounted

Client/AP
A = Access Point
C = Client

Voltage Range 1
C = 18 to 60 V DC
K = 48 to 320 V DC, 90 to 265 V AC
W = 24 V DC, PoE

Voltage Range 2
C = 18 to 60 V DC
W = 24 V DC, PoE
K = 48 to 320 V DC, 90 to 265 V AC
9 = not assembled

Approvals 1
F = ANSI/ISA 61010-1 + Class 1 Div2
G = ATEX Zone 2
I = Substation (EN 61850)
K = Train (EN 50155)
M = Vehicles, E1
9 = no additional approval

Approvals 2
M = Vehicles, E1
9 = no additional approval

Montage
A = Operator access area indoors
D = Outdoors
B = Service access area indoors
E = Sea water proof

Gigabit-Ethernet 1
O7 = Combo Gigabit Ethernet
O5 = Combo Gigabit M12/SFP

Gigabit-Ethernet 2
T1 = Twisted Pair/RJ45
T6 = Twisted Pair/M12 x-codiert
99 = not assembled

Temperature-Range
S = 0°C up to +60°C
T = -40°C up to +70°C, inclusive Conformal Coating

SW-options 1
A = VPN-5
B = VPN-50
C = VPN-100
9 = none

SW-options 2
F = PROFINET
E = EtherNet/IP
9 = none

SW-options 3
D = Public Spot
9 = none

Configuration
H = Standard

OEM Type
H = Standard

Software Release
XX.XX.XXXX = SW Release XX.XX.XXXX
08.60.1234 = SW Release 8.6

www.hirschmann.com
1.510.438.9071

Be Certain with Belden
Wireless Ethernet Access Clients

BAT-C

BAT-C WLAN Client delivers a wireless solution that is both practical and cost effective. The client was designed for industrial use and is able to operate within an extended temperature range. Its IP67 housing and 24 V power supply make it suitable for most industrial environments and can be used together with Belden cables; switches; routers; and connectors.

Product Features

• WLAN according to 802.11n, one antenna connector
• Power supply 24 V
• Integrated web interface for basic configurations
• Max. security level is WPA2/PSK
• Fast roaming support

Technical Information

<table>
<thead>
<tr>
<th>Product Description</th>
<th>BAT-C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Industrial Wireless LAN Client for 2.4 GHz and 5 GHz operation</td>
</tr>
<tr>
<td>Available Ports</td>
<td>1 x 802.11n/a/b/g/h/i; 1 x 24 V DC; 1 x 100 Mbit/s Ethernet (M12)</td>
</tr>
<tr>
<td>Order No.</td>
<td>942 072-001</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Construction</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting</td>
<td>Wall or table mounting</td>
</tr>
<tr>
<td>Protection Class</td>
<td>IP67</td>
</tr>
<tr>
<td>Dimensions (WxHxD)</td>
<td>approx. 11 x 6 x 5 cm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ambient Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
</tr>
<tr>
<td>Storage/Transport Temperature</td>
</tr>
<tr>
<td>Relative Humidity (non-condensing)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Radio Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenna Connector</td>
</tr>
<tr>
<td>Frequency Band</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Voltage</td>
</tr>
<tr>
<td>Current Consumption at 24 V DC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regulatory Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety of Industrial Control Equipment</td>
</tr>
<tr>
<td>Radio</td>
</tr>
<tr>
<td>For Use in Vehicles and Cars</td>
</tr>
<tr>
<td>Warranty</td>
</tr>
</tbody>
</table>

NOTE: These are the prominent technical specifications. For complete technical specifications visit: www.hirschmann.com
Wireless Ethernet Access Points/Clients

**BAT54/300 Series**

BAT54 products support WLAN standards IEEE 802.11a/b/g/h, and operate at up to 108 Mbit/s (raw data rate).

BAT300 devices support WLAN standards IEEE 802.11a/b/g/h/n and IEEE 802.11n, and they operate at up to 300 Mbit/s (raw data rate).

BAT-Rail devices are supplied in a metal enclosure for mounting on DIN rails in automation or vehicle applications.

BAT-F devices are supplied in IP65/67 metal housings. They are designed for field-level applications or harsh industrial environments.

For complete technical specifications visit: [www.hirschmann.com](http://www.hirschmann.com)

---

**BAT-Planner and BAT-Planner Pro**

Software Suite that Provides Effective Support for Planning WLAN Projects

**BAT-Planner**

Planning software to plan WLAN projects quickly and easily. Using the free BAT-Planner you can draw up a rough plan of your industry-standard network quickly and reliably without needing to have any profound WLAN knowledge. It provides you quickly and easily with the material list of all the components you need for your solution, comprising access points, antennas, cables and lightning protection. The plan and the material list are produced in the form of an overview and can thus be used as the basis for planning your WLAN project. That gives you an easy and reliable start to a project, and you can implement the next steps together with Hirschmann or a Hirschmann partner.

**BAT-Planner Pro**

Planning software for professional detailed planning of your network. BAT-Planner pro allows detailed calculation of the coverage among other things, taking account of wall damping, interference, antenna adjustment and channel distribution.
## Wireless Ethernet Antennas

### BAT Series

#### BAT Series, Dual-Frequency Antennas/802.11a/b/g/n (2.4 GHz and 5 GHz)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Type</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAT-ANT-N-6ABG-IP65</td>
<td>943 981-004</td>
<td>Dual Band Omni-Directional</td>
<td>802.11a/b/g</td>
</tr>
<tr>
<td>BAT-ANT-N-MIMO DB-5N-IP65</td>
<td>943 981-012</td>
<td>Dual Band Omni-Directional, 2.4 GHz 3.5 dBi, 5 GHz 5.5 dBi, MiMo</td>
<td>802.11a/b/g/n</td>
</tr>
</tbody>
</table>

#### BAT Series, Antennas/802.11a/n (5 GHz)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Type</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAT-ANT-N-5A-IP65</td>
<td>943 981-003</td>
<td>5 GHz Omni-Directional, 5 dBi gain</td>
<td>802.11a</td>
</tr>
<tr>
<td>BAT-ANT-N-9A-DS-IP65</td>
<td>943 981-010</td>
<td>5 GHz, Directional antenna, 8 dBi gain w/polarization diversity</td>
<td>802.11a/n</td>
</tr>
<tr>
<td>BAT-ANT-N-MIMO5-9N-IP65</td>
<td>943 981-013</td>
<td>5 GHz, Directional antenna, 9 dBi gain, Mimo</td>
<td>802.11a/n</td>
</tr>
<tr>
<td>BAT-ANT-N-18A-IP65</td>
<td>943 981-006</td>
<td>5 GHz, Directional antenna, 18 dBi gain</td>
<td>802.11a</td>
</tr>
<tr>
<td>BAT-ANT-N-23A-V-IP65</td>
<td>943 981-007</td>
<td>5 GHz, Directional antenna, 23 dBi gain</td>
<td>802.11a</td>
</tr>
<tr>
<td>BAT-ANT-N-23A-VH-IP65</td>
<td>943 981-008</td>
<td>5 GHz, Directional antenna, 23 dBi gain w/polarization diversity</td>
<td>802.11a/n</td>
</tr>
</tbody>
</table>

#### BAT Series, Antennas/802.11b/g/n (2.4 GHz)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Type</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAT-ANT-N-6G-IP65</td>
<td>943 981-002</td>
<td>2.4 GHz Omni-Directional, 6 dBi gain</td>
<td>802.11b/g</td>
</tr>
<tr>
<td>BAT-ANT-N-8G-DS-IP65</td>
<td>943 981-009</td>
<td>2.4 GHz Directional, 8 dBi gain w/polarization diversity</td>
<td>802.11b/g/n</td>
</tr>
<tr>
<td>BAT-ANT-N-14G-IP23</td>
<td>943 981-005</td>
<td>2.4 GHz Directional, 14 dBi gain</td>
<td>802.11b/g</td>
</tr>
<tr>
<td>BAT-ANT-N-LC-G-50M-IP65</td>
<td>943 981-001</td>
<td>2.4 GHz Leaky Coax, 50 meter (1 x N connector)</td>
<td>802.11b/g</td>
</tr>
<tr>
<td>BAT-ANT-N-LC-G-100M-IP65</td>
<td>943 981-010</td>
<td>2.4 GHz Leaky Coax, 100 meter (2 x N connectors)</td>
<td>802.11b/g</td>
</tr>
</tbody>
</table>

### BAT Series, Accessories

#### BAT Series Accessories

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Type</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAT-CLB-2 N-m</td>
<td>943 903-513</td>
<td>Antenna cable 2 m, N male to N male</td>
<td>802.11a/b/g/n</td>
</tr>
<tr>
<td>BAT-CLB-2 N-m-f</td>
<td>943 903-514</td>
<td>Antenna cable 2 m, N male to female</td>
<td>802.11a/b/g/n</td>
</tr>
<tr>
<td>BAT-CLB-5 N-m</td>
<td>943 903-515</td>
<td>Antenna cable 5 m, N male to N female</td>
<td>802.11a/b/g/n</td>
</tr>
<tr>
<td>BAT-CLB-15 N-m</td>
<td>943 903-515</td>
<td>Antenna cable 15 m, N male to N female</td>
<td>802.11a/b/g/n</td>
</tr>
<tr>
<td>BAT-CLB-15 N-m-f</td>
<td>943 903-516</td>
<td>Antenna cable 15 m, N male to female</td>
<td>802.11a/b/g/n</td>
</tr>
<tr>
<td>BAT-PIGTAIL</td>
<td>943 903-360</td>
<td>Used to adapt BAT Rail products to N-style connector</td>
<td>802.11a/b/g/n</td>
</tr>
<tr>
<td>BAT-ANT Protector m-f</td>
<td>943 903-373</td>
<td>RF Surge Arrestor, N male to N female</td>
<td>802.11a/b/g/n</td>
</tr>
<tr>
<td>BAT-LAN Protector IP68</td>
<td>943 903-374</td>
<td>IP68 RF Surge arrestor, N male to N female</td>
<td>802.11a/b/g/n</td>
</tr>
</tbody>
</table>
Wireless Local Area Network (WLAN) Controllers

Wireless Local Area Network (WLAN) applications are becoming more prevalent in the field of industrial automation. The new IEEE 802.11n standard enables data rates of up to 300 Mbit/s while simultaneously extending the range and stability of wireless transmissions. Centralized management guarantees secure operation in an industrial network and provides the necessary overview. The new Hirschmann™ BAT-Controller Wireless LAN Controller (WLC) was especially developed for this purpose.

Product Features

- Automatic configuration and central management of all the access points in the WLAN
- Compatible with all Hirschmann™ access points in the BAT families BAT-R and F
- Full throughput of payload data as per IEEE 802.11n for each access point
- Integrated IP router with firewall
- User authentication compliant with IEEE 802.1x, RADIUS and LEPS
- Roaming possible across a number of subnetworks
- Automatic frequency management in the 2.4 and 5 GHz waveband
- High availability achieved through redundancy and backup mechanisms
- A number of WLAN networks can be linked using the VPN gateway function
- 19" unit for use in control rooms

Technical Information

<table>
<thead>
<tr>
<th>Product Description</th>
<th>BAT-Controller WLC25</th>
<th>BAT-Controller WLC50</th>
<th>BAT-Controller WLC100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order No.</td>
<td>942 034-001</td>
<td>942 034-002</td>
<td>942 034-003</td>
</tr>
<tr>
<td>Smart Controller Technology</td>
<td>The WLAN Controller uses wireless cell or SSID to support a number of ways of transmitting user data:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supported Access Points</td>
<td>All BAT54 and BAT300 access points and OpenBAT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interfaces</td>
<td>4 individual ports, 10/100/1000 Mbit/s Ethernet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USB 2.0 Host Port</td>
<td>USB 2.0 high-speed host port for connecting USB printers (USB print server) or serial devices (COM port server) Bidirectional data exchange is also possible (max. 480 Mbit/s)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LANconfig

Configuration program for Microsoft Windows, including a convenient Setup Wizard. Possibilities for group configuration, simultaneous remote configuration and management of several devices via an IP connection (HTTPS, HTTP, TFTP). Project-related, user-related or global default settings for the configuration program. Automatic storage of the current configuration prior to every firmware update. Exchange of configuration files between similar devices, e.g. for migrating old configurations to new BAT products.

LANmonitor

Monitoring application for Microsoft Windows for (remote) monitoring and logging of equipment and connection status of BAT devices, including PING diagnostics and TRACE with filters and provision for storing the results in a file. Search and comparison functions for TRACE output. Wizards for standard diagnostics. Export of diagnostic files for support purposes (contain bootlog, system info and device configuration without passwords). Graphical representation of parameters (indicated by appropriate symbols in the LANmonitor view) plus chronological sequence and tabular comparison of minimum, maximum and average values in a separate window, e.g. for transmission and receiving speeds, CPU load, available memory.

WLANmonitor

Monitoring application for Microsoft Windows for visualizing and monitoring BAT WLAN installations, including Rogue AP and Rogue Client visualizations.
Industrial Firewall/VPN Router System

EAGLE20 Series

Faced with an increasing number of Cyber Security threats, all industrial networks require protection, to ensure the highest availability. A high speed VPN, firewall, and routing solution all in one package, the EAGLE20 allows users to achieve the highest level of security for Industrial Ethernet networks. All security functions are integrated into the self-contained independent EAGLE20 platform, eliminating the need to reconfigure the system being protected or install additional drivers or software. Integration, regardless of the application or operating system, is easily done with the learning mode and default one-way communication.

Product Features

- Scalable security functionality: pure Stateful Inspection firewall and VPN router
- Dynamic firewall rules
- Port Forwarding, NAT, and Double NAT
- Easy integration: no need to change IP addresses in existing networks
- Simple deployment: visible in HiDiscovery and support for the USB auto configuration adapter
- Extensive diagnostics: web-based management, status LEDs, relay contact, logging to a Syslog server, integrated in Industrial HiVision
- Support for redundancy mechanisms: firewall redundancy, redundant ring coupling and network segmentation (router mode)
- Faster deployment via offline management that allows users to create EAGLE20 configuration files without having the hardware present

<table>
<thead>
<tr>
<th>EAGLE SERIES, Firewall/VPN Router</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Trusted Port</th>
<th>Untrusted/Public Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAGLE20 TX/TX</td>
<td>943 987-001</td>
<td>10/100BASE-TX, RJ45</td>
<td>10/100BASE-TX, RJ45</td>
<td></td>
</tr>
<tr>
<td>EAGLE20 TX/MM</td>
<td>943 987-002</td>
<td>10/100BASE-TX, RJ45</td>
<td>100BASE-FX-MM, SC</td>
<td></td>
</tr>
<tr>
<td>EAGLE20 TX/SM</td>
<td>943 987-003</td>
<td>10/100BASE-TX, RJ45</td>
<td>100BASE-FX-SM, SC</td>
<td></td>
</tr>
<tr>
<td>EAGLE20 MM/TX</td>
<td>943 987-004</td>
<td>100BASE-FX-MM, SC</td>
<td>10/100BASE-TX, RJ45</td>
<td></td>
</tr>
<tr>
<td>EAGLE20 MM/MM</td>
<td>943 987-005</td>
<td>100BASE-FX-MM, SC</td>
<td>100BASE-FX-MM, SC</td>
<td></td>
</tr>
</tbody>
</table>

Interfaces

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply fault relay output</td>
<td>1 x pluggable terminal block, 6 pin</td>
</tr>
<tr>
<td>V.24 port</td>
<td>1 x RJ11 socket, serial interface for device configuration</td>
</tr>
<tr>
<td>USB interface</td>
<td>1 x USB for connection to ACA21-USB</td>
</tr>
</tbody>
</table>

Security

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stateful Inspection Firewall</td>
<td>Firewall rules (incoming/outgoing, modem access, management), IP Masquerading, 1-to-1 NAT, DoS Limiter, MAC Filter, user firewall for ext. activation of firewall rules</td>
</tr>
<tr>
<td>Multipoint VPN</td>
<td>IPSec, IKEv2, DES, 3DES, AES (-128, -192, -256), Pre-Shared Key, X.509v3 Certificate, MD5, SHA-1, NAT-1, firewall rules for each VPN connection, configuration assistance via web interface, remote-controlled activate/deactivate connection.</td>
</tr>
</tbody>
</table>
**Industrial Firewall/VPN Router System**

**EAGLE20 Series**

<table>
<thead>
<tr>
<th>Service</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Management</strong></td>
<td>Command Line Interface (CLI), web interface, auto configuration adapter (ACA21-USB), DHCP, HiDiscovery, Industrial HiVision</td>
</tr>
<tr>
<td><strong>Diagnostics</strong></td>
<td>LEDs (power, link status, data, fault, ACA (V.24), relay contact (24 V DC/1 A), Log file, Syslog)</td>
</tr>
<tr>
<td><strong>Protocols</strong></td>
<td>Serial, HTTPS, SSH, SNMP v1/v2/v3, LLDP</td>
</tr>
<tr>
<td><strong>Further features</strong></td>
<td>DHCP server/client, DHCP relay/option 82, DynDNS, firewall access via V.24 (PPP), SNTP, VLAN support (IEEE 802.1pQ), port forwarding</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Redundancy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Redundancy functions</strong></td>
<td>Use in redundant network-/ring coupling, firewall redundancy (layer 4), redundant 24 V power supply</td>
</tr>
</tbody>
</table>

Example of firewall/VPN router installation (EAGLE20) in a factory setting.
The Ultimate Zone Level Security For Your Control Network

EAGLE Tofino™

The Tofino Industrial Security Solution is a distributed security solution that quickly and cost effectively implements cyber security protection within your control network. Tofino’s flexible architecture allows you to create security zones – Zone Level Security – throughout your control network to protect critical system components. Tofino helps you meet and exceed NERC CIP requirements and ANSI/ISA-99 Standards. And best of all, it helps you avoid expensive down time and achieve optimal performance in your plant.

Product Features

- Securely track network devices and easily create firewall rules
- Deep packet inspection for Modbus/TCP and OPC
- A security system that is easy to deploy and does not risk industrial processes
- Intuitive drag and drop configuration software
- Extends Cyber Security down to the control network
- Simplified regulatory and standards compliance – FERC/NERC CIP, ANSI/ISA-99, IEC 62443

<table>
<thead>
<tr>
<th>EAGLE20 Tofino™ Hardware</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Untrusted/Public Port</th>
<th>Trusted Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAGLE20 Tofino TX/TX</td>
<td>943</td>
<td>987-501</td>
<td>TX</td>
<td>TX</td>
</tr>
<tr>
<td>EAGLE20 Tofino TX/MM</td>
<td>943</td>
<td>987-502</td>
<td>MM</td>
<td>TX</td>
</tr>
<tr>
<td>EAGLE20 Tofino MM/TX</td>
<td>943</td>
<td>987-504</td>
<td>TX</td>
<td>MM</td>
</tr>
<tr>
<td>EAGLE20 Tofino MM/MM</td>
<td>943</td>
<td>987-505</td>
<td>MM</td>
<td>MM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EAGLE Tofino™ Centralized Management Platform</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAGLE Tofino CMP</td>
<td>942</td>
<td>016-003</td>
<td>For up to 3 Tofinos</td>
</tr>
<tr>
<td>EAGLE Tofino CMP</td>
<td>942</td>
<td>016-005</td>
<td>For up to 5 Tofinos</td>
</tr>
<tr>
<td>EAGLE Tofino CMP</td>
<td>942</td>
<td>016-010</td>
<td>For up to 10 Tofinos</td>
</tr>
<tr>
<td>EAGLE Tofino CMP</td>
<td>942</td>
<td>016-020</td>
<td>For up to 20 Tofinos</td>
</tr>
<tr>
<td>EAGLE Tofino CMP</td>
<td>942</td>
<td>016-050</td>
<td>For up to 50 Tofinos</td>
</tr>
<tr>
<td>EAGLE Tofino CMP</td>
<td>942</td>
<td>016-100</td>
<td>For unlimited Tofinos</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EAGLE20 Tofino™ Loadable Security Modules (LSM’s) • One Required per EAGLE20 Tofino for Operation</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAGLE Tofino Firewall LSM</td>
<td>942</td>
<td>016-110</td>
<td>Firewall Loadable Security Module</td>
</tr>
<tr>
<td>EAGLE Tofino Modbus TCP Enforcer LSM</td>
<td>942</td>
<td>016-112</td>
<td>Modbus TCP Enforcer Loadable Security Module</td>
</tr>
<tr>
<td>EAGLE Tofino OPC Enforcer LSM</td>
<td>942</td>
<td>016-117</td>
<td>Modbus OPC Enforcer Loadable Security Module</td>
</tr>
<tr>
<td>EAGLE Tofino VPN Server LSM</td>
<td>942</td>
<td>016-113</td>
<td>Virtual Private Network Server Loadable Security Module</td>
</tr>
<tr>
<td>EAGLE Tofino VPN Client LSM</td>
<td>942</td>
<td>016-114</td>
<td>Virtual Private Network Client Loadable Security Module</td>
</tr>
<tr>
<td>EAGLE Tofino Event Logger LSM</td>
<td>942</td>
<td>016-115</td>
<td>Event Logger Loadable Security Module</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EAGLE20 Tofino™ VPN License</th>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAGLE Tofino VPN PC Client License</td>
<td>942</td>
<td>016-116</td>
<td>Virtual Private Network PC Client license for EAGLE Tofino</td>
</tr>
</tbody>
</table>
Multi-port Industrial Firewall System

EAGLE20-0400 and EAGLE30-0402

The primary advantage of EAGLE20-0400 and EAGLE30-0402 over other products is the increased number of ports. This means that in some scenarios a single device can be deployed, rather than multiple EAGLE20s, saving costs and space.

The Hirschmann™ EAGLE20-0400 and EAGLE30-0402 are multi-port firewalls in convection-cooled metal DIN Rail housings. Available in two versions, the Hirschmann™ EAGLE20-0400 firewall supports 4x 100 Mb/s ports, while the Hirschmann™ EAGLE30-0402 firewall supports 4x 100 Mb/s ports and 2x 1 Gb/s ports; the Gigabit ports are SFP ports.

Product Features

- Transmission rates and standards supported are 100 Mb/s, 1 Gb/s, Ethernet
- Integrated management functions: CLI via serial port or SSH, web interface, SNMP v3
- Routing functions: static routing
- Security mechanisms implemented: stateful inspection, packet filtering rules
- Degree of protection: IP20
- Operating temperatures: -40°C to +70°C
- Cooling system: convection cooling
- Power supply: up to two power inputs. Two power supplies are available: 18 V DC to 60 V DC or 48 V DC to 320 V DC and 88 V AC to 265 V AC
- Tools available for configuration and diagnosis: CLI (serial and SSH), web interface, Industrial HiVision
- Standards and approvals:
  - Radio Equipment: CE, FCC
  - Substation: EN 61850-3, IEEE 1613
  - Safety: EN 60950-1, UL 60950-1, EN 61131-2 (Class 1 Equipment)
  - Hazardous Locations: ISA-12.12.-01 Class 1 Div. 2 (pending)
  - Traffic Controllers: NEMA TS 2 (pending)
  - Railway: EN 50121-4 (pending)
- Can be used together with Belden cables; switches; routers; end devices
- Future-proof: additional functionality can be added via firmware upgrade
- Replacement devices can be configured using USB sticks and SD cards
- The Belden Competence Center provides consulting, training, and support for these products
## Multi-port Industrial Firewall System

### Technical Information

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Type</th>
<th>EAGLE20-0400</th>
<th>EAGLE30-0402</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available Ports</td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

### Construction

<table>
<thead>
<tr>
<th>Mounting</th>
<th>DIN Rail 35 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection Class</td>
<td>IP20</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>Width (metal housing): 100 mm, Width (plastic housing): 90 mm, Height: 165 mm, Depth: 115 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>Aluminium housing: 1.5 kg, Plastic housing: 1.3 kg</td>
</tr>
</tbody>
</table>

### Ambient Conditions

| Operating Temperature | 0°C to +60°C, -40°C to +70°C, or -40°C to +70°C (inclusive Conformal Coating), IEC 60068-2-2 Dry Heat Test +85°C 16 Hours |
| Storage/Transport Temperature | -40°C to +85°C |
| Relative Humidity (non-condensing) | 10% to 95% |
| Conformal Coating | Yes (variant dependent) |

### Interfaces

| V.24 Interface | 1 x RJ11 socket (serial interface for device configuration) |
| USB Interface | 1 x USB socket (to connect auto-configuration adapter ACA21-USB) |
| SD Interface  | 1 x SD socket (to connect auto-configuration adapter ACA31-SD) |

### Power Requirements

| Operating Voltage | 18 to 60 V DC, or 48 to 320 V DC and 88 to 265 V AC |
| Power Supply/Signaling Contact | 1 x plug-in terminal block, 6-pin |
| Current Consumption at 24 VDC | max. 14 W |

### Regulatory Approvals

| Safety of Industrial Control Equipment | cUL508 |
| Hazardous Locations | cUL Approval according to ISA-12.12.-01 Class 1 Div. 2 Group A, B, C, D (pending) |
| Germanischer Lloyd | Germanischer Lloyd (pending) |
| Substation | EN 61850-3, IEEE 1613 |
| Traffic Controller | NEMA TS 2 (pending) |

### Switching/Routing

| Bridging | Yes |
| Routing  | Yes |
| Firewall | Yes |

### Reliability

| MTBF Range | 63.5 to 67.1 years |
| Warranty   | 5 years standard |

**NOTE:** These are the prominent technical specifications. For complete technical specifications visit: [www.hirschmann.com](http://www.hirschmann.com)
# Multi-port Industrial Firewall Configurations

## EAGLE20-0400 and EAGLE30-0402

<table>
<thead>
<tr>
<th>Design/Model</th>
<th>EAGLE20</th>
<th>Security Router</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EAGLE30</td>
<td>Security Router</td>
</tr>
</tbody>
</table>

### Fast Ethernet Port Configurations
- **04** = 4 x 10/100 Mbit/s

### Gigabit Ethernet Ports
- **00** = 0 x 1000 Mbit/s
- **02** = 2 x 1000 Mbit/s

### Type Uplink Ports
- **206** = all SFP slots
- **999** = not available

### Remaining Ports
- **TT** = all twisted pair

### Cellular Ports
- **9** = not available

### WAN Ports
- **99** = not available

### Temperature Range Options
- **S** = 0°C up to + 60°C
- **T** = -40°C up to +70°C
- **E** = -40°C up to +70°C includes Conformal Coating

### Voltage Range
- **CC** = 2 x 24/36/48 V DC
- **K9** = 1 x 60/110/125/220/250 V DC and 110/120/220/230 V AC

### Approvals
- **Z9** = CE, FCC, EN 61131, (EN 60950)
- **V9** = Z9 + IEC 61850, IEEE 1613

### OEM Type
- **HS** = Hirschmann™ Standard

### Configuration
- **E** = Enhanced encryption

### Software Level
- **3F** = Layer 3 firewall software

### Software Release
- **XX.X.XX** = Current Software Release

**NOTE**: The part number categories (OEM Type, Configuration and Software Release) are optional.
Easy and reliable connection of end devices with serial interfaces to Ethernet networks is now possible with the new series of IOLAN DC converters. Thanks to a variety of different serial interfaces, bandwidths, security functions, protection standards, temperature ranges and special approvals, the IOLAN DC converters provide ideal solutions for a variety of applications, including factory and process automation, building automation, and automation for new energy applications.

**Product Features**

- Meets high security and EMC standards
- Approval for Ex Zone 2
- RS 232/422/485 interfaces selectable via software
- Fast or Gigabit Ethernet ports
- Redundant Ethernet connection
- V.92/V.90 modem for connection to wide area networks
- IP40 or IP30 protection standard
- Robust metal housing
- Fanless cooling

**Technical Information**

<table>
<thead>
<tr>
<th>Product Description</th>
<th>IOLAN DS1 T</th>
<th>IOLAN SDS3 M</th>
<th>IOLAN SDS4 HL</th>
<th>IOLAN SDS16C HV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available Ports</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Order No.</td>
<td>942 036-001</td>
<td>942 036-201</td>
<td>942 036-101</td>
<td>942 036-301</td>
</tr>
<tr>
<td>Ambient Conditions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40°C to +70°C</td>
<td>0°C to +55°C</td>
<td>-40°C to +70°C</td>
<td>-40°C to +70°C</td>
</tr>
<tr>
<td>Interfaces</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serial Port Speeds</td>
<td>50 bps to 230 Kbps with customizable baud rate support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Bits</td>
<td>5, 6, 7, 8, 9-bit protocol support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td>Odd, Even, Mark, Space, None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow Control</td>
<td>Hardware, Software, Both</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local Console Port</td>
<td>RS232 on Serial Port</td>
<td>RS232 on RJ45 with DB9 Adapter (provided)</td>
<td>RS232 on RJ45 with DB9 Adapter (provided)</td>
<td>RS232 on RJ45 with DB9 Adapter (provided)</td>
</tr>
<tr>
<td>Network</td>
<td>1 x 10/100-base TX Ethernet RJ45</td>
<td>2 x 10/100/1000-base TX Ethernet RJ45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Supply</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Voltage Range</td>
<td>9 to 30 V DC</td>
<td>88 to 300 V DC or 85 to 265 V AC (47 to 63 Hz)</td>
<td></td>
<td></td>
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<tr>
<td>Approvals</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>FCC</td>
<td>FCC</td>
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<td></td>
<td></td>
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<tr>
<td>Safety Standard for IT Equipment</td>
<td>IEC 60950-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substation</td>
<td>n/a</td>
<td></td>
<td>IEC 61850-3, IEEE 1613</td>
<td></td>
</tr>
<tr>
<td>Hazardous Locations</td>
<td>n/a</td>
<td></td>
<td>ATEX Class 1 Zone 2, ANSI/ISA - 12.12.01 - 2007 Class 1 Division 2</td>
<td>n/a</td>
</tr>
</tbody>
</table>
## IOLAN DS/SDS Ethernet Converters with Serial Interfaces

### Adapter for IOLAN DS, SDS

<table>
<thead>
<tr>
<th>Type</th>
<th>Order No.</th>
<th>Description</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBA0010</td>
<td>942 048-001</td>
<td>DB25F</td>
<td>–</td>
</tr>
<tr>
<td>DBA0011</td>
<td>942 048-002</td>
<td>DB25M</td>
<td>Cisco/HP/IBM/Sun</td>
</tr>
<tr>
<td>DBA0013</td>
<td>942 048-003</td>
<td>DB25M PC-Pinout</td>
<td>Modern</td>
</tr>
<tr>
<td>DBA0020</td>
<td>942 048-004</td>
<td>DB9F</td>
<td>APC/Checkpoint/Dell/Extreme Networks/F5/Juniper/Nortel/Sun/HP/IBM</td>
</tr>
<tr>
<td>DBA0021</td>
<td>942 048-005</td>
<td>DB9M</td>
<td>Sun/Zyxel</td>
</tr>
<tr>
<td>DBA0023</td>
<td>942 048-006</td>
<td>DB9M PC-Pinout</td>
<td>All manufacturers with provided cable for PC/notebook</td>
</tr>
<tr>
<td>DBA0023C</td>
<td>942 048-007</td>
<td>DB9F</td>
<td>Perle IOLAN and IOLAN C Console*</td>
</tr>
<tr>
<td>DBA0031</td>
<td>942 048-008</td>
<td>RJ45M-RJ45F Cisco/Sun</td>
<td>Cisco/Sun/Juniper</td>
</tr>
</tbody>
</table>

* Included in delivery with all variants with RJ45 on serial side or RJ45 device console. Conform to DBA0020.

### Adapter for IOLAN SDS C

<table>
<thead>
<tr>
<th>Type</th>
<th>Order No.</th>
<th>Description</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBA0010C</td>
<td>942 048-009</td>
<td>DB25F</td>
<td>–</td>
</tr>
<tr>
<td>DBA0011C</td>
<td>942 048-010</td>
<td>DB25M</td>
<td>Cisco/HP/IBM/Sun</td>
</tr>
<tr>
<td>DBA0013C</td>
<td>942 048-011</td>
<td>DB25M PC-Pinout</td>
<td>Modern</td>
</tr>
<tr>
<td>DBA0020C</td>
<td>942 048-012</td>
<td>DB9F</td>
<td>APC/Checkpoint/Dell/Extreme Networks/F5/Juniper/Nortel/Sun/HP/IBM</td>
</tr>
<tr>
<td>DBA0021C</td>
<td>942 048-013</td>
<td>DB9M</td>
<td>Sun/Zyxel</td>
</tr>
<tr>
<td>DBA0023C</td>
<td>942 048-014</td>
<td>DB9M PC-Pinout</td>
<td>All manufacturers with provided cable for PC/notebook</td>
</tr>
<tr>
<td>DBA0031C</td>
<td>942 048-015</td>
<td>RJ45M-RJ45F Cisco/Sun</td>
<td>Cisco/Sun/Juniper</td>
</tr>
</tbody>
</table>

### DIN Rail Adapter

<table>
<thead>
<tr>
<th>Type</th>
<th>Order No.</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIN Rail Mount Kit 1</td>
<td>942 048-016</td>
<td>DIN Rail Mounting Kit for 1 port IOLAN DS</td>
</tr>
<tr>
<td>DIN Rail Mount Kit 2</td>
<td>942 048-017</td>
<td>DIN Rail Mounting Kit for 4 port IOLAN SDS wall mount models and Stand-Alone Media Converter</td>
</tr>
</tbody>
</table>
# Hardened Rail Transceivers, Hubs, and Fieldbus Tranceivers/Modems

## SPIDER Ethernet Transceivers

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPIDER 1TX/1FX MM</td>
<td>943 890-001</td>
<td>1 x 10/100Base-TX RJ45, 1 x 100Base-FX Multimode, SC sockets</td>
</tr>
<tr>
<td>SPIDER 1TX/1FX SM</td>
<td>943 891-001</td>
<td>1 x 10/100Base-TX RJ45, 1 x 100Base-FX Singlemode, SC sockets</td>
</tr>
</tbody>
</table>

## RS232 Media Converters

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OZDV 2451P</td>
<td>943 316-021</td>
<td>1 electrical and 1 optical port, bus-powered, POF 0 to 60 m</td>
</tr>
<tr>
<td>OZDV 2451G</td>
<td>943 349-021</td>
<td>1 electrical and 1 optical port, bus-powered, Multimode 0 to 2000 m</td>
</tr>
<tr>
<td>OZDV 2471P</td>
<td>943 340-021</td>
<td>1 electrical and 1 optical port, POF 0-100M, HCS 0 to 2100 m</td>
</tr>
<tr>
<td>OZDV 2471G</td>
<td>943 341-021</td>
<td>1 electrical and 1 optical port, Multimode 0 to 6700 m</td>
</tr>
<tr>
<td>OZDV 2471G-1300</td>
<td>933 990-021</td>
<td>1 electrical and 1 optical port, Singlemode 0 to 32 km</td>
</tr>
</tbody>
</table>

## Hardened Fiber Modems/Repeaters

### RS485 Repeaters

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OZD 485 G12 BASIC</td>
<td>943 893-321</td>
<td>1 electrical and 2 optical ports, Multimode-line capable</td>
</tr>
<tr>
<td>OZD 485 G12 PRO</td>
<td>943 894-321</td>
<td>1 electrical and 2 optical ports, predictive maintenance, Multimode, redundant ring capable</td>
</tr>
<tr>
<td>OZD 485 G12-1300 PRO</td>
<td>943 895-321</td>
<td>1 electrical and 2 optical ports, predictive maintenance, Singlemode, redundant ring capable</td>
</tr>
</tbody>
</table>

### PROFIBUS Repeaters

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OZD PROFI 12M P11</td>
<td>943 728-221</td>
<td>For plastic fiber, 1 electrical, 1 optical port</td>
</tr>
<tr>
<td>OZD PROFI 12M P12</td>
<td>943 728-321</td>
<td>For plastic fiber, 1 electrical, 2 optical ports redundant ring capable</td>
</tr>
<tr>
<td>OZD PROFI 12M G11</td>
<td>943 727-221</td>
<td>1 electrical, 1 optical port, multimode</td>
</tr>
<tr>
<td>OZD PROFI 12M G12</td>
<td>943 727-321</td>
<td>1 electrical, 2 optical ports, multimode – redundant ring capable</td>
</tr>
<tr>
<td>OZD PROFI 12M G12 EEC</td>
<td>943 730-321</td>
<td>1 electrical, 2 optical ports, multimode – redundant ring capable, EEC*</td>
</tr>
<tr>
<td>OZD PROFI 12M G11 1300</td>
<td>943 729-221</td>
<td>1 electrical, 1 optical port, singlemode</td>
</tr>
<tr>
<td>OZD PROFI 12M G12 1300</td>
<td>943 729-321</td>
<td>1 electrical, 2 optical ports, singlemode – redundant ring capable</td>
</tr>
<tr>
<td>OZD PROFI 12M G12 1300 EEC</td>
<td>943 256-321</td>
<td>1 electrical, 2 optical ports, singlemode – redundant ring capable, EEC*</td>
</tr>
<tr>
<td>OZD PROFI 12M P11 PRO</td>
<td>943 904-221</td>
<td>1 electrical, 1 optical port, predictive maintenance, POF</td>
</tr>
<tr>
<td>OZD PROFI 12M P12 PRO</td>
<td>943 904-321</td>
<td>1 electrical, 2 optical ports, predictive maintenance, POF, redundant ring capable</td>
</tr>
<tr>
<td>OZD PROFI 12M G11 PRO</td>
<td>943 905-221</td>
<td>1 electrical, 1 optical port, predictive maintenance, multimode</td>
</tr>
</tbody>
</table>

**NOTE:** Devices showing EEC above can operate in extended environmental conditions: -20°C to +60°C, 100% humidity
# PROFIBUS Repeaters (continued)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OZD PROFI 12M G12 PRO</td>
<td>943 905-321</td>
<td>1 electrical, 2 optical ports, predictive maintenance, multimode, redundant ring capable</td>
</tr>
<tr>
<td>OZD PROFI 12M G12 EEC PRO</td>
<td>943 907-321</td>
<td>1 electrical, 2 optical ports, predictive maintenance, multimode, redundant ring capable, EEC*</td>
</tr>
<tr>
<td>OZD PROFI 12M G11-1300 PRO</td>
<td>943 906-221</td>
<td>1 electrical, 1 optical port, predictive maintenance, singlemode</td>
</tr>
<tr>
<td>OZD PROFI 12M G12-1300 PRO</td>
<td>943 906-321</td>
<td>1 electrical, 2 optical ports, predictive maintenance, singlemode, redundant ring capable</td>
</tr>
<tr>
<td>OZD PROFI 12M G12-1300 EEC PRO</td>
<td>943 908-321</td>
<td>1 electrical, 2 optical ports, predictive maintenance, singlemode, redundant ring capable, EEC*</td>
</tr>
</tbody>
</table>

**NOTE:** *Devices showing EEC above can operate in extended environmental conditions: -20°C to +60°C, 100% humidity*

# PROFIBUS ATEX Zone 1 Repeaters

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OZD PROFI G12DU ATEX 1</td>
<td>943 881-321</td>
<td>1 electrical, 2 optical ports, predictive maintenance, multimode, redundant ring capable, cabinet assembly</td>
</tr>
<tr>
<td>OZD PROFI G12DK ATEX 1</td>
<td>943 882-321</td>
<td>1 electrical, 2 optical ports, predictive maintenance, multimode, redundant ring capable, plastic IP67 housing for mounting in ATEX-certified housing</td>
</tr>
<tr>
<td>OZD PROFI G12DE ATEX 1</td>
<td>943 883-321</td>
<td>1 electrical, 2 optical ports, predictive maintenance, multimode, redundant ring capable, stainless steel IP67 housing</td>
</tr>
</tbody>
</table>

# Geniusbus Repeaters

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OZD GENIUS G12</td>
<td>933 989-021</td>
<td>1 electrical, 2 optical ports, redundant ring capable</td>
</tr>
<tr>
<td>OZD GENIUS G12 1300</td>
<td>934 233-021</td>
<td>1 electrical, 2 optical ports, singlemode, redundant ring capable</td>
</tr>
</tbody>
</table>

# Modbus+ Repeaters

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODBUS PLUS G12</td>
<td>943 749-021</td>
<td>1 electrical, 2 optical ports, redundant ring capable</td>
</tr>
<tr>
<td>MODBUS PLUS G12 1300</td>
<td>943 821-021</td>
<td>1 electrical, 2 optical ports, singlemode, redundant ring capable</td>
</tr>
</tbody>
</table>

# WorldFIP Repeaters

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OZD FIP G3</td>
<td>933 847-321</td>
<td>1 electrical, 2 optical ports, multimode, redundant ring capable</td>
</tr>
<tr>
<td>OZD FIP G3 T</td>
<td>933 847-521</td>
<td>1 electrical, 2 optical ports, multimode, redundant ring capable, bus termination included</td>
</tr>
</tbody>
</table>

**Hardened Fiber Modems/Repeaters**
### SFP + XFD Transceiver Modules

#### Fast Ethernet Transceivers

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-FAST SFP-MM/LC</td>
<td>943 865-001</td>
<td>100BASE-FX, 5 km 50/125 μm MM, 4 km 62.5/12.5 μm MM</td>
</tr>
<tr>
<td>M-FAST SFP-MM/LC EEC</td>
<td>943 945-001</td>
<td>100BASE-FX, 5 km 50/125 μm MM, 4 km 62.5/12.5 μm MM</td>
</tr>
<tr>
<td>M-FAST SFP-SM/LC</td>
<td>943 866-001</td>
<td>100BASE-FX, 25 km 9/125 μm SM</td>
</tr>
<tr>
<td>M-FAST SFP-SM/LC EEC</td>
<td>943 946-001</td>
<td>100BASE-FX, 25 km 9/125 μm SM</td>
</tr>
<tr>
<td>M-FAST SFP-SM+/LC</td>
<td>943 867-001</td>
<td>100BASE-FX, 25 to 65 km 9/125 μm SM</td>
</tr>
<tr>
<td>M-FAST SFP-SM+/LC EEC</td>
<td>943 947-001</td>
<td>100BASE-FX, 25 to 65 km 9/125 μm SM</td>
</tr>
<tr>
<td>M-FAST SFP-LH/LC</td>
<td>943 868-001</td>
<td>100BASE-FX, 55 to 140 km 9/125 μm SM</td>
</tr>
<tr>
<td>M-FAST SFP-LH/LC EEC</td>
<td>943 948-001</td>
<td>100BASE-FX, 55 to 140 km 9/125 μm SM</td>
</tr>
</tbody>
</table>

#### Gigabit Ethernet Transceivers

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-SFP-SX/LC</td>
<td>943 014-001</td>
<td>1000Base-SX, 550 m 50/125 μm MM, 275 m 62.5/125 μm MM</td>
</tr>
<tr>
<td>M-SFP-SX/LC EEC</td>
<td>943 896-001</td>
<td>1000Base-SX, 550 m 50/125 μm MM, 275 m 62.5/125 μm MM</td>
</tr>
<tr>
<td>M-SFP-LX/LC</td>
<td>943 015-001</td>
<td>1000Base-LX, 550 m 50/125 μm MM, 550 m 62.5/125 μm MM, 20 km 9/125 μm SM</td>
</tr>
<tr>
<td>M-SFP-LX/LC EEC</td>
<td>943 897-001</td>
<td>1000Base-LX, 550 m 50/125 μm MM, 550 m 62.5/125 μm MM, 20 km 9/125 μm SM</td>
</tr>
<tr>
<td>M-SFP-LX+/LC</td>
<td>942 035-001</td>
<td>1000Base-MX, 2 km with good quality 50/125μ (62.5u) MM</td>
</tr>
<tr>
<td>M-SFP-LX+/LC EEC</td>
<td>942 023-001</td>
<td>1000Base-LX, 40 km with 9/125u SM</td>
</tr>
<tr>
<td>M-SFP-LX+/LC EEC</td>
<td>942 024-001</td>
<td>1000Base-LX, 40 km with 9/125u SM, -40ºC to +85ºC</td>
</tr>
<tr>
<td>M-SFP-LH/LC</td>
<td>943 042-001</td>
<td>1000Base-LH, 16 to 80 km 9/125 μm SM-LH</td>
</tr>
<tr>
<td>M-SFP-LH/LC EEC</td>
<td>943 898-001</td>
<td>1000Base-LH, 70 km with 9/125u SM, -40ºC to +85ºC</td>
</tr>
<tr>
<td>M-SFP-LH+/LC</td>
<td>943 049-001</td>
<td>1000Base-LH, 44 to 120 km 9/125 μm SM-LH</td>
</tr>
<tr>
<td>M-SFP-TX/RJ45</td>
<td>943 977-001</td>
<td>Gigabit RJ45 SFP</td>
</tr>
</tbody>
</table>

#### Gigabit Ethernet Bi-Directional Transceivers (Single Fiber Strand)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-SFP-BIDI-Bundle LX/LC EEC</td>
<td>943 974-101</td>
<td>1000Base-LX, 20 km 9/125 μm SM</td>
</tr>
<tr>
<td>M-SFP-BIDI-Bundle LH/LC EEC</td>
<td>943 975-101</td>
<td>1000Base-LH, 23 to 80 km 9/125 μm SM-LH</td>
</tr>
<tr>
<td>M-SFP-BIDI Type A LH/LC EEC</td>
<td>943 975-001</td>
<td>1000Base-LX Type A with LC connector, extended temperature range, -40ºC to +85ºC</td>
</tr>
<tr>
<td>M-SFP-BIDI Type A LX/LC EEC</td>
<td>943 974-001</td>
<td>1000Base-LX Type A with LC connector, extended temperature range, -40ºC to +85ºC</td>
</tr>
<tr>
<td>M-SFP-BIDI Type B LH/LC EEC</td>
<td>943 975-002</td>
<td>1000Base-LX Type B with LC connector, extended temperature range, -40ºC to +85ºC</td>
</tr>
<tr>
<td>M-SFP-BIDI Type B LX/LC EEC</td>
<td>943 974-002</td>
<td>1000Base-LX Type B with LC connector, extended temperature range, -40ºC to +85ºC</td>
</tr>
</tbody>
</table>

#### 10 Gigabit Ethernet Transceivers

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-XFP-ZR/LC</td>
<td>943 921-001</td>
<td>10GBASE-SX, 40 to 80 km 9/125 μm SM</td>
</tr>
<tr>
<td>M-XFP-ER/LC</td>
<td>943 920-001</td>
<td>10GBASE-SX, 10 to 40 km 9/125 μm SM</td>
</tr>
<tr>
<td>M-XFP-LR/LC</td>
<td>943 919-001</td>
<td>10GBASE-SX, 2 to 10 km 9/125 μm SM</td>
</tr>
<tr>
<td>M-XFP-SR/LC</td>
<td>943 917-001</td>
<td>10GBASE-SX, 33 m 50/125 μm MM or 300 m w/modal band-width 2000 [MHz x km] fiber</td>
</tr>
</tbody>
</table>
## Accessories

### Power Supplies and Programming/Configuration Tools

<table>
<thead>
<tr>
<th>Power Supplies</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPS15</td>
<td>943 662-015</td>
<td>24 V DC rail power supply unit 1.3 A at 100 to 240 V AC</td>
</tr>
<tr>
<td>RPS30</td>
<td>943 662-003</td>
<td>24 V DC rail power supply unit 1.3 A</td>
</tr>
<tr>
<td>RPS80 EEC</td>
<td>943 662-080</td>
<td>24 V DC rail power supply unit 3.0 A, -25°C up to +70°C</td>
</tr>
<tr>
<td>RPS120 EEC (CC)</td>
<td>943 662-121</td>
<td>24 V DC rail power supply unit 4.5 A, -25°C up to +70°C with conformal coating</td>
</tr>
<tr>
<td>RPS60/48 V EEC</td>
<td>943 952-001</td>
<td>48 V DC rail power supply unit 1.25 A, -10°C up to +70°C</td>
</tr>
<tr>
<td>RPS90/48V HV, PoE</td>
<td>943 979-001</td>
<td>48 V DC PoE rail power supply unit 1.9 A, -40°C up to +50°C</td>
</tr>
<tr>
<td>RPS90/48V LV, PoE</td>
<td>943 980-001</td>
<td>48 V DC PoE rail power supply unit 1.9 A, -25°C up to +60°C</td>
</tr>
<tr>
<td>PSW 5-24</td>
<td>943 008-001</td>
<td>5 V DC Plug-in rail power supply 0°C up to +40°C</td>
</tr>
<tr>
<td>PC150/36V/48V-IP67</td>
<td>943 968-001</td>
<td>DC/DC converter with 36 V/48 V power output, IP67 rated 24 V/48 V input</td>
</tr>
<tr>
<td>PC150/72V/48V-IP67</td>
<td>943 968-001</td>
<td>DC/DC converter with 72 V/48 V power output, IP67 rated 72 V/110 V input</td>
</tr>
<tr>
<td>Power Cord</td>
<td>942 000-001</td>
<td>Power Cord for pluggable connection for the power supply of the MACH1000 family and RSR20/RSR30 family. Cable length 2 meters.</td>
</tr>
</tbody>
</table>

### ACA – Programming and Configuration Backup

<table>
<thead>
<tr>
<th>Programming and Configuration Backup</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACA21-USB EEC</td>
<td>943 271-002</td>
<td>USB configuration adapter for storage/backup and device replacement of (managed) RS, MS and MACH switches as well as EAGLE firewalls</td>
</tr>
<tr>
<td>ACA21-M12 EEC</td>
<td>943 913-002</td>
<td>M12 configuration adapter for storage/backup and device replacement of (managed) Octopus switch devices</td>
</tr>
<tr>
<td>ACA11 EEC</td>
<td>943 751-002</td>
<td>Similar to above ACA adapters, but communication via the device’s RJ11 RS232 interface</td>
</tr>
<tr>
<td>ACA11-M12 (EEC)</td>
<td>943 972-001</td>
<td>M12 configuration adapter for storage/backup and device replacement of IP67 BAT (wireless) devices</td>
</tr>
<tr>
<td>ACA11-miniDIN (EEC)</td>
<td>943 973-001</td>
<td>Mini DIN configuration adapter for storage/backup and device replacement of DIN rail mounted BAT (wireless) devices</td>
</tr>
<tr>
<td>ACA31 (EEC)</td>
<td>942 074-001</td>
<td>Adapter for storage/backup and device replacement of switches and firewalls (RSP, MSP, EAGLE30)</td>
</tr>
<tr>
<td>Serial/Terminal Cable</td>
<td>943 301-001</td>
<td>Terminal cable for managing and configuring managed switches via the RJ11 RS232 interface</td>
</tr>
</tbody>
</table>
Embedded Ethernet Modules and Switches

The Hirschmann Embedded Ethernet Modules (EEMs) combine advanced networking expertise with state-of-the-art industrial Ethernet technology and innovative automation hardware. Embedded Ethernet offers manufacturers of intelligent automation devices a ready solution to the Ethernet needs of their products. Hirschmann’s Embedded Ethernet Modules incorporate network access right into the unit. Simultaneous integration in a network management system further increases the value, and offers the following benefits for:

- Intelligent sensors
- Measuring instruments
- I/O modules
- Distribution boxes
- Displays
- Valve clusters
- Motor starters, etc.

### Embedded Ethernet Modules

<table>
<thead>
<tr>
<th>Type</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEM PROFINET IO</td>
<td>942 019-001</td>
<td>Embedded Ethernet Module for integration of PROFINET functionality in automation devices</td>
</tr>
<tr>
<td>EEM EtherCAT</td>
<td>942 019-003</td>
<td>Embedded Ethernet Module for integration of EtherCAT functionality in automation devices</td>
</tr>
<tr>
<td>EEM EtherNet/IP</td>
<td>942 019-002</td>
<td>Embedded Ethernet Module for integration of EtherNet/IP functionality in automation devices</td>
</tr>
<tr>
<td>EEM Development Kit</td>
<td>942 017-001</td>
<td>Baseboard development kit for Embedded Ethernet Modules (EEM)</td>
</tr>
<tr>
<td>EEM XC161 Adaptor</td>
<td>942 018-001</td>
<td>Optional Adaptor for phytec CPU</td>
</tr>
</tbody>
</table>

### Embedded Ethernet Switches

<table>
<thead>
<tr>
<th>Type</th>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EES20-0600UHSH2E</td>
<td>942 050-001</td>
<td>Managed Fast Ethernet Switch according to IEEE 802.3, store-and-forward-switching. 6 x Fast Ethernet ports, configurable as 100BaseTX or 100BaseFX, RX+/RX- and TX+/TX- signals per port. RSTP, Media Redundancy Protocol (MRP, IEC 62439-2), 200 ms recovery. PTPv2 (IEEE 1588-2008) transparent clock and boundary clock.</td>
</tr>
<tr>
<td>EES25-0600UHMM2E</td>
<td>942 050-002</td>
<td>Managed Fast Ethernet Switch according to IEEE 802.3, store-and-forward-switching. 6 x Fast Ethernet ports, configurable as 100BaseTX or 100BaseFX, RX+/RX- and TX+/TX- signals per port. RSTP, Fast Media Redundancy Protocol (Fast-MRP, IEC 62439-2), 10 ms recovery. PTPv2 (IEEE 1588-2008) transparent clock and boundary clock, IRIG-B output.</td>
</tr>
<tr>
<td>EES25-0600UHHP2E</td>
<td>942 050-003</td>
<td>Managed Fast Ethernet Switch according to IEEE 802.3, store-and-forward-switching. 6 x Fast Ethernet ports, configurable as 100BaseTX or 100BaseFX, RX+/RX- and TX+/TX- signals per port. RSTP, Media Redundancy Protocol (MRP, IEC 62439-2), 200 ms recovery. Parallel Redundancy Protocol (PRP, IEC 62439-3). RedBox. PTPv2 (IEEE 1588-2008) transparent clock and boundary clock, IRIG-B output.</td>
</tr>
<tr>
<td>EES Development Kit</td>
<td>942 049-001</td>
<td>Development Kit for Embedded Ethernet Switches (EES)</td>
</tr>
</tbody>
</table>
Modular Industrial Patch Panel (MIPP)

The new MIPP is a termination panel for cables that need connecting to active equipment such as switches. Thanks to the modular design, MIPP can be linked to create a large single patch panel, to which, for the first time ever, both fiber and copper cables can be connected. The MIPP is a completely new solution that provides the ideal connection between Belden cables and Hirschmann switches. Available in a choice of modules suitable for both fiber and copper cables, up to 6 modules can be connected to create a single panel that can accommodate both types of cable at the same time for maximum system flexibility. Using patchcords to connect to active equipment, cables can be terminated outside the cabinet in an organized and structured manner to ensure the highest level of reliability.

Product Features
• Accommodating various media and connectors
• LC, SC, ST and E-2000™ fiber duplex adapters
• RJ45 copper keystone jacks (Shielded and Unshielded, Cat 5e, Cat 6, Cat 6A)
• RJ45 copper coupler (Shielded and Unshielded, Cat 6A)
• High port density for maximum use of available space
• Easy to use, allows space for handling cable and module is removable from unit to facilitate connection/splicing
• Splice tray and multiple fingers for easy fiber management
• Cable entries in two places (top or bottom), for ease of use and choice of placement in cabinet
• Three cable entries for single fiber module, for ring topology applications
• Double fiber module accommodates hybrid fiber cables, with single mode and multi mode fibers
• Resilient for protection against the harsher industrial environments
• Wide temperature range from -20° C to +70° C
• Available as part of a system with market leading Hirschmann switches and high performance Belden cabling for optimum reliability in Industrial Ethernet networks
• UL approval (UL 1863)

Technical Information

<table>
<thead>
<tr>
<th>Housing Type and Description</th>
<th>Modular Industrial Patch Panel, DIN Rail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Single Modules</td>
<td>1</td>
</tr>
<tr>
<td><img src="image" alt="Image for Modular Industrial Patch Panel (MIPP)" /></td>
<td></td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Mechanical Construction</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Material Housing</td>
<td>Aluminium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (WxHxD)</td>
<td>42 x 138 x 122 mm</td>
<td>72 x 138 x 122 mm</td>
<td>102 x 138 x 122 mm</td>
<td>132 x 138 x 122 mm</td>
<td>162 x 138 x 122 mm</td>
<td>192 x 138 x 122 mm</td>
</tr>
<tr>
<td>Dimensions with Adapters and Gland, max. (HxD)</td>
<td>165 x 133 mm</td>
<td>165 x 133 mm</td>
<td>165 x 133 mm</td>
<td>165 x 133 mm</td>
<td>165 x 133 mm</td>
<td>165 x 133 mm</td>
</tr>
<tr>
<td>Mounting</td>
<td>DIN Rail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appr. Weight Housing</td>
<td>360 g</td>
<td>530 g</td>
<td>697 g</td>
<td>865 g</td>
<td>1034 g</td>
<td>1200 g</td>
</tr>
<tr>
<td>Dimension Wallmount Plate (WxH)</td>
<td>38 x 157 mm</td>
<td>68 x 157 mm</td>
<td>98 x 157 mm</td>
<td>128 x 157 mm</td>
<td>158 x 157 mm</td>
<td>188 x 157 mm</td>
</tr>
<tr>
<td>Appr. Weight Wallmount Plate</td>
<td>67 g</td>
<td>119 g</td>
<td>172 g</td>
<td>223 g</td>
<td>277 g</td>
<td>329 g</td>
</tr>
</tbody>
</table>
### Module Types and Description

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>6 x SC Duplex</td>
<td>6 x LC Duplex</td>
<td>6 x ST Duplex</td>
<td>6 x E-2000™ Duplex</td>
<td>4 x RJ45 Keystone Jack, Unshielded</td>
<td>4 x RJ45 Coupler, Unshielded</td>
</tr>
</tbody>
</table>

### Mechanical Construction

#### Material
- Steel

#### Adapter/Keystone Types
- Blue SC adapter OS2 UPC zirconia ceramic
- Blue LC adapter OS2 UPC zirconia ceramic
- Blue ST adapter OS2 UPC zirconia ceramic
- Blue E-2000™ adapter OS2 UPC zirconia ceramic
- Cat 5e Modular Jack, Keyconnect AX101310, black
- Cat 6+ Modular Jack, Keyconnect AX101321, black
- Cat 6A/10GX Modular Jack, Keyconnect AX102283, black

#### Appr. Weight Module
- 218 g
- 218 g
- 218 g
- 218 g
- 516 g
- 516 g

#### Protection Class
- IP40
- IP40
- IP40
- IP40
- IP20
- IP20

#### Cable Entry
- M20 Gland
- M20 Gland
- M20 Gland
- M20 Gland
- –
- –

#### Maximum Diameter Cable
- 10 mm
- 10 mm
- 10 mm
- 10 mm
- 4 x 7.5 mm
- 4 x 7.5 mm

#### Cable Types
- Fiber cables up to 12 fibers: loose tube, mini-breakout, breakout cables
- Cat 5e unshielded, Cat 6 unshielded, Cat 6A unshielded

### Module Types and Description

<table>
<thead>
<tr>
<th>Type</th>
<th>Double Modules</th>
<th>Double Modules</th>
<th>Double Modules</th>
<th>Double Modules</th>
<th>Single Module</th>
<th>Single Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>12 x SC Duplex</td>
<td>12 x LC Duplex</td>
<td>12 x ST Duplex</td>
<td>12 x E-2000™ Duplex</td>
<td>4 x RJ45 Keystone Jack, Shielded</td>
<td>4 x RJ45 Coupler, Shielded</td>
</tr>
</tbody>
</table>

### Mechanical Construction

#### Material
- Steel

#### Adapter/Keystone Types
- Blue SC adapter OS2 UPC zirconia ceramic
- Blue LC adapter OS2 UPC zirconia ceramic
- Blue ST adapter OS2 UPC zirconia ceramic
- Blue E-2000™ adapter OS2 UPC zirconia ceramic
- Cat 5e Shielded Modular Jack, Keyconnect AX104596, metal body
- Cat 6+ Shielded Modular Jack, Keyconnect AX104596, metal body
- Cat 6A/10GX Shielded Modular Jack, Keyconnect AX104562, metal body

#### Appr. Weight Module
- 450 g
- 450 g
- 450 g
- 450 g
- 636 g
- 636 g

#### Protection Class
- IP40
- IP40
- IP40
- IP40
- IP20
- IP20

#### Cable Entry
- M20 Gland
- M20 Gland
- M20 Gland
- M20 Gland
- –
- –

#### Maximum Diameter Cable
- 13 mm
- 13 mm
- 13 mm
- 13 mm
- 4 x 7.5 mm
- 4 x 7.5 mm

#### Cable Types
- Fiber cables up to 24 fibers: loose tube, mini-breakout, breakout cables
- Hybrid Fiber cable: 6 x SM + 6 x OM1, 6 x SM + 6 x OM2, 6 x SM + 6 x OM3, 6 x SM + 6 x OM4
- Cat 5e shielded, Cat 6 shielded, Cat 6A shielded, Cat 7 shielded

### Accessories

#### Pigtailed (1 pack of 12 pigtailed, 900 micron, 0.6 m in 12 different colours)
- SC/PC MM 9/125, 0.62
- SC/PC MM 50/125, 0.62
- LC/PC MM 62.5/125, OM1, black, AX100247
- LC/PC MM 50/125, 0.62
- LC/PC MM 50/125, OM1, black, AX100237
- LC/PC MM 62.5/125, OM1, black, AX100247
- ST/PC MM 9/125, 0.62
- ST/PC MM 50/125, OM1, black, AX100247
- ST/PC MM 62.5/125, OM1, black, AX100247
- ST/PC MM 9/125, 0.62
- ST/PC MM 50/125, OM1, black, AX100247
- ST/PC MM 62.5/125, OM1, black, AX100247

#### Brilliance Field Installable Connector (900 micron)
- 12 fibre connectors SC: SM 9/125, 0.62, blue, AX104247
- MM 62.5/125, OM1, blue, AX104244
- MM 50/125, OM2, black, AX104245
- MM 50/125, OM3/OM4, aqua, AX104246
- ST/PC MM 9/125, 0.62
- ST/PC MM 50/125, OM1
- ST/PC MM 62.5/125, OM1
- ST/PC MM 9/125, 0.62
- ST/PC MM 50/125, OM1
- ST/PC MM 62.5/125, OM1
- ST/PC MM 9/125, 0.62
- ST/PC MM 50/125, OM1
- ST/PC MM 62.5/125, OM1
- ST/PC MM 9/125, 0.62
- ST/PC MM 50/125, OM1
- ST/PC MM 62.5/125, OM1
- ST/PC MM 9/125, 0.62
- ST/PC MM 50/125, OM1
- ST/PC MM 62.5/125, OM1
- ST/PC MM 9/125, 0.62
- ST/PC MM 50/125, OM1
- ST/PC MM 62.5/125, OM1
- ST/PC MM 9/125, 0.62
- ST/PC MM 50/125, OM1
MIPP Product Configurations

Design/Model

**MIPP** = Modular Industrial Patch Panel

**Housing Type** (Note: A double module requires two places)

<table>
<thead>
<tr>
<th>Design</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>No Housing</td>
</tr>
<tr>
<td>A</td>
<td>1 x Single module</td>
</tr>
<tr>
<td>B</td>
<td>2 x Single module</td>
</tr>
<tr>
<td>C</td>
<td>3 x Single module</td>
</tr>
<tr>
<td>D</td>
<td>4 x Single module</td>
</tr>
<tr>
<td>E</td>
<td>5 x Single module</td>
</tr>
<tr>
<td>F</td>
<td>6 x Single module</td>
</tr>
<tr>
<td>G</td>
<td>1 x Double module fiber</td>
</tr>
<tr>
<td>H</td>
<td>2 x Double module fiber</td>
</tr>
<tr>
<td>I</td>
<td>3 x Double module fiber</td>
</tr>
<tr>
<td>J</td>
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**Mounting Type**

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**Module Type**

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<tr>
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**Adapter and Keystone Type**

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<tr>
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<td>LC/LC Duplex adapters</td>
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<td>S</td>
<td>SC/SC Duplex adapters</td>
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<td>E</td>
<td>E-2000™/E-2000™ adapters</td>
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<td>d</td>
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**Fiber Type/Category Type for Copper**

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**Accessories and Number of Keystones/Couplers**

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<td>B</td>
<td>Brilliance Field Installable connectors</td>
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**Description of Parts Configured**

Panel with one single module and one double module fiber:

- OM1 single fiber module (three input version) with 6 LC duplex adapters including pack of 12 pigtails
- SM/OS2 double fiber module with 12 ST duplex adapters
Switch and Network Management

Industrial Profiles

Switch management within EtherNet/IP and PROFINET

Available for OpenRail, MACH and OCTOPUS, Hirschmann’s Industrial Profiles are a valuable addition to the managed switches’ firmware. The functionality provides an almost seamless integration between Hirschmann’s managed switches and either EtherNet/IP (Allen-Bradley) or PROFINET (Siemens) platforms. Using this functionality, all switch data will be readily accessible to the PLC/HMI for easier network management, security and safety. The industrial profiles also permit PLC/HMI access to switch status, port link status, IGMP settings, network statistics – even the enabling and disabling of individual ports. OpenRail users with firmware prior to 3.0 can upgrade simply by downloading and flashing the updated firmware onto the switch. For more information or for access to the firmware, please contact your local Hirschmann representative.

Industrial HiVision

Network Visualization and Configuration Software

Ideally suited for auditing and monitoring network connections and throughputs, Industrial HiVision permits users to have realtime feedback from multiple switches regarding the network and link status. The application’s GUI illustrates the network as it is, while providing network statistics (including bandwidth utilization) and live/lost links. Compatible with most brands of managed Ethernet devices that have an IP address.

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Integration of Third-party Devices

Industrial HiVision makes it simple for network administrators to integrate any manageable third-party products, no matter whether these are network infrastructure products or end devices. All managed products offer a standard feature set which can be supervised, for example the status of a connection to a device. In addition, options such as device specific functions, status propagation and long term history can be made available using the standard intuitive interface. Users decide the level of supervision detail to suit their own requirements.

Enhanced Auto-topology Discovery

Industrial HiVision is able to detect unmanaged switches and hubs and display their position within the network topology. The software is also able to determine the network topology of devices which are located behind a router. This results in an unprecedented level of topology detail.

MultiConfig™

Not only will MultiConfig™ allow you to configure the same parameters across multiple devices simultaneously, but it will also show you where there is an inconsistency between parameter configurations. It even works across different types of devices, where those devices have parameters in common.

Free 30 Day Trial

Seeing is believing. Download your free 30 day trial of Industrial HiVision from our web site, and see for yourself how you can benefit from the extensive visualization, diagnostics, and reporting information provided by our network management software. Longer trial periods are available on request.
Product, Feature and Approval Matrix

<table>
<thead>
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<th>Product</th>
<th>Feature 1</th>
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Hirschmann Competence Center

As the use and complexity of industrial networks have increased, so have the pressures on users to design, implement and maintain them. No longer are plant-level Ethernet networks simply a means of gathering data. Industrial applications now monitor and control highly sophisticated and complex operations and processes.

Unlike some lesser Industrial Ethernet switch vendors, Hirschmann understands industrial networks and has the global network support structure to be there when it really counts.

The Hirschmann Competence Center staff has extensive hands-on experience with real-world industrial networks – dealing with applications ranging from petrochemical, pharmaceutical and pulp/paper plants to something as simple as a small sortation machine. Each member of Hirschmann's service team has their own field of technical expertise, ensuring that customers get the best to assist them and their company.

Please feel free to contact us at info.hirschmann@belden.com with your application support, troubleshooting or design needs. To register for one of the upcoming classes, please visit the Hirschmann Competence Center at www.hicomamericas.com.

- Industrial Ethernet Fundamentals 2-days
- Advanced Ethernet 2 Days
- Wireless Ethernet 2 Days
- Layer 3/Routing 2 Days
- Network Security 3 Days

<table>
<thead>
<tr>
<th>Hirschmann Competence Center</th>
<th>Your optimal network solution</th>
<th>Know-how for reliable operation of your network</th>
<th>Protection against downtimes</th>
<th>Lasting cost control</th>
</tr>
</thead>
</table>
| Consulting                   | • Individual consultation, design, project management  
|                              | • Network design and migration concepts  
|                              | • Compatibility testing  
|                              | • Wireless site survey  
|                              | • Training plans  
|                              | • Documentation  
|                              | • Maintenance concepts  
|                              | • Security concepts (network security)  
|                              | • Integration of redundancy  
|                              | • Spare parts store concept  
|                              | • Emergency concepts  
|                              | • Service planning  
|                              | • Complete costing |
| Training                     | • Technology and product training courses for network designers  
|                              | • Introduction courses for decision makers  
|                              | • Individual user training courses  
|                              | • Security training  
|                              | • Workshops  
|                              | • Qualification/certification of your employees and external service providers  
|                              | • Update training for technologies and products |
| Support                      | • Pre-configuration and pre-assembly of systems  
|                              | • On-site commissioning  
|                              | • Application tests  
|                              | • Network monitoring and support by in-house experts or partners  
|                              | • Network security audit  
|                              | • Network baselining  
|                              | • 24x7 support hotline  
|                              | • On-site support  
|                              | • Remote service  
|                              | • Replacement hardware service  
|                              | • Warranty extension  
|                              | • Individual, product-related service packages |
# Bulk Industrial Ethernet Cable Options from Belden

## DataTuff® Industrial Ethernet Category 5e and 6 Cables

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<th>No. of Pairs</th>
<th>Shielding</th>
<th>Conductor</th>
<th>Installation Stress Resistance†</th>
<th>Pull Tension</th>
<th>Oil Resistance</th>
<th>UV Sunlight Resistance</th>
<th>Weld-Splitter Resistance</th>
<th>CAM Outdoor</th>
<th>Under-ground (buried)</th>
<th>Gasoline Resistance</th>
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<th>MSHA Hi/Lo Temp</th>
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- 🍉 Shielded products are recommended for high-noise environments.
- 🍉 Stranded products are recommended where more flexibility is needed.
- †† Products with Bonded-Pair technology provide Installable Performance® advantages — refer to Belden’s Bonded-Pair Cable Bulletin #BP02
## TrayOptic® Cable Options from Belden
TrayOptic Heavy-Duty, All-Dielectric Fiber Optic Cables

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Table 2: Fiber Optic Cable Guide

For detailed specifications for each cable type reference Section 18 “Industrial Automation & Process Control Cables” in the Belden Master Catalog or visit our website: [www.belden.com](http://www.belden.com). For Belden Technical Support: **1-800-BELDEN-1**
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