HIRSCHMANN

A **BELDEN** BRAND

Leading Networking Solutions for Industrial & Mission Critical Applications

Edition 7

Hirschmann™ Networking Equipment Maximizes Throughput, Simplifies Installation, and Reduces Total Cost of Ownership

HIRSCHMANN
A BELDEN BRAND

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 connectors, to cable, to routers and switches. 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/industrial** to locate a Belden sales representative near you.

HIRSCHMANN
A BELDEN BRAND

The Hirschmann Brand of Ethernet Switches and Connectivity Products Set the Standard for Quality, Reliability and Service.

Hirschmann™ Switches Maximize Throughput, Simplify Installation, and Reduce Overall Costs.

Hirschmann™, A BELDEN BRAND provides the industry with leading Ethernet networking technology and sets the standards 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 manage 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.

Table of Contents

The MACH1000 Rack-Mounted and RSR Compact Managed Switches provide total connectivity with an uncompromising rugged design with single/dual AC and/or DC power inputs and extended operational temperature ranges from -40° C to +85° C.

HIRSCHMANN
A BELDEN BRAND

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 II 8, 9 and 10 ports
- SPIDER II PoE 4 PoE and 4 standard ports
- SPIDER II GIGA 5 and 7 ports, all Gigabit

RS, 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

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

RS22, RS32

Managed PoE switches with selectable features and approvals

- RS22 4, 8, 9, 16, 17, 24 or 25 ports, four ports are PoE
- RS32 10, 18, or 26 ports, four of which are PoE and two are Gigabit

MS20, MS30, MS4128

Managed modular switches with selectable features and approvals as well as user hotswappable 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

RSR20, RSR30

Ultra-hardened switches w/ -40 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

IP 67/Waterproof Switches

OCTOPUS

Ideally suited for applications subject to moisture and vibrations or where a protective panel is not practical

- OCTOPUS 5TX and 10TX unmanaged, 5- and 10-ports, M12 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

Ethernet Cord Sets

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 and PoE/PoE+)
- 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)

19" Rack Mount Switches (Continued)

MACH1000

Ultra-hardened switches w/ -40 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 ports, with optional Layer 3

MACH4000

High density and high speed back-bone switch w/ Layer 3/routing and speeds up to 10 Gigabit

- MACH4002-48+4G up to 48 ports, are 100 mbps max with 4 Gigabit ports
- MACH4002-24G up to 24 Giga bit ports
- MACH4002-24G+3X, up to 24 Gigabit ports and three 10 Gigabit XFP ports
- MACH4002-48G up to 48 Giga bit ports
- MACH4002-48G+3X up to 48 Gigabit ports and three 10 Gigabit XFP ports

Security, Firewall and VPN Appliance

EAGLE / EAGLE Tofino

Network segmentation, VPN and deep packet inspection

- EAGLE20 - web-managed and ideal for smaller/localized deployment
- EAGLE Tofino - Software managed and ideal of large-scale, multi-zone deployment and deep packet inspection

Wireless Ethernet

BAT Access Point/Client/ Bridge

- 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

Network Management Software

- Industrial HiVision network visualization and management software with integrated OPC server

Fiber Transceivers/Modems

FiberINTERFACES

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

- OZDV RS232, one copper connection and one fiber port
- OZD485 RS485, one copper connection and up to two fiber ports
- OZD PROFI Profibus protocol, one copper connection and up to two fiber ports
- OZD PROFI PLUG Profibus protocol, one fiber port connection and up to two copper connections
- OZD GENIUS GeniusBus protocol, one copper connection and up to two fiber ports
- OZD MODBUS Modbus+ protocol, one copper connection and two fiber ports
- OZD FIP WorldFIP protocol, one copper connection and two fiber ports

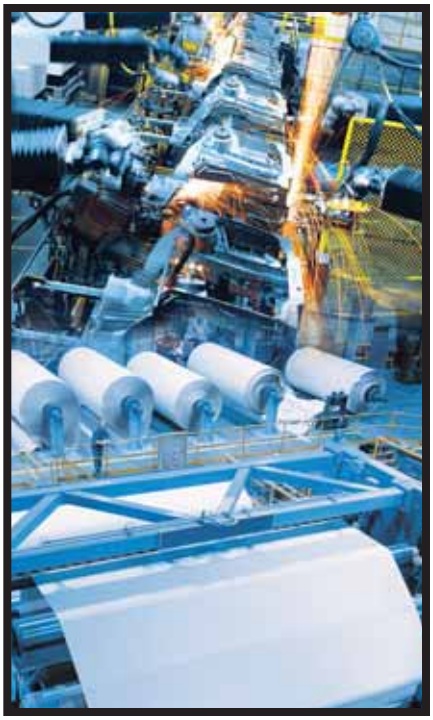
Unmanaged DIN Rail Mount Switches

Entry-level Unmanaged Switches

SPIDER Family

Now available with Gigabit and PoE. The SPIDER family of switches provides users with an economical, yet highly reliable hardened Ethernet switch. 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 35). Unless specified, all switches are rated 0° C to +60° C, have a 24 VDC power input via pluggable terminal block and have an average MTBF exceeding 100 years.

ALL COPPER/RJ45		
Part No.	**Order No.**	**Ports**
SPIDER 3TX-TAP	943 899-001	3 x RJ45
SPIDER 5TX	943 824-002	5 x RJ45
SPIDER 5TX EEC	943 824-102	5 x RJ45
SPIDER II 8TX	943 957-001	8 x RJ45
SPIDER II 8TX EEC	943 958-001	8 x RJ45
SPIDER II 8TX POE	942 008-001	8 x RJ45 and 4 X PoE, with metal housing and 24 VDC input
COPPER/RJ45 and FIBER		
Part No.	**Order No.**	**Ports**
SPIDER 4TX/1FX	943 221-001	4 x RJ45 and 1 x MM, SC
SPIDER 4TX/1FX EEC	943 221-101	4 x RJ45 and 1 x MM, SC
SPIDER 4TX/1FX-ST EEC	943 914-001	4 x RJ45 and 1 x MM, ST
SPIDER 4TX/1FX SM EEC	943 880-001	4 x RJ45 and 1 x SM, SC
SPIDER 1TX/1FX	943 890-001	1x RJ45 and 1 x MM, SC
SPIDER 1TX/1FX EEC	943 927-101	1 x RJ45 and 1 x MM, SC
SPIDER 1TX/1FX-SM	943 891-001	1x RJ45 and 1 x MM, SC
SPIDER 1TX/1FX SM EEC	943 928-001	1 x RJ45 and 1 x SM, SC
SPIDER II 8TX/1FX EEC	943 958-111	8 x RJ45 and 1 x MM, SC
SPIDER II 8TX/1FX-ST EEC	943 958-121	8 x RJ45 and 1 x MM, ST
SPIDER II 8TX/2FX EEC	943 958-211	8 x RJ45 and 2 x MM, SC
SPIDER II 8TX/2FX-ST EEC	943 958-221	8 x RJ45 and 2 x MM, ST
SPIDER II 8TX/1FX-SM EEC	943 958-131	8 x RJ45 and 1 x SM, SC
SPIDER II 8TX/2FX-SM EEC	943 958-231	8 x RJ45 and 2 x SM, SC
FULL GIGABIT		
Part No.	**Order No.**	**Ports**
SPIDER II Giga 5T EEC	943 962-002	5 x RJ45 (10/100/1000)
SPIDER II Giga 5T/2S EEC	943 963-002	5 x RJ45 (10/100/1000), and 2 x SFP Socket (1000)



NOTE: EEC stands for extended environmental conditions (–40° C to +70° C).

Feature-rich Unmanaged Switches

RS2 Switches

These 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.

ALL COPPER/RJ45 / RS2		
Part No.	**Order No.**	**Ports/Features**
RS2-4TX EEC	943 819-001	4 x 10/100 Mbps RJ45, link loss alarm, power loss alarm, fault relay output, ext. temp. – 40° C to + 70° C
RS2-5TX	943 732-003	5 x 10/100 Mbps RJ45, rugged die-cast metal housing offering wall-mount option
RS2-TX	943 686-003	8 x 10/100 Mbps RJ45, link loss alarm, power loss alarm, fault relay output
COPPER/RJ45 and FIBER MIX		
Part No.	**Order No.**	**Ports/Features**
RS2-3TX/2FX EEC	943 771-001	3 x 10/100 Mbps RJ45 and 2 x 100 Mbps MM-SC, link loss alarm, power loss alarm, fault relay output, ext. temp. – 40° C to + 70° C
RS2-3TX/2FX-SM EEC	943 772-001	3 x 10/100 Mbps RJ45 and 2 x 100 MbpsSM-SC, link loss alarm, power loss alarm, fault relay output, ext. temp. – 40° C to + 70° C
RS 2-5TX/FX	943 732-103	4 x 10/100 Mbps RJ45 and 1 x 100 Mbps MM-MTRJ, rugged die-cast metal housing offering wall-mount option
RS 2-4TX/1FX EEC	943 773-001	4 x 10/100 Mbps RJ45 and 1 x 100 Mbps MM-SC, link loss alarm, power loss alarm, fault relay output, ext. temp. – 40° C to + 70° C
RS 2-4TX/1FX-ST EEC	943 119-002	4 x 10/100 Mbps RJ45 and 1 x 100 Mbps MM-ST, link loss alarm, power loss alarm, fault relay output, ext. temp. – 40° C to + 70° C
RS 2-4TX/1FX-SM EEC	943 774-001	4 x 10/100 Mbps RJ45 and 1 x 100 Mbps SM-SC, link loss alarm, power loss alarm, fault relay output, ext. temp. – 40° C to + 70° C

RS20 and RS30 DIN Rail Mount Switches

Standard and Customizable Unmanaged Switches

RS20 and RS30 Unmanaged Switches

Hirschmann's unmanaged RS20 and RS30 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:

- 8 x, 9 x, 16 x, 17 x, 24 x and 25 x ports in a 4.25" footprint
- Up to 4 x fiber ports
- Redundant power inputs via dual 24 VDC
- Fault relay (triggerable by loss of one power input and/or the loss of the link(s) specified)
- 10/100/1000 auto-negotiating and auto-crossing (either patch or crossover cables will work in the ports)
- 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)
- Variety of approvals including IEC 61850-3, IEEE 1613, EN 50121-4 and ATEX 100a Zone 2

ALL COPPER/RJ45 / RS20		
Part No.	**Order No.**	**Ports/Features**
RS20-1600T1T1SDAU	943 434-047	16 x 10/100 Mbps RJ45
MULTIMODE		
Part No.	**Order No.**	**Ports/Features**
RS20-0900NNM4TDAU	943 434-058	3 x 100 Mbps MM fiber (ST) and 6 x 10/100 Mbps RJ45
RS20-0900MMM2TDAU	943 434-059	3 x 100 Mbps MM fiber (SC) and 6 x 10/100 Mbps RJ45
RS20-1600M2T1SDAU	943 434-049	1 x 100 Mbps MM fiber (SC) and 15 x 10/100 Mbps RJ45
RS20-1600M2M2SDAU	943 434-048	2 x 100 Mbps MM fiber (SC) and 14 x 10/100 Mbps RJ45
RS20-1600S2M2SDAU	943 434-052	1 x 100 Mbps MM fiber (SC)1 x 100 Mbps SM fiber (SC) and 14 x 10/100 Mbps RJ45
RS20-1600L2M2SDAU	943 434-055	1 x 100 Mbps MM fiber (SC)1 x 100 Mbps Long Haul SM fiber (SC) and 14 x 10/100 Mbps RJ45
SINGLEMODE		
Part No.	**Order No.**	**Ports/Features**
RS20-0900VVM2TDAU	943 434-060	3 x 100 Mbp SM fiber (SC) and 6 x 10/100 Mbps RJ45
RS20-1600S2T1SDAU	943 434-051	1 x 100 Mbps SM fiber (SC) and 15 x 10/100 Mbps RJ45
RS20-1600S2S2SDAU	943 434-053	2 x 100 Mbps SM fiber (SC) and 14 x 10/100 Mbps RJ45
RS20-1600L2T1SDAU	943 434-054	1 x 100 Mbps Long Haul SM fiber (SC) and 15 x 10/100 Mbps RJ45
RS20-1600L2S2SDAU	943 434-056	1 x 100 Mbps Long Haul SM fiber (SC) 1x 100 Mbps SM fiber (SC) and 14 x 10/100 Mbps RJ45
RS20-1600L2L2SDAU	943 434-057	2 x 100 Mbps Long Haul SM fiber (SC) and 14 x 10/100 Mbps RJ45
RS20-1600S2M2SDAU	943 434-052	1 x 100 Mbps MM fiber (SC),1 x 100 Mbps SM fiber (SC) and 14 x 10/100 Mbps RJ45
RS20-1600L2M2SDAU	943 434-055	1 x 100 Mbps MM fiber (SC) 1 x 100 Mbps Long Haul SM fiber (SC) and 14 x 10/100 Mbps RJ45

NOTE: Don't see what you're looking for? Need an unmanaged switch with Gigabit uplinks? Custom configure your unmanaged RS20 or RS30 switch using the configuration table on page 11!

As an example, the below configuration is a 24-port switch (23 x 10/100 RJ45 and 1 x 100 Mbps multimode SC). The "U" designates this as an unmanaged switch.

RS20-2400M2T1SDAU

Please refer to the online Configurator for online assistance.

Compact Managed DIN Rail Mount Switches

EtherNet/IP conformance tested

PROFINET

RS20 Series Compact Switches

300ms HiPer-Ring

All ports are 100 Mbps max.

- Available in 4 to 25-port densities, with and without fiber
- Fiber ports are available in multimode and/or singlemode
- Fully managed (web, SNMP and CLI) – VLAN, IGMP snooping (multicast filtering), port mirroring, port control, port security, link alarms, broadcast limiter, traffic diagnostics, ring redundancy and much more
- Dual power inputs, integrated fault relay and automated configuration recovery for fast device replacement
- 0° C to + 60° C, – 40° C to + 70° C, conformal coating available
- Differentiator between similar switches listed is the firmware level/features (last digit of part number). See page 27 for details.

All Copper

Part No.	Order No.	Ports
RS20-0400T1T1SDAE	943 434-007	4 x RJ45
RS20-0400T1T1SDAP	943 434-008	4 x RJ45
RS20-0800T1T1SDAE	943 434-021	8 x RJ45
RS20-0800T1T1SDAP	943 434-022	8 x RJ45
RS20-1600T1T1SDAE	943 434-023	16 x RJ45
RS20-1600T1T1SDAP	943 434-024	16 x RJ45
RS20-2400T1T1SDAE	943 434-041	24 x RJ45
RS20-2400T1T1SDAP	943 434-042	24 x RJ45

Multimode

Part No.	Order No.	Ports
RS20-0400M2T1SDAE	943 434-009	3 x RJ45, 1 x SC
RS20-0400M2T1SDAP	943 434-010	3 x RJ45, 1 x SC
RS20-0400M2M2SDAE	943 434-001	2 x RJ45, 2 x SC
RS20-0400M2M2SDAP	943 434-002	2 x RJ45, 2 x SC
RS20-0800M2M2SDAE	943 434-003	6 x RJ45, 2 x SC
RS20-0800M2M2SDAP	943 434-004	6 x RJ45, 2 x SC
RS20-0800M4M4SDAE	943 434-017	6 x RJ45, 2 x ST
RS20-0800M4M4SDAP	943 434-018	6 x RJ45, 2 x ST
RS20-1600M2T1SDAE	943 434-025	15 x RJ45, 1 x SC
RS20-1600M2T1SDAP	943 434-026	15 x RJ45, 1 x SC
RS20-1600M2M2SDAE	943 434-005	14 x RJ45, 2 x SC
RS20-1600M2M2SDAP	943 434-006	14 x RJ45, 2 x SC
RS20-2400M2M2SDAE	943 434-043	22 x RJ45, 2 x SC
RS20-2400M2M2SDAP	943 434-044	22 x RJ45, 2 x SC

Single-Mode

Part No.	Order No.	Ports
RS20-0400S2T1SDAE	943 434-011	3 x RJ45, 1 x SC
RS20-0400S2T1SDAP	943 434-012	3 x RJ45, 1 x SC
RS20-0400S2S2SDAE	943 434-013	2 x RJ45, 2 x SC
RS20-0400S2S2SDAP	943 434-014	2 x RJ45, 2 x SC
RS20-0800S2S2SDAE	943 434-019	6 x RJ45, 2 x SC
RS20-0800S2S2SDAP	943 434-020	6 x RJ45, 2 x SC
RS20-1600S2S2SDAE	943 434-027	14 x RJ45, 2 x SC
RS20-1600S2S2SDAP	943 434-028	14 x RJ45, 2 x SC
RS20-2400S2S2SDAE	943 434-045	22 x RJ45, 2 x SC
RS20-2400S2S2SDAP	943 434-046	22 x RJ45, 2 x SC

NOTE: Add an additional "-E" to switches for pre-configured IGMP Snooping, auto-negotiation on the uplinks and more (a factory-set configuration for EtherNet/IP). Please contact us for more details.

RS30 Series Compact Switches

FAST 30ms HiPer-Ring

Two ports are Gigabit, balance are 100 Mbps max.

- Available in 2x Gigabit plus 8 x, 16 x and 24 x 10/100 Mbps ports.
- Identical management and feature options as RS20
- Gigabit multimode or singlemode fiber via SFP socket

All Copper

Part No.	Order No.	Ports
RS30-0802T1T1SDAE	943 434-029	8 x 10/100 RJ45, 2 x 10/100/1000 RJ45
RS30-0802T1T1SDAP	943 434-030	8 x 10/100 RJ45, 2 x 10/100/1000 RJ45
RS30-1602T1T1SDAE	943 434-033	16 x 10/100 RJ45, 2 x 10/100/1000 RJ45
RS30-1602T1T1SDAP	943 434-034	16 x 10/100 RJ45, 2 x 10/100/1000 RJ45
RS30-2402T1T1SDAE	943 434-037	24 x 10/100 RJ45, 2 x 10/100/1000 RJ45
RS30-2402T1T1SDAP	943 434-038	24 x 10/100 RJ45, 2 x 10/100/1000 RJ45

Fiber

Part No.	Order No.	Ports
RS30-08020606SDAE	943 434-031	8 x 10/100 RJ45, 2 x Gigabit SFP
RS30-08020606SDAP	943 434-032	8 x 10/100 RJ45, 2 x Gigabit SFP
RS30-16020606SDAE	943 434-035	16 x 10/100 RJ45, 2 x Gigabit SFP
RS30-16020606SDAP	943 434-036	16 x 10/100 RJ45, 2 x Gigabit SFP
RS30-24020606SDAE	943 434-039	24 x 10/100 RJ45, 2 x Gigabit SFP
RS30-24020606SDAP	943 434-040	24 x 10/100 RJ45, 2 x Gigabit SFP

RS40 Series Compact Switches

FAST 30ms HiPer-Ring

All ports are Gigabit

- Available with 9 ports (4 of which are RJ45/SFP combo ports)
- Identical management and features as RS20 and RS30
- 5 x 10/100/1000 RJ45 and 4 x 100/1000 RJ45/SFP combo ports (function of one RJ45 is lost for each SFP utilized)
- Fiber uplink ports are available in multimode and/or singlemode by using Gigabit or 100 Mbps SFP transceivers

Compact Switches - RS40

Part No.	Ports
RS40-0009CCCCSDAE	9 x 10/100/1000 RJ45 4 x 100/1000 SFP
RS40-0009CCCCSDAP	9 x 10/100/1000 RJ45 4 x 100/1000 SFP

NOTE: A combo port is a combination 10/100/1000 Mbps RJ45 and 1000 Mbps SFP port (100 and 1000 Mbps SFPs are supported by RS40). Only one is active at a time. The use of one SFP port disables one RJ45 port. The use of two SFP ports disables two RJ45 ports, etc.

Don't see your configuration requirement? Build your own on page 11!

RS20/RS30/RS40 Configuration

RS20-0800S2S2TDHE	RS20 / RS30 / RS40 Managed DIN Rail Mount Switches - Part Configurator		
RS20-	Design/Model		
	Compact Rail Switch		
	RS20 10/100 Mbps Ethernet uplinks		
	RS22 10/100 Mbps Ethernet uplinks (4 of the Fast Ethernet ports will be PoE)		
	RS30 10/100/1000 Mbps Ethernet uplinks		
	RS32 10/100/1000 Mbps Ethernet uplinks (4 of the Fast Ethernet ports will be PoE)		
	RS40 Full Gigabit		
08	Ports Fast Ethernet (not applicable to RS40)		
	04 (only RS20)		
	08		
	09 (only RS20, RS22)		
	16		
	17 (RS20, RS22)		
	24 (RS20, RS22, RS30, RS32)		
	25 (RS20, RS22)		
00	Ports Gibabit Ethernet		
	00 For RS20 and RS22		
	02 For RS30 / RS32		
	09 09: number of 1000 Mbps ports (RS40)		
S2	Ports, Type 1, Uplink		
	T1 1 x Twisted Pair RJ45	**06**	1 x SFP Slot Gigabit
	M2 1 x Multimode SC (100 Mbps)	**MM**	2 x Multimode SC (100 Mbps) - only RS20 w/ 9, 17 or 25 ports
	M4 1 x Multimode ST (100 Mbps)	**NN**	2 x Multimode ST (100 Mbps) - only RS20 w/ 9, 17 or 25 ports
	S2 1 x Singlemode SC (100 Mbps)	**VV**	2 x Singlemode SC (100 Mbps) - only RS20 w/ 9, 17 or 25 ports
	S4 1 x Singlemode ST (100 Mbps)	**UU**	2 x Singlemode ST (100 Mbps) - only RS20 w/ 9, 17 or 25 ports
	L2 1 x Long Haul SC (100 Mbps)	**OO**	2 x SFP Slot Gigabit
	G2 1 x Long Haul+ SC (100 Mbps)	**CC**	2 x RJ45 / SFP Combo Gigabit (RS40 only option)
S2	Ports, Type 2. Uplink		
	T1 1 x Twisted Pair RJ45	**ZZ**	2x SFP Slot FE (100 Mbps)
	M2 1 x Multimode SC (100 Mbps)	**CC**	2x RJ45/SFP Combo Gigabit (RS40 only option)
	M4 1 x Multimode ST (100 Mbps)		
	S2 1 x Singlemode SC (100 Mbps)		
T	Temperature Range		
	S 0°C up to + 60° C		
	T – 40° C up to + 70° C (+60 Deg C for RS22 / RS32)		
	E – 40° C up to + 70° C includes Conformal Coating		
D	Power Supply Input Requirements		
	D 12/24 V/48 VDC (9.6 – 60 V) and 24 VAC (18 – 30 V) - not applicable for RS22/32		
	P 47 – 52 VDC for RS22 and RS32		
H	Approvals		
	A cUL508 · cUL1604 · Class1 Div.2 (only option for RS22/32)		
	H cUL508 · cUL1604 · Class1 Div.2 / GL: German Lloyd · IEC 61850-3: Substation / IEEE 1613: Substation · EN 50121-4: Railway (track)		
	B cUL508 · cUL1604 · Class1 Div.2 / GL: German Lloyd · IEC 61850-3: Substation / IEEE1613: Substation · EN 50121-4: Railway (track) / ATEX100a, Zone 2: Hazardous Location		
E	Software Version (see page 27 for details)		
	U Unmanaged (not available for RS22 / RS32 / RS40)		
	E Enhanced, additional filters and redundancy		
	P Professional, DHCP server, additional security and diagnostics, advanced filtering and redundancy		
H	Configuration		
	H Standard		
	X Customer specific		
H	OEM-Type		
	H Standard		
	X Customer specific		
04.0.	Software Release		
	04.0. Software release 4.0.		
	XX.X. Newest software release		

NOTE: Due to the vast number of switch variations (port density, port type, approvals, power input, etc.), Hirschmann has developed a part number matrix that permits users to custom-tailor their own switch. Simply decide on Compact or Modular, number of ports, the type of uplink ports (these can be used as standard ports), and select the temperature, power and approvals. It is highly recommended that configurations are verified using the online Configurator. **www.beldensolutions.com**

Required Field | Optional

Optimized Price/Performace Ratio DIN Rail Mount Switches

300ms HiPer-Ring

RSB20 Series, Compact Basic Managed Switches

All ports are 100 Mbps max

The RSB20 series of managed switches consists of 32 models that are distinguished by the number and type of 8 core models, each of which are available in as a -40 to +70 deg model and/or pre-configuired IGMP Snooping (multicast filtering) for EtherNet/IP use..

This provides an economically attractive entry into the segment of managed switches, where customers only pay for their needs. The RSB20 portfolio permits economical customized, hardened and reliable communications solutions without compromising quality.

Product Features

- Available in 8 and 9 port versions.
- Variety of multimode (SC), singlemode (SC) and SFP socket options.
- Available with pre-configured multicast filtering (IGMP Snooping and Querier) for EtherNet/IP use
- Fanless operational Temperature ranges from 0 to +60 °C or -40 to +70 °C (EEC versions)
- Redundant 12/24VDC power inputs
- Broad management functionality (see page 27 for details)
- Various configuration and diagnostic functionality — standard
- Industrial standards: cUL508 and cUL1604 Class I Div. 2 and NEMA TS 2 (EEC version)

Ordering Information

All Copper			
Part No.	**Order No.**	**Ports**	**Port Configurations**
RSB20-0800T1T1SAAB	942 014 001	8	8TX
RSB20-0800T1T1SAABE	942 014 017	8	8TX E, pre-configured multicast filtering for EtherNet/IP use
RSB20-0800T1T1TAABE	942 014 025	8	8TX E, pre-configured multicast filtering for EtherNet/IP use
RSB20-0800T1T1TAAB	942 014 009	8	8TX EEC
Multimode (Copper & Fiber)			
Part No.	**Order No.**		**Port Configurations**
RSB20-0800M2M2SAAB	942 014 002	8	6TX/2FX MM
RSB20-0800M2M2SAABE	942 014 018	8	6TX/2FX MM E, pre-configured multicast filtering for EtherNet/IP use
RSB20-0800M2M2TAABE	942 014 026	8	6TX/2FX MM E, pre-configured multicast filtering for EtherNet/IP use
RSB20-0800M2M2TAAB	942 014 010	8	6TX/2FX MM EEC
RSB20-0900M2TTSAAB	942 014 005	9	8TX/1FX MM
RSB20-0900M2TTSAABE	942 014 021	9	8TX/1FX MM E, pre-configured multicast filtering for EtherNet/IP use
RSB20-0900M2TTTAABE	942 014 029	9	8TX/1FX MM E, pre-configured multicast filtering for EtherNet/IP use
RSB20-0900M2TTTAAB	942 014 013	9	8TX/1FX MM EEC
RSB20-0900MMM2SAAB	942 014 007	9	6TX/3FX MM
RSB20-0900MMM2SAABE	942 014 023	9	6TX/3FX MM E, pre-configured multicast filtering for EtherNet/IP use
RSB20-0900MMM2TAABE	942 014 031	9	6TX/3FX MM E, pre-configured multicast filtering for EtherNet/IP use
RSB20-0900MMM2TAAB	942 014 015	9	6TX/3FX MM EEC
Singlemode (Copper & Fiber)			
Part No.	**Order No.**		**Port Configurations**
RSB20-0800S2S2SAAB	942 014 003	8	6TX/2FX SM
RSB20-0800S2S2SAABE	942 014 019	8	6TX/2FX SM E, pre-configured multicast filtering for EtherNet/IP use
RSB20-0800S2S2TAABE	942 014 027	8	6TX/2FX SM E, pre-configured multicast filtering for EtherNet/IP use
RSB20-0800S2S2TAAB	942 014 011	8	6TX/2FX SM EEC
RSB20-0900S2TTSAAB	942 014 006	9	8TX/1FX SM
RSB20-0900S2TTSAABE	942 014 022	9	8TX/1FX SM E, pre-configured multicast filtering for EtherNet/IP use
RSB20-0900S2TTTAABE	942 014 030	9	8TX/1FX SM E, pre-configured multicast filtering for EtherNet/IP use
RSB20-0900S2TTTAAB	942 014 014	9	8TX/1FX SM EEC
Singlemode/Multimode (Copper & Fiber)			
Part No.	**Order No.**		**Port Configurations**
RSB20-0900VVM2SAAB	942 014 008	9	6TX/2FX SM/1 FX MM
RSB20-0900VVM2SAABE	942 014 024	9	6TX/2FX SM/1 FX MM E, pre-configured multicast filtering for EtherNet/IP
RSB20-0900VVM2TAABE	942 014 032	9	6TX/2FX SM/1 FX MM E, pre-configured multicast filtering for EtherNet/IP
RSB20-0900VVM2TAAB	942 014 016	9	6TX/2FX SM/1 FX MM EEC
SFP			
Part No.	**Order No.**		**Port Configurations**
RSB20-0900ZZZ6SAAB	942 014 004	9	6TX/3SFP
RSB20-0900ZZZ6SAABE	942 014 020	9	6TX/3SFP E, pre-configured multicast filtering for EtherNet/IP use
RSB20-0900ZZZ6TAABE	942 014 028	9	6TX/3SFP E, pre-configured multicast filtering for EtherNet/IP use
RSB20-0900ZZZ6TAAB	942 014 012	9	6TX/3SFP EEC

Managed Modular DIN Rail Mount Switches

EtherNet/IP conformance tested

PROFINET

MS20 Modular Switches

300ms HiPer-Ring

PoE

Four to twenty-four 100 Mbps 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.

- 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
- Std. 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. See page 27 for details.

MS20-08

MS20-16

MS20-24 (including backplane extension MB-2T)

MS20 - All Ports are 10/100 Mbps		
Part No.	**Order No.**	**Ports**
MS20-0800SAAE	943 435-001	2 x any MM2/MM3 (2 slots, max. 8 x 10/100 Mbps ports)
MS20-0800SAAP	943 435-002	2 x any MM2/MM3 (2 slots, max. 8 x 10/100 Mbps ports)
MS20-0800ECCP	943 956-001	2 x any MM2/MM3 (2 slots, max. 8 x 10/100 Mbps ports), -40 to +70 deg, conformal coated, 24/48 VDC
MS20-1600SAAE	943 435-003	4 x any MM2/MM3 (6 slots max. 16 x 10/100 Mbps ports/24 ports w/ MB-2T)
MS20-1600SAAP	943 435-004	4 x any MM2/MM3 (6 slots max. 16 x 10/100 Mbps ports/24 ports w/ MB-2T)
MS20-1600ECCP	943 956-002	4 x any MM2/MM3 (6 slots max. 16 x 10/100 Mbps ports/24 ports w/ MB-2T), -40 to +70 deg, conformal coated, 24/48 VDC

MS30 Modular Switches

FAST 30ms HiPer-Ring

PoE

Uplink ports are 10/100/1000 Mbps. All other ports are 10/100 Mbps. Same functionality and features as MS20, with the exception of an added slot for a Gigabit Media Module (for 2 x 10/100 RJ45 / Gigabit SFP combo ports.

- MS30-08 can have a max of 8 x 10/100 Mbps ports and 2 x 10/100 RJ45 / Gigabit SFP combo ports
- MS30-16 can have 16 x 10/100 Mbps ports (24 ports max w/ MB-2T) and 2 x 10/100 RJ45 / Gigabit SFP combo ports
- Ports can be any combination of copper and/or fiber. Gigabit RJ45/SFP combo ports compatible with Gigabit and 100 mbps SFPs.

MS30-08

MS30-16

MS30-24 (including backplane extension MB-2T)

MS30, 2x 10/100 RJ45 / Gigabit SFP combo ports - All Other Ports are 10/100 Mbps		
Part No.	**Order No.**	**Ports**
MS30-0802SAAE	943 435-005	2 x any MM2/MM3 and 1 x MM4-2TX/SFP (max 10 ports)
MS30-0802SAAP	943 435-006	2 x any MM2/MM3 and 1 x MM4-2TX/SFP (max 10 ports)
MS30-1602SAAE	943 435-007	4 x any MM2/MM3 (6 x w/MB-2T) and 1 x MM4-2TX/SFP (max 26 ports)
MS30-1602SAAP	943 435-008	4 x any MM2/MM3 (6 x w/MB-2T) and 1 x MM4-2TX/SFP (max 26 ports)

MS Managed Modular DIN Rail Mount Switches

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.

MS Backplane Extensions		
Part No.	**Order No.**	**Extensions for Use With**
MB-2T	943 733-102	MS20-16, MS30-16, and MS4128
MB20-2TAHH	943 435-002	Same as above but with -40°C to +70°C

PowerMICE Gigabit Layer 2/3 Switches

FAST 30ms HiPer-Ring

PoE

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 on the previous page, 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.

MS Modular Managed Industrial Ethernet Layer 2/3 Switches with Professional or Enhanced Management				
Part No.	**Order No.**	**Layer/Management**	**Ports**	**Configurations**
MS4128-L2P	943 009-002	Layer 2/Professional	28	4 x any MM2/MM3 (6 x w/MB-2T) and 1 x any MM4 (max 28 ports)
MS4128-L2P EEC	943 009-103	Layer 2/Professional	28	Same as 002 except extended temperature range
MS4128-L3E	943 009-202	Layer 3/Enhanced	28	4 x any MM2/MM3 (6 x w/MB-2T) and 1 x any MM4 (max 28 ports)
MS4128-L3E EEC	943 009-203	Layer 3/Enhanced	28	Same as 202 except extended temperature range
MS4128-L3P	943 009-302	Layer 3/Professional	28	4 x any MM2/MM3 (6 x w/MB-2T) and 1 x any MM4 (max 28 ports)
MS4128-L3P EEC	943 009-303	Layer 3/Professional	28	Same as 302 except extended temperature range

MS 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).

MS Modules: Maximum Module Density	
MS20-08	2 x any MM2/MM3
MS20-16	4 x any MM2/MM3 (6 x using MB-2T backplane extension)
MS30-08	2 x any MM2/MM3 plus 1 x MM4-2TX/SFP
MS30-16	4 x any MM2/MM3 (6 x using MB-2T backplane extension), plus 1 x MM4-2TX/SFP
MS4128	4 x any MM2/MM3 (6 x using MB-2T backplane extension), plus 1 x any MM4

NOTE: SFPs are needed for MM4 fiber functionality.

MS Modules: ALL COPPER			
Type	**Part No.**	**Order No.**	**Ports/Speed**
ALL COPPER	MM2-4TX1	943 722-101	4 x 10/100 Mbps RJ45
ALL COPPER	MM2-4TX1-EEC	943 722-151	4 x 10/100 Mbps RJ45, ext. temperature range*

MS Managed Modular DIN Rail Mount Switches

MS Modules: MULTIMODE			
MM	MM2-2FXM2	943 718-101	2 x 100 Mbps MM SC
MM	MM3-4FXM2	943 764-101	4 x 100 Mbps MM SC
MM	MM3-4FXM4	943 835-101	4 x 100 Mbps MM ST
MM	MM3-1FXM2/3TX1	943 839-101	1 x 100 Mbps MM SC, 3 x RJ45
MM	MM3-2FXM4/2TX1	943 837-101	2 x 100 Mbps MM ST, 2 x RJ45
MM	MM3-4FLM4	943 760-101	4 x 10 Mbps MM ST
MM	MM3-2FXM2/2TX1	943 761-101	2 x 100 Mbps MM SC, 2 x RJ45
MM	MM3-2FXM2/2TX1-EEC	943 761-151	2 x 100 Mbps MM SC, 2 x RJ45, ext. temperature range*
MM	MM3-1FXM2/1FXS2/2TX1	943 929-101	2 x 100 Mbps SC (1 x MM and 1 x SM), 2 x RJ45
MM	MM2-4FXM3	943 721-101	4 x 100 Mbps MM MTRJ
MM	MM2-2FXM3/2TX1	943 720-101	2 x 100 Mbps MM MTRJ, 2 x RJ45
SFP	MM20-Z6Z6Z6Z6SAHH	943 938-001	4 x 100 Mbps SFP sockets (SFPs need to be purchased separately), for MS20, MS30 and MS4128

MS Modules: SINGLEMODE			
Type	**Part No.**	**Order No.**	**Ports/Speed**
SM	MM 2-2FXS2	943 719-101	2 x 100 Mbps SM SC
SM	MM 3-2FXS2/2TX1	943 762-101	2 x 100 Mbps SM SC, 2 x RJ45
SM	MM 3-2FXS2/2TX1-EEC	943 762-151	2 x 100 Mbps SM SC, 2 x RJ45, ext. temp.*
SM	MM 3-1FXS2/3TX1	943 838-101	1 x 100 Mbps SM SC, 3 x RJ45
SM	MM 3-4FXS2	943 836-101	4 x 100 Mbps SM SC
SM	MM 3-1FXL2/3TX1	943 763-101	1 x 100 Mbps SM, SC Long Haul, 3 x RJ45
SM	MM3-1FXLH+/3TX1	943 930-101	1 x 100 Mbps SM SC Long Haul+, 3 x RJ45
SM	MM 3-1FXS2/3TX1-EEC	943 838-151	1 x 100 Mbps SM SC, 3 x RJ45, ext. temp.*
SFP	MM20-Z6Z6Z6Z6SAHH	943 938-001	4 x 100 Mbps SFP sockets (SFPs need to be purchased separately), for MS20, MS30 and MS4128

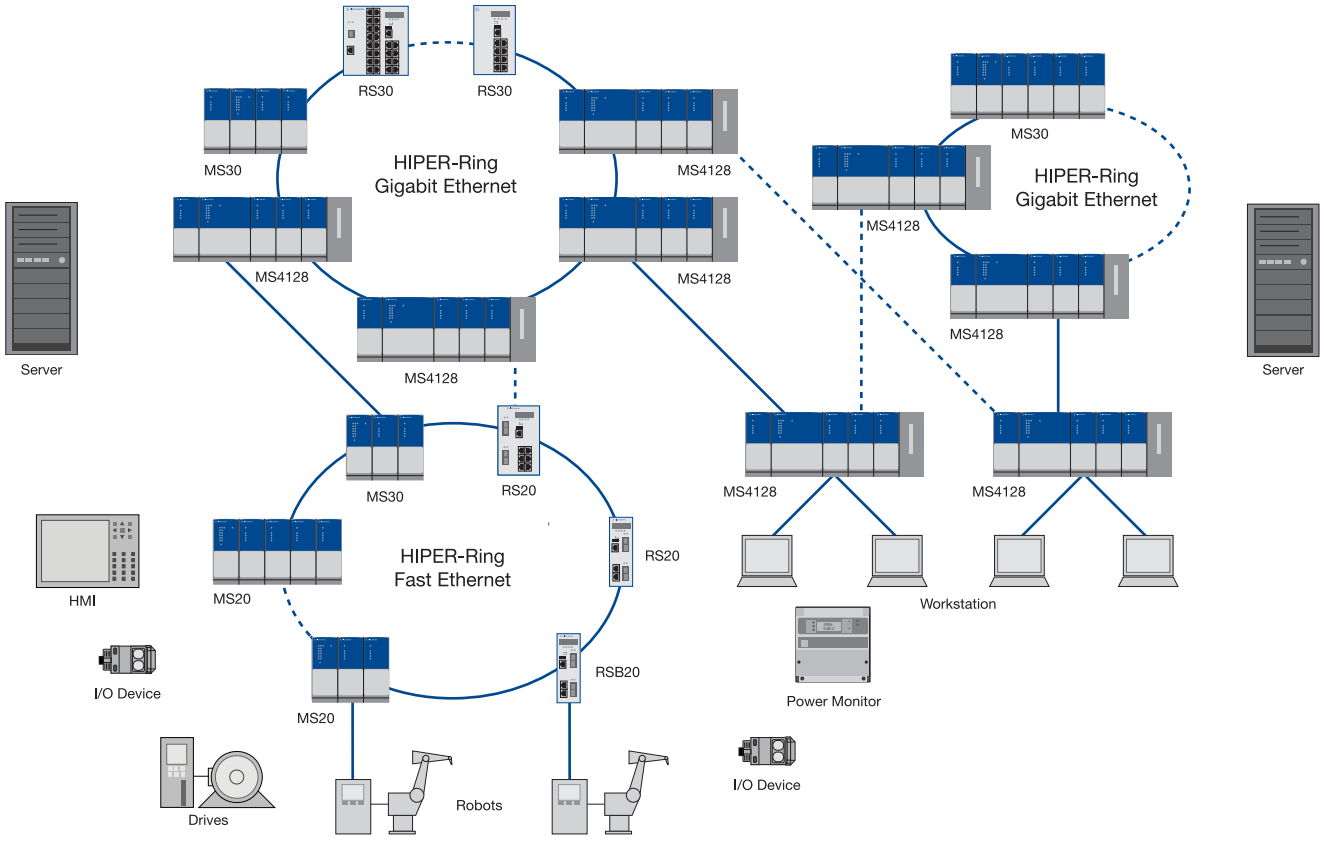
MS Modules: GIGABIT			
Type	**Part No.**	**Order No.**	**Ports/Speed**
GIGABIT	MM 4-2TX/SFP	943 622-001	2 x Gigabit RJ45/SFP combo ports** for use with MS30 and MS4128
GIGABIT	MM 4-4TX/SFP	943 010-001	4 x Gigabit RJ45/SFP combo ports** for use with MS4128 only

MS Modules: SPECIAL PURPOSE			
Type	**Part No.**	**Order No.**	**Ports/Speed**
REALTIME	MM23-T1T1T1T1SA PTP		IEEE1588 Version 2 realtime module, 4x 10/100 RJ45, replacement for 943 117-001
REALTIME	MM23-M2M2T1T1SA PTP		IEEE1588 Version 2 realtime module, 2x multimode, SC sockets, replacement for 943 117-002
REALTIME	MM23-S2S2T1T1SA PTP		IEEE1588 Version 2 realtime module, 2x singlemode, SC sockets, replacement for 943 117-003
REALTIME	MM23-F4F4T1T1SA PTP		IEEE1588 Version 2 realtime module, 2x multimode, ST sockets, replacement for 943 117-004
REALTIME	MM33-07079999SA PTP		IEEE1588 Version 2 realtime module, SFP sockets
REALTIME	MM3-4TX1-RT-EEC	943 955-001	4 x RJ45, railway certifications EN 50155, EN 50121-4
REALTIME	MM3-2FXM2/2TX1-RT-EEC	943 955-002	2 x 100 Mbps MM SC, 2 x RJ45, IEEE 1588, railway certifications EN 50155, EN 50121-4
REALTIME	MM3-2FXS2/2TX1-RT-EEC	943 955-003	2 x 100 Mbps SM SC, 2 x RJ 45, IEEE 1588, railway certifications EN 50155, EN 50121-4
AUI	MM3-2AUI	943 840-101	2 x AUI SUB-D 15-pin male D-sub
IP67	MM3-4TX5	943 841-101	4 x M12 socket (D-code), for connectors see OCTOPUS family
POE	MM22-T1T1T1T1SAHH	943 938-002	4 x RJ45 PoE (external PoE power supply)
SFP	MM20-Z6Z6Z6Z6SAHH	943 938-001	4 x 100 Mbps SFP sockets (SFPs need to be purchased separately), for MS20, MS30 and MS4128

NOTE: MS Media Modules can be custom configured in a multitude of copper/fiber combinations. Don't see what you need? Visit www.beldensolutions.com

NOTE: **For every SFP used, one copper port is lost. SFPs need to be purchased separately.

MS Managed Modular DIN Rail Mount Switches



Example of managed compact and modular switches used in a HIPER-Ring featuring Fast and Gigabit Ethernet.

NOTE: All of Hirschmann's managed switches have the ability of being designed into a redundant ring with 300ms resiliency at 100 Mbps and 30 ms at 1000 Mbps (each with 100 switches in the ring).

Über-Rugged™ Managed DIN Rail Mount Switches

RSR20 and RSR30 Series Compact Über-Rugged™ Switches

BLAZING 10ms HiPer-Ring

RSR Ruggedized Ethernet Switches for DIN Rail-Mount

- 0 to +60 deg C or -40°C to +85°C
- Up to two AC/DC inputs with choice of voltage
- DIN rail or panel mounting (mounting flange required)
- RSR20 with all 100 Mbps max or RSR30 with up to 3x Gigabit ports
- Robust metal housing offers extended RFI/EMI and vibration immunity
- From 8TX to 10 ports fiber
- Ultra-fast ring recovery time <10ms

Über-Rugged™ Managed DIN Rail Mount Switches

RSR30-0802S2M2T1UCCHPHH04.0.	Über-Rugged Managed DIN Rail Mount Switches - Part Configurator			
RSR30-	Design/Model			
	RSR20	Rail Switch Rugged Fast Ethernet		
	RSR30	Rail Switch Rugged Gigabit Ethernet Uplink Ports		
09	Ports Fast Ethernet			
	06	6x 100 Mbps Ethernet	**08**	8x 100 Mbps Ethernet
	07	7x 100 Mbps Ethernet	**09**	9x 100 Mbps Ethernet
02	Ports Gigabit Ethernet			
	00	0x 1000 Mbps Ethernet	**03**	3x 1000 Mbps Ethernet
	02	2x 1000 Mbps Ethernet		
S2	Ports, Type 1, Uplink			
	CC	2 x RJ45/SFP Combo Port Gigabit Ethernet	**07**	RJ45/SFP Combo Port Gigabit Ethernet
	00	2 x SFP Slot Gigabit Ethernet	**06**	SFP Slot Gigabit Ethernet
	TT	2 x Twisted Pair (Tx) / RJ45	**T1**	Twisted Pair (Tx) / RJ45
	MM	2 x Multimode FX SC	M2	Multimode FX SC
	JJ	2 x Multimode FX MTRJ	**M3**	Multimode FX MTRJ
	NN	2 x Multimode FX ST	**M4**	Multimode FX ST
	VV	2 x Singlemode FX SC	**S2**	Singlemode FX SC
	UU	2 x Singlemode FX ST	**S4**	Singlemode FX ST
	LL	2 x Singlemode Long Haul FX SC	**L2**	Singlemode Long Haul FX SC
	GG	2 x Singlemode Long Haul+ FX SC (200 km)	**G2**	Singlemode Long Haul+ FX SC (200 km)
	ZZ	2 x SFP Slot (100 Mbps)	**Z6**	SFP Slot (100 Mbps)
M2	Ports Type 2, Uplink			
	ZZ	2 x SFP Slot (100 Mbps)	**M4**	Multimode FX ST
	07	RJ45/SFP Compo Port Gigabit Ethernet	**S2**	Singlemode FX SC
	06	SFP Slot Gigabit Ethernet	**S4**	Singlemode FX ST
	T1	Twisted Pair (Tx) / RJ45	L2	Singlemode Long Haul FX SC
	M2	Multimode FX SC	**G2**	Singlemode Long Haul+ FX SC (200 km)
	M3	Multimode FX MTRJ	**Z6**	SFP Slot (100 Mbps)
T1	Remaining Ports			
	T1	Twisted Pair (Tx) / RJ45	**Z6**	SFP Slot (100 Mbps)
U	Temperature Range			
	S	Standard (0° C up to + 60° C)		
	U	Extended (- 40° C up to + 85° C)		
	F	Extended (– 40° C up to + 85° C inclusive Conformal Coating)		
C	Voltage Range 1			
	C	24/36/48 VDC	**K**	60/120/250 VDC and 110/230 VAC
C	Voltage Range 2			
	9	Not availabe	**K**	60/120/250 VDC and 110/230 VAC
	C	24/36/48 VDC		
H	Approvals			
	H	UL508, GL, IEC 61850; IEEE 1613; EN 50121		
E	Software Version			
	P	Professional		
H	Configuration			
	H	Standard	**P**	PROFINET pre-setting
	X	Customer specific	**E**	Ethernet/IP pre-setting
H	OEM-Type			
	H	Standard		
	X	Customer specific		
04.0.	Software Release			
	04.0.	Software release 4.0.		
	XX.X.	Newest software release		

Required Field	Optional

IP67 Switches

Industrial On-Machine Switches

OCTOPUS Series - IP 67 - Now with Fiber Optic Ports

300ms HiPer-Ring

PoE

The OCTOPUS family of switches meet all relevant industry standards and are the most robust switches in the market. With Power over Ethernet , Professional firmware standard on all models and Gigabit connectivity for where a higher bandwidth connection is required, Hirschmann has complemented its IP67 solutions with an absolutely future-proof technology. This is deployed in all situations where new end devices such as IP cameras or IP telephones require electrical power without additional installation work.

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 ODVA-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, ODVA-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 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.

Gigabit Ethernet with Fiber Optic Ports

OCTOPUS IP 67 Unmanaged and Managed Switches		
Part No.	**Order No.**	**Ports/Functions**
OCTOPUS 5TX EEC	943 892-001	5 x 10/100 Mbps M12-coding, Unmanaged IP 67 Switch
OCTOPUS 8M	943 931-001	8 x 10/100 Mbps M12, Managed IP 67 Switch
OCTOPUS 16M	943 912-001	16 x 10/100 Mbps M12, Managed IP 67 Switch
OCTOPUS 16M-Train	943 984-001	16 x 10/100 Mbps M12, EN 50155, Managed IP 67 Switch
OCTOPUS 24M	943 923-001	24 x 10/100 Mbps M12, Managed IP 67 Switch
OCTOPUS 8M-6PoE	943 967-101	8 x 10/100 Mbps M12 with 6 PoE ports, Managed IP 67 Switch
OCTOPUS 8M-8PoE	943 967-001	16 x 10/100 Mbps M12 with 8 PoE ports, Managed IP 67 Switch
OCTOPUS 16M-8PoE	943 960-001	24 x 10/100 Mbps M12 with 8 PoE ports, Managed IP 67 Switch
OCTOPUS OS20-0010001M1MTREPHH	943 988-001	8x 10/100 mbps, 2x 100mbps singlemode (Variant 1)
OCTOPUS OS20-0010001S1STREPHH	943 988-002	8x 10/100 mbps, 2x 100mbps singlemode (Variant 1)
OCTOPUS OS20-0010004M4MTREPHH	943 988-003	8x 10/100 mbps, 2x 100mbps multimode (Variant 4)
OCTOPUS OS20-0010004S4STREPHH	943 988-004	8x 10/100 mbps, 2x 100mbps singlemode (Variant 4)
OCTOPUS OS30-0008021A1ATREPHH	943 988-005	8x 10/100 mbps, 2x Gigabit singlemode (Variant 1)
OCTOPUS OS30-0008021B1BTREPHH	943 988-006	8x 10/100 mbps, 2x Gigabit singlemode (Variant 1)
OCTOPUS OS30-0008024A4ATREPHH	943 988-007	8x 10/100 mbps, 2x Gigabit multimode (Variant 4)
OCTOPUS OS30-0008024B4BTREPHH	943 988-008	8x 10/100 mbps, 2x Gigabit singlemode (Variant 4)

OCTOPUS 5TX EEC

OCTOPUS 8M

OCTOPUS 8M-8PoE

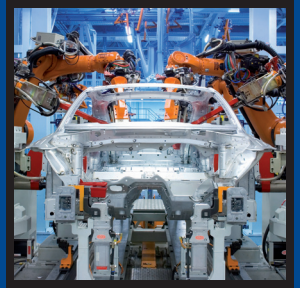
OCTOPUS 16M-2FX

OCTOPUS 16M-8PoE

OCTOPUS 24M

OCTOPUS IP 67 Connectivity Solutions		
Part No.	**Order No.**	**Ports/Functions**
EM12S OCTOPUS	934 445-001	Field-installable M12 (IP67) Ethernet connector
EF12RJ45 OCTOPUS	934 498-001	Bulkhead M12 to RJ45
ACA21-M12 EEC	943 913-002	ACA 21 auto configuration adapter for OCTOPUS managed switches
OCTOPUS Terminal Cable	943 902-001	M12 4-pin to Sub-D- 9-pin terminal cable

NOTE: See page 19 and 20 for patch cables



Industrial Ethernet Media Cordsets

Industrial Ethernet Media Cordsets

Hirschmann by Belden Brand

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.

RJ45 to RJ45

RJ45 to M12

M12 to M12

RJ45 to M12 (Panel Receptacle)

Industrial Ethernet Media Cordsets - TPE - Bonded-Pair, CAT 5e, 24 AWG Unshielded, 2- and 4-Pair

Part No.	Configuration	Description
J424TPESTJT...M	RJ45 to RJ45	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 sunlightand-oil-resistant, teal jacket.
M224TPESTJT...M	RJ45 to M12	
M224TPESTMT...M	M12 to M12	
J224TPESTPT...M	RJ45 to M12 (Panel Receptacle)	

Example of completed part number: **J424TPESTJT00.3M** is a 00.3 meter cable.

Industrial Ethernet Media Cordsets - TPE High-Flex - Bonded-Pair, CAT 5e, 24 AWG Unshielded, 2- and 4-Pair

Part No.	Configuration	Description
J424THFSTJT...M	RJ45 to RJ45	Industrial Ethernet High-Flex CAT 5E, TPE High-Flex,
M224THFSTJT...M	RJ45 to M12	unshielded, 2-and 4 pair, 24 AWG cable, stranded copper
M224THFSTMT...M	M12 to M12	alloy conductors, polyolefin insulation, teal jacket.
J224THFSTPT...M	RJ45 to M12 (Panel Receptacle)	Warranted to 10 million flex cycles @ 20X OD and 1M flex cycles @ 10X OD.

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

Industrial Ethernet Media Cordsets - PVC - Bonded-Pair, CAT 5e, 24 AWG Unshielded, 2- and 4-Pair

Part No.	Configuration	Description
J424PVCSTJT...M	RJ45 to RJ45	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 sunlightand oil-resistant, teal jacket.
M224PVCSTJT...M	RJ45 to M12	
M224PVCSTMT...M	M12 to M12	
J224PVCSTPT...M	RJ45 to M12 (Panel Receptacle)	

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

Industrial Ethernet Media Cordsets - TPE - Bonded-Pair, CAT 5e, 24 AWG Shielded, 2-Pair

Part No.	Configuration	Description
J224TPETLJT...M	RJ45 to RJ45	Industrial Ethernet CAT 5E, TPE Shielded, 2-pair, 24 AWG cable, bonded-pairs, stranded (7x32) tinned copper conductors, polyolefin insulation, and industrial grade sunlightand oil-resistant, teal jacket.
M224TPETLJT...M	RJ45 to M12	
M224TPETLMT...M	M12 to M12	
J224TPETLPT...M	RJ45 to M12 (Panel Receptacle)	

Example of completed part number: **J224TPETLJT00.3M** is a 00.3 meter cable.

Industrial Ethernet Media Cordsets and Part Number Configurator

Industrial Ethernet Media Cordsets - TPE High-Flex - Bonded-Pair, CAT 5e, 24 AWG Shielded, 2- and 4-Pair		
Part No.	**Configuration**	**Description**
J424THFTLJT...M	RJ45 to RJ45	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 sunlightand oil-resistant, teal jacket.
M224THFTLJT...M	RJ45 to M12	
M224THFTLMT...M	M12 to M12	
J224THFTLPT...M	RJ45 to M12 (Panel Receptacle)	

Example of completed part number: **J424THFTLJT00.3M** is a 00.3 meter cable.

Part Number Configurator

J424PVCSTJT00.3M	Industrial Ethernet Media Cord Sets - Part Number Configurations
J	Connector Type 1
	J RJ45
	M M12
4	Number of Conductors (Pairs)
	2 2-Pair
	4 4-Pair
24	Wire Gauge
	24 24 AWG cable
PVC	Cable Type
	PVC PVC cable type - Bonded-Pair
	TPE TPE cable type - Bonded-Pair
	THF TPE High-Flex cable type - Bonded-Pair
ST	Stranding
	ST Stranded, Unshielded
TL	Shielding
	TL Stranded, Shielded
J	Connector Type 2
	J RJ45
	M M12
	P M12 Panel-mount receptacle
T	Cable Jacket Color
	T Teal cable jacket
	B Black cable jacket*
	G Grey cable jacket*
	R Red cable jacket*
	U Blue cable jacket*
	N Orange cable jacket*
	* Denotes special order. Minimum quantities apply.
00.3M	Cable Lengths
	00.3M 0.3 meters
	00.5M 0.5 meters
	01.0M 1 meter
	02.0M 2 meters
	03.0M 3 meters
	04.0M 4 meters
	05.0M 5 meters
	06.0M 6 meters
	07.0M 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
	55M 55 meters
	60M 60 meters
	65M 65 meters
	70M 70 meters
	75M 75 meters
	80M 80 meters
	90M 90 meters

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.

Illustration 1: Example of Non-Bonded Pair. As cable is stretched and pulled, pairs begin to separate, causing a degradation in signal quality.

Illustration 2: Example of Bonded Pair. As cable is stretched and pulled, pairs stay intact.

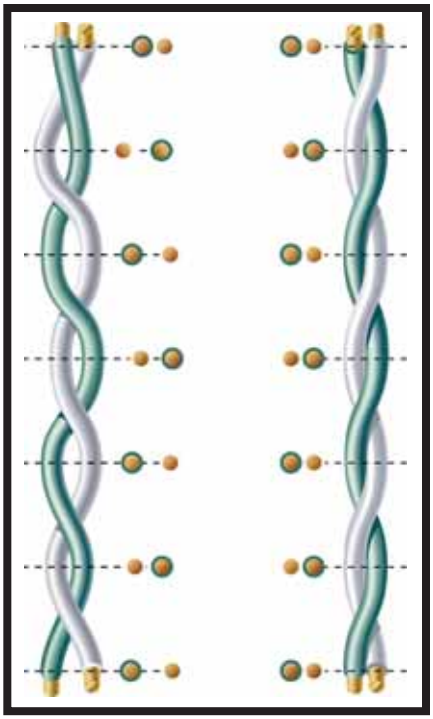


Illustration 3: Side-by-side comparison. Non-Bonded Pair versus Bonded-Pair cable.

Workgroup Rack-mount Switches

Industrial Workgroup Switches

MACH100 Switches

FAST 30ms HiPer-Ring

Hirschmann has expanded its 19" rack-mount switch product portfolio with the release of the MACH100 family, allowing workgroups to be networked by either copper and/or fiberoptic cable. The switches are offered in versions with 8 or 24 permanently installed 10/100 Mbps RJ45 Ethernet ports, or as modular switches with 8 permanent ports and slots for 2 additional 8-port media modules. Both versions offer two RJ45/SFP Gigabit Combo ports for connection to the network backbone. An all-Gigabit version with 24 10/100/1000 ports is also available. The switches are designed for a temperature range of 0° C to + 50° C and support a large range of management and redundancy modes, as well as several functions for configuration and diagnostics. Further features are fanless cooling as well as an optional power supply. As a result the devices of the MACH100 family offer a high level of security and flexibility for Ethernet network design or upgrade in production-related areas.

Features and Benefits

- Fanless design
- Hot-swappable modules
- Optional redundant power inputs
- ACA 21 USB configuration backup
- CLI and WEB management interface
- L2P firmware - DHCP Option 82, HiDiscovery, HIPER-Ring, MRP, RSTP, disable learning, SNTP, Industrial Profiles (EtherNet/IP, PROFINET)
- Fully integrated in Industrial HiVision
- Temperature range: 0° C to + 50° C

NOTE: *SFPs need to be purchased separately (see accessories on page 36 for SFPs).

MACH100 MODULAR		
Part No.	**Order No.**	**Ports**
MACH102-8TP	943 969-001	8 x 10/100BASE-TX RJ45 ports, 2 x GE combo ports (100 or 1000 MBps SFPs) and 2 x 8 port media module slots
MACH102-8TP-R	943 969-101	Same as -001 above, but w/ redundant 110/220 VAC power supply
FIXED PORTS		
Part No.	**Order No.**	**Ports**
MACH102-8TP-F	943 969-201	8 x 10/100BASE-TX RJ45 ports and 2 x GE combo ports (100 or 1000 MBps SFPs)
MACH102-8TP-FR	943 969-301	Same as -201, but w/ redundant 110/220 VAC power supply
MACH102-24TP-F	943 969-401	24 x 10/100BASE-TX RJ45 ports and 2 x GE combo ports (100 or 1000 MBps SFPs)
MACH102-24TP-FR	943 969-501	Same as -401, but w/ redundant 110/220 VAC power supply
MACH104-20TX-F	942 003-001	20 x GE TX Ports, 4 x GE RJ45/SFP combo ports
MACH104-20TX-F-4PoE	942 003-201	Same as MACH104-20TX-F, 4 of the 20 10/100/1000 ports are 802.11af PoE
MACH104-20TX-FR	942 003-101	Same as MACH104-20TX-F, redundant power supply
MEDIA MODULES (2 Max. per Modular MACH 100)		
Part No.	**Order No.**	**Ports**
M1-8TP-RJ45	943 970-001	8 x 10/100BASE-TX, RJ45 media module
M1-8TP-RJ45 PoE	942 028-001	8 x 10/100BASE-TX, RJ45 media module PoE
M1-8MM-SC	943 970-101	8 x 100BASE-FX MM, SC media module
M1-8SM-SC	943 970-201	8 x 100BASE-FX SM, SC media module
M1-8SFP	943 970-301	8 x 100BASE-X SFP media module

Über-Rugged™ Rack-mount Switches

Über-Rugged™ Switches

MACH1000 - 19" Rack-mount Switches

FAST 30ms HiPer-Ring

PoE

Why Über-Rugged™?

This is the only way to describe a switch that goes above and beyond the already rugged capabilities of Hirschmann's switches by being extremely immune to noise and able to provide maximum uptime in extreme environmental conditions. 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.

Features and Benefits

- 19" rack-mount, fanless design
- – 40° C to + 85° C operating temperature (conformal coating available)
- Exceeds IEC 61850-3 and IEEE 1613 standards for electric power substation communication equipment
- Exceeds NEMA TS-2 standard for traffic control equipment
- Redundant 24/36/48 VDC or 120/250 VDC and 110/230 VAC
- Extremely efficient components for minimal heat generation and high MTBF (mean time between failure)
- Ultra-fast ring recovery time < 10 ms

Über-Rugged™ Rack-mount Switches - Configurations

MAR1030-CCMMMMMMVVZZTTTTTTTTTTTT99UGCHPHH04.0. / MACH1000 19" Switch

MAR1030- — **Design/Model**

MAR1020	Fast Ethernet uplink
MAR1030	Gigabit Ethernet uplink
MAR1022	Fast Ethernet uplink with 4 ports PoE
MAR1032	Gigabit Ethernet uplink with 4 ports PoE
MAR1120	Fast Ethernet uplink with ports at the back (20 ports max. 100 meg)
MAR1130	Gigabit Ethernet uplink with ports at the back (20 ports max. 100 meg)
MAR1122	Fast Ethernet uplink with ports at the back and 4 ports PoE (20 ports max. 100 meg)
MAR1132	Gigabit Ethernet uplink with ports at the back and 4 ports PoE (20 ports max. 100 meg)
MAR1040	Full GE-Switch
MAR1042	Full GE-Switch, PoE
MAR1140	Full GE-Switch, ports on rear
MAR1142	Full GE-Switch, ports on rear, PoE

CC — **Gigabit Ethernet Ports**

99	Not present
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
OT	2 ports GE SFP and 2 ports 10/100/1000TX
4C4C4C4C9999	16 RJ45/SFP combo ports (supports 100 and 1000 Mbps SFPs) - only for use with full GE switch

MM 1 + 2 / MM 3 + 4 / MM 5 + 6 / VV 7 + 8 / ZZ 9 + 10 / TT 11 + 12 / TT 13 + 14 / TT 15 + 16 / TT 17 + 18 / TT 19 + 20 / TT 21 + 22 / 99 23 + 24 — **Fast Ethernet Ports - Ports 1 to 24 (not applicable for MAR1040)**

TT	2 x Twisted Pair (TX) 10/100 Mbps RJ45
RR	2 x Twisted Pair (TX) 10/100 Mbps M12
FF	2 x Multimode 10 Mbps ST
MM	2 x Multimode 100 Mbps SC
JJ	2 x Multimode 100 Mbps MTRJ
NN	2 x Multimode 100 Mbps ST
VV	2 x Singlemode 100 Mbps SC
UU	2 x Singlemode 100 Mbps ST
LL	2 x Singlemode LH 100 Mbps SC
GG	2 x Singlemode LH+ 100 Mbps SC
ZZ	2 x SFP Slot 100 Mbps SFP
99	Not present

U — **Temperature Range**

S	Standard	0° C up to + 60° C
U	Extended	– 40° C up to + 85° C, not MAR1040
F	Extended	– 40° C up to + 85° C inclusive Conformal Coating, not MAR1040
T	Extended	(default temp range) -40° up to +70°C (only MAR1040)
E	Extended	-40° up to +70°C with conformal coating (only MAR1040)

C — **Power Supply 1**

C	24/36/48 VDC (spring clip, not MAR1040)	**G**	110/250 VDC/110/230 VAC (spring clip, not MAR1040)
L	24/36/48 VDC (plug-in connector)	**M**	110/250 VDC/110/230 VAC (plug-in connector)

C — **Power Supply 2**

C	24/36/48 VDC (spring clip, not MAR1040))	**G**	110/250 VDC/110/230 VAC (spring clip, not MAR1040))
L	24/36/48 VDC (plug-in connector)	**M**	110/250 VDC/110/230 VAC (plug-in connector)
9	not present		

H — **Approvals**

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

P — **Software Version (see page 27 for details)**

P	Layer 2 Professional: extended diagnostics, redundancy and security features
R	Layer 3 Professional: Routing capabilities (Full GE switches only)

H — **Configuration**

H	Standard	**P**	Pre-setting/pre-configure	**E**	Ethernet/IP pre-setting

H — **OEM-Type**

H	Standard	**X**	Customer specific

04.0. — **Software Release**

X	Current software release	04.0	example: former software release

Required Field | **Optional**

NOTE: Use the Hirschmann OpenRail system to configure your substation switch: **www.beldensolutions.com**

Über-Rugged™ Rack-mount Switches

Industrial Workgroup All Gigabit Switches

MACH1040 - 19“ Rack-mount

BLAZING 10ms HiPer-Ring

PoE

The new MACH 1040 Full Gigabit Ethernet Switch is an IP30 Layer-2 switch with 16 Gigabit Ethernet combo ports (10/100/1000 TX (RJ45) or 100/1000 FX (SFP). All ports support version 2 of Precision Time Protocol in accordance with IEEE 1588 V2 and has support for an optional 4 ports of PoE (IEEE 802.3af). Layer 3 functionality is available with the R software option.

Designed for assembly in 19" cabinets, the fan-less MACH1040 uses the latest energy-saving chip technology. Its rugged metal housing measures 448 by 44 by 310 mm in width, height and depth. Rapid deployment is ensured through the 10-second boot time and the compatibility with the ACA 21-USB - a configuration storage device that provides mutli-device configuration and device replacement ease for the lowest possible MTTR (Mean Time To Replace).

In addition, an SNMP interface permits users to manage the switch over any web browser, while the use of network management software, such as HiVision and Industrial HiVIsion, provides multi-device management - an optimal solution for networks requiring the management of a higher number of switches..

Media redundancy mechanisms procedures, e.g. HIPER Ring, MRP, Trunking, Link Aggregation and Rapid Spanning Tree (RSTP), dual power inputs and quality components provide for high network availability. Security mechanisms include access control according to IEEE 802.1x, IP and MAC port security as well as SNMP V3 and SSH.

An operating temperature range of -40°C to +70°C and its high resistance to jarring, and extensive tolerance to electrical discharge and magnetic fields makes the MACH1040 an excellent fit for power transmission and distribution systems. Passive cooling (no fans) and a redundant power supply are added to ensure high operational safety while meeting the standards and approval requirements of IEC 61850, IEEE 1613, EN 50121-4, EN 50155, cUL 508, cUL 1604 and GL.

Product Features

- 16 GE ports with non-blocking architecture
- Available with Layer 3 capabilities
- PTP IEEE 1588v2 with BC and TC, precision 30 ns
- Highest flexibility through 16 Gigabit RJ45/ SFP combo ports
- Extensive software features
- Fastest media ring recovery times
- Optional 4 PoE ports
- Sub-10 second boot time
- High operational safety through:
  - High vibration resistance
  - Immunity to RFI and EMI
  - Fanless cooling
  - Redundant power supply

Part Number Configurations

1. Design	
MAR1040	Full GE-Switch
MAR1042	Full GE-Switch, PoE
MAR1140	Full GE-Switch, backside ports
MAR1142	Full GE-Switch, backside ports, PoE
2. Gigabit Ports	
4C4C4C4C9999	16 GE RJ45/SFP combo ports
3. Temperature range	
S	0°C to +60°C
T	-40°C to +70°C
E	-40°C to +70°C with conformal coating
4. Power supply 1	
L	24/36/48 V/DC
M	110/250 VDC / 110/230 VAC
5. Power supply 2	
9	Empty
L	24/36/48 V/DC
M	110/250 VDC / 110/230 VAC
6. Approvals	
H	cUL508, cUL/1604 class 1 Div 2, GL, IEC 61850, IEEE1613, NEMA TS
7. Software (see page 27 for details)	
P	Layer 2 Professional
R	Layer 3 Professional

Example

MAR1042	4C4C44C9999	E	L	M	H	P
1.	2.	3.	4.	5.	6.	7.

Gigabit Backbone Layer 2/3 Rack-mount Switches

High Density Layer 2/3 Gigabit Backbone Switch

MACH4000 Switch

Capable of providing as many as 48 Gigabit ports and three 10Gigabit ports, the MACH4000 is the ultimate high-density Layer 2/3 Gigabit backbone switch for mission-critical applications requiring high-availability and high port densities.

The MACH4000 comes standard with up to 16 + ports and can be configured with as many as 32 additional ports (via hot-plug copper/fiber modules).

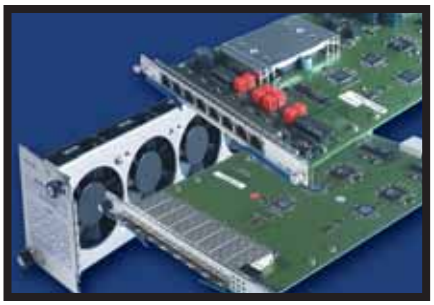
Standard features include:

- 19" rack-mount
- Two user-definable fault relays
- Hot-swappable media modules for continuous operation – up to 4 Media Modules (8 ports max. each)
- HIPER-Ring, redundant coupling and link aggregation capable
- Flexible power options: 100 – 240 VAC, 24 VDC and 48 VDC
- 0° C to + 60° C operating temperature

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 - High Density Layer 2/3 Gigabit Backbone Switch		
Part No.	**Order No.**	**Ports**
MACH4002 48+4G-L2P	943 859-101	Layer 2, Professional Management chassis
MACH4002 48+4G-L3E	943 859-201	Layer 3, Enhanced Management chassis
MACH4002 48+4G-L3P	943 859-301	Layer 3, Professional Management chassis
• Fixed ports: 4 x Gigabit Ethernet combo ports* (1000 Mbps SFP socket or 10/100/1000 Mbps RJ45) and 16 x RJ45 10/100 Mbps • Media modules: 4 sockets (8 ports max each) for total 32 ports 10/100 Mbps (Media modules sold separately – see page 26. For software functionality – see page 27)		
MACH4002-24G-L2P	943 916-101	Layer 2, Professional Management chassis
MACH4002-24G-L3E	943 916-201	Layer 3, Enhanced Management chassis
MACH4002-24G-L3P	943 916-301	Layer 3, Professional Management chassis
• Fixed ports: 8 x Gigabit Ethernet combo ports* (SFP dual speed socket or TP 10/100/1000 Mbps) • Media modules: 2 x sockets (8 ports max each) for total 16 ports 10/100/1000 Mbps (Media modules sold separately – see page 26. For software functionality – see page 27)		
MACH4002-24G+3X-L2P	943 915-101	Layer 2, Professional Management chassis
MACH4002-24G+3X-L3E	943 915-201	Layer 3, Enhanced Management chassis
MACH4002-24G+3X-L3P	943 915-301	Layer 3, Professional Management chassis
• Fixed ports: 3 x 10Gigabit Ethernet XFP socket and 8 Gigabit Ethernet ports TP/RJ45 10/100/1000 Mbps • Media modules: 2 x sockets (8 ports max each) for total 16 ports 10/100/1000 Mbps (Media modules sold separately – see page 26. For software functionality – see page 27)		
MACH4002-48G-L2P	943 911-101	Layer 2, Professional Management chassis
MACH4002-48G-L3E	943 911-201	Layer 3, Enhanced Management chassis
MACH4002-48G-L3P	943 911-301	Layer 3, Professional Management chassis
• Fixed ports: 16 Gigabit Ethernet (8 Gigabit Ethernet combo ports* 100/1000 Mbps SFP dual speed socket or 10/100/1000 Mbps + 8 Gigabit 10/100/1000 Mbps RJ45) • Media modules: Four sockets (8 ports max each) for total 32 ports 10/100/1000 Mbps (Media modules sold separately – see page 26. For software functionality – see page 27)		
MACH4002-48G+3X-L2P	943 878-101	Layer 2, Professional Management chassis
MACH4002-48G+3X-L3E	943 878-201	Layer 3, Enhanced Management chassis
MACH4002-48G+3X-L3P	943 878-301	Layer 3, Professional Management chassis
• Fixed ports: Three 10Gigabit Ethernet XFP sockets and 16 Gigabit Ethernet ports (100/1000 Mbps SFP dual speed socket or 10/100/1000 Mbps RJ45) • Media modules: Four sockets (8 ports max each) for total 32 ports 10/100/1000 Mbps (Media modules sold separately – see page 26. For software functionality – see page 27)		

Gigabit Backbone Layer 2/3 Rack-mount Switches



MACH4000 Media Modules, Power Supplies and Accessories

The media modules provide maximum flexibility, with 10/100/1000 Mbps over Twisted Pair or 100/1000/10000 Mbps over optic fiber with data transmission ranges of more than 80 km.

M4-8TP-RJ45 M4-FAST 8-SFP M4-FAST 8TP-RJ45-PoE M4-GIGA 8-SFP

MACH4000 Media Modules		
Part No.	**Order No.**	**Ports**
M4-8TP-RJ45	943 863-001	8 x 10/100/1000 Mbps RJ45 (no 1000 Mbps with MACH4002 48+4G)
M4-FAST 8-SFP	943 864-001	8 x 100 Mbps SFP sockets*
M4-FAST 8TP-RJ45-PoE	943 873-001	8 x 10/100 Mbps RJ45 ports with Power over Ethernet
M4-GIGA 8-SFP	943 879-001	8 x 100/1000 Mbps SFP sockets* (not for MACH4002 48+4G)

NOTE: *SFPs need to be purchased separately (see Accessories on page 36for SFPs).

MACH4000 Internal Power Supplies		
Part No.	**Order No.**	**Voltage**
M4-S-AC/DC 300W	943 870-001	110 – 240 VAC internal power module (redundancy in combination with M4-POWER chassis and power supply)
M4-S-24VDC 300W	943 871-001	24 VDC internal power module (redundancy power input)
M4-S-48VDC 300W	943 872-001	48 VDC internal power module (redundancy power input)

MACH4000 External Power Supplies		
Part No.	**Order No.**	**Voltage**
M4-POWER	943 874-001	Rack-mounted external power chassis. Requires at least one M4-P power supply (more for redundant power), with a maximum of 3 power supplies
M4-P AC/DC 300W	943 875-001	110 – 240 VAC power module for use with external M4-POWER chassis
M4-P DC 24V 300W	943 876-001	24 VDC power module for use with external M4-POWER chassis (redundant power input)
M4-P DC 48V 300W	943 877-001	48 VDC power module for use with external M4-POWER chassis (redundant power input)
M4-POWERCABLE II	943 922-001	Spare power cable to connect M4-POWER and MACH4002. 1 meter

MACH4000 Accessories		
Part No.	**Order No.**	**Voltage**
M4-AIR	943 869-001	Fan module (included with chassis), has 4 redundant fans with fault notification
M4-AIR-L	942 005-001	Fan module for MACH 4002 chassis, four redundant fans with reduced speed, lower noise level
M4-RACKMOUNT-50	943 951-001	19" fixing brackets offer 50 mm more space in the front of the switch for cables
M4-RACKMOUNT	943 951-101	19" spare fixing brackets

M4-AIR. Fan module (included with chasis), has 4 redundant fans with fault notification

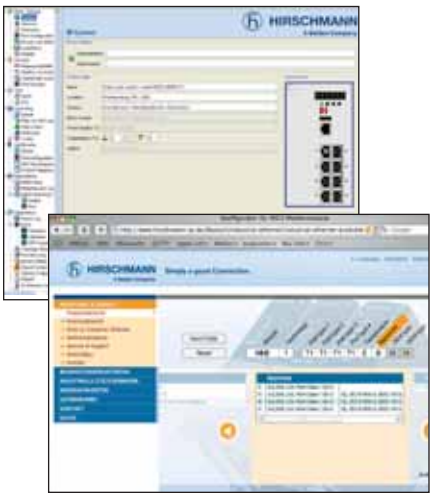
Management Software Functionality

Technical Tips and Tools

An excellent documentation resource for everything pertaining to Hirschmann's hardware and software can be found on our ftp server - **ftp.hirschmann-usa.com**

The different management versions are listed and explained on the tabel to the right. Alternatively, you may also access our online switch at **http://demo.hirschmann-usa.com** to see the management functionality live in one of our switches.

Please note that you will need the Java Runtime Environment (JRE) to view the content. If you experience difficilties accessing the switch, it may be due to the policies of some companies to have their firewalls block this two-way data traffic.



EtherNet/IP (Allen-Bradley) and PROFINET (Siemens) users please note that Hirschmann's managed switches are easily integrated into the respective PLCs/HMIs, enabling switch management from/by the PLC/HMI. The seamless integration also provides network/switch status to the PLC/HMI for alarming and network statistics. Please refer to page 38 for more information on the industrial profiles Enjoy the benefits of direct, hassle-free configuration with our online tool at **www.beldensolutions.com**

Management Software Functionality

Basic	L2 Enhanced	L2 Professional	L3 Enhanced	L3 Professional	Plug & Play
		●	●	●	DHCP server per port
		●	●	●	Multiple stored firmware versions
	●	●	●	●	IP address conflict detection
●	●	●	●	●	Automatic configuration undo
●	●	●	●	●	DHCP relay agent, option 82
●	●	●	●	●	External flash memory
●	●	●	●	●	Auto Config and firmware restore
					Security
		●	●	●	Radius - IEEE 802.1x
		●	●	●	SSH
		●	●	●	SNMP, v3 encryption
		●	●	●	Port security IP, multiple addresses per port
	●	●	●	●	Port security MAC, multiple addresses per port
					Switching
		●	●	●	GVRP
		●	●	●	Multicast GMRP – 802.1D
		●	●	●	Optimized for video multicasting
	●	●	●	●	Static VLAN, Q-MIB – 802.3ac, 802.1Q
	●	●	●	●	Port priority – 802.1D/p
●	●	●	●	●	Broadcast, unicast, multicast limiter
●	●	●	●	●	Multicast IGMP querier
●	●	●	●	●	Multicast IGMP snooping
					Redundancy
		●	●	●	Link aggregation – 802.3ad
		●	●	●	MSTP – 802.1s
	●	●	●	●	Redundant net coupling
●	●	●	●	●	RSTP – 802.1w
●	●	●	●	●	HIPER-Ring redundancy manager
●	●	●	●	●	HIPER-Ring
●	●	●	●	●	MRP-Ring
					Industrial Profile
	●	●	●	●	PROFINET Profile
	●	●	●	●	EtherNet/IP Profile
					Routing
				●	DVMRP/PIM DM multicast routing
				●	OSPF
			●	●	RIP v1/v2
			●	●	Static routing
			●	●	VRRP, HiVRRP (< 500 ms) router redundancy
			●	●	Layer 3 ACL
					Diagnostic
		●	●	●	n port to 1 port mirroring
		●	●	●	Text configuration file
		●	●	●	Cable diagnostic TX
	●	●	●	●	Automatic configuration check
	●	●	●	●	HUB functionality (disable learning)
	●	●	●	●	Syslog
●	●	●	●	●	Log file
●	●	●	●	●	Port mirroring
●	●	●	●	●	Topology discovery 802.1ad

Enjoy the benefits of direct, hassle-free configuration with our online tool at: **www.beldensolutions.com**

Wireless Ethernet

Wireless Ethernet Access Point/Clients
BAT Series

With applications where the reliability of a hard-wired connection is not practical (or feasible), a wireless solution may be the best solution. The new line of BAT wireless Ethernet access points/clients/bridges has an extensive feature list that sets it apart from your average commercially-available options - **now supporting 802.11n.**

All BATs can be powered via 24 VDC and/or PoE (the RAILs even include a 110/220VAC wall adapter).

BAT54

BAT300

BAT54-F

BAT300-F

BAT54-Rail and -Rail Client

- 802.11b/g (2.4 GHz) and 802.11a/h (5 GHz)
- Simultaneous 2.4/5 GHz communication and redundant WLAN for BAT54-Rail
- Redundant WLAN connections (BAT54-Rail)
- Up to 108 Mbps bandwidth
- IEEE 802.11i and 802.1x security
- Redundant 24 VDC power inputs (incl. IEEE 802.3af PoE support)
- Redundant connections using RSTP
- Built-in IP routing, fast roaming and firewall
- Operating temperature of – 30° C to + 50° C
- Includes two 3 dBi dipole dual-band antennas and two 50 Ohm terminators (client: 1 antenna and 1 terminator)

BAT300-Rail

- Same features and functionality as BAT54-Rail above, but as a single WLAN with support for 802.11a/b/g/h/n.
- 802.11b/g (2.4 GHz) and 802.11a/h/n (5 GHz)
- Redundant WLAN connections
- Up to 300 Mbps bandwidth (802.11n draft 2.0 with MSC15)
- Includes three 3 dBi dipole dual-band antennas

BAT300-F and BAT300-F FCC

- IEEE 802.11n (draft 2.0) Waterproof to IP67 standard
- 1 x WLAN interface
- Up-to 8 x SSID's per WLAN interface
- Two LAN ports 10/100BASE-TX
- Autosensing, Power over Ethernet (POE), per IEEE 802.3af - Includes three 3 dBi dipole dual-band antennas

BAT54-F and BAT54-F X2

- Same features and functionality as BAT54-Rail above
- Waterproof to IP67 standard
- BAT54-F X2 also approved for ATEX zone 2
- Rugged design for operation in extreme conditions
- Designed to operate between – 20° C and + 55° C
- Full shock and vibration protection
- Includes two 3 dBi dipole dual-band antennas and two 50 Ohm terminators

BAT SERIES, Access Point/Client/Bridge, 802.11a/b/g/h/i/n - DIN Rail Mount		
Part No.	**Order No.**	**Description**
BAT54-Rail	943 926-001	DIN rail mounted Access Point/Client Bridge w/antennas (802.11a/b/g/h/i) 4 x RP-SMA connector, (non-U.S. applications only)
BAT54-Rail-FCC	943 926-002	DIN rail mounted Access Point/Client Bridge w/antennas (802.11a/b/g/h/i) 4 x RP-SMA connector, (U.S. applications)
BAT54-Rail Client	943 926-501	DIN rail mounted Access Client w/antennas (802.11a/b/g/h/i) 2 x RP-SMA connector, (non-U.S. applications)
BAT54-Rail Client-FCC	943 926-502	DIN rail mounted Access Client w/antennas (802.11a/b/g/h/i) 2 x RP-SMA connector, (U.S. applications)
BAT300-Rail	943 989-001	DIN rail mounted Access Point/Client Bridge w/antennas (802.11a/b/g/h/i/n) 3 x RP-SMA connector, (non-U.S. applications only)
BAT300-Rail FCC	943 989-101	DIN rail mounted Access Point/Client, Bridge w/antennas (802.11a/b/g/h/i/n) 3 x RP-SMA connector, (U.S. applications)

Wireless Ethernet

BAT SERIES, Access Point/Client, 802.11a/b/g/h/i/n - IP 67 / Hard Mount		
Part No.	**Order No.**	**Description**
BAT54-F	943 959-111	IP67 Access Point, Client, Bridge w/out antennas (802.11a/b/g/h/i) 4 x N connector (non-U.S. applications only)
BAT54-F FCC	943 959-011	IP67 Access Point, Client, Bridge w/out antennas (802.11a/b/g/h/i) 4 x N connector (U.S. applications only)
BAT54-F X2	943 959-101	IP67 ATEX Zone II - Access Point, Client, Bridge w/out antennas (802.11a/b/g/h/i) 4 x N connector (non-U.S. applications only)
BAT54-F X2 FCC	943 959-001	IP67 ATEX Zone II - Access Point, Client, Bridge w/out antennas (802.11a/b/g/h/i) 4 x N connector (U.S. applications only)
BAT300-F	943 959-118	Dualband Ruggedized Hard Mount Access Point, Client, w/ single independent radio modules w/ IEEE 802.11n (draft 2.0) for Harsh Environments
BAT300-F FCC	943 959-018	Dualband Industrial Performacne Hard Mount Access Point, Client, w/ IEEE 802.11n (draft 2.0) for Harsh Environments

Wireless Ethernet Antennas

BAT-ANT-N-6ABG-IP65

BAT-ANT-N-MiMoDB-5N-IP65

BAT-ANT-N-MiMo5-9N-IP65

BAT-ANT-N-8G-DS-IP65

BAT SERIES, Dual-Frequency Antennas / 802.11a/b/g//n (2.4 GHz and 5 GHz)				
Part No.	**Order No.**	**Type**	**Standards**	**Est. Max Outdoor Range**
BAT-ANT-N-6ABG-IP65	943 981-004	Dual Band Omni-Directional	802.11a/b/g	2.99km
BAT-ANT-N-MiMoDB-5N-IP65	943 981-012	Dual Band Omni-Directional, 2.4GHz 3.5dBi, 5GHz 5.5 dBi, MiMo	802.11a/b/g/n	0.5km
BAT-ANT-6ABG-IP65	943 981-007	Dual Band Omni-Directional, 2,4GHz 6dBi, 5GHz 8dBi	802.11a/b/g	0.89km
BAT SERIES, Antennas / 802.11a/n (5 GHz)				
Part No.	**Order No.**	**Type**	**Standards**	**Est. Max Outdoor Range**
BAT-ANT-N-5A-IP65	943 981-003	5GHz Omni-Directional, 5dBi gain	802.11a	0.45km
BAT-ANT-N-9A-DS-IP65	943 981-010	5GHz, Directional antenna, 8dBi gain w/polarization diversity	802.11a/n	1.12km
BAT-ANT-N-MiMo5-9N-IP65	943 981-013	5GHz, Directional antenna, 9dBi gain, MiMo	802.11a/n	1.2km
BAT-ANT-N-18A-IP65	943 981-006	5GHz, Directional antenna, 18dBi gain	802.11a	8.91km
BAT-ANT-N-23A-V-IP65	943 981-007	5GHz, Directional antenna, 23dBi gain	802.11a	15.84km
BAT-ANT-N-23A-VH-IP65	943 981-008	5GHz, Directional antenna, 23dBi gain w/polarization diversity	802.11a/n	15.84km
BAT SERIES, Antennas / 802.11b/g/n (2.4 GHz)				
Part No.	**Order No.**	**Type**	**Standards**	**Est. Max Outdoor Range**
BAT-ANT-N-6G-IP65	943 981-002	2.4GHz Omni-Directional, 6dBi gain	802.11b/g	2.98km
BAT-ANT-N-8G-DS-IP65	943 981-009	2.4GHz Directional, 8dBi gain w/polarization diversity	802.11b/g/n	3.75km
BAT-ANT-N-14G-IP65	943 981-005	2.4GHz Directional, 14dBi gain	802.11b/g	7.49km
BAT-ANT-N-LC-G-50m-IP65	943 981-001	2.4GHz Leaky Coax, 50 meter (1 x N connector)	802.11b/g	
BAT-ANT-N-LC-G-100m-IP65	943 981-101	2.4GHz Leaky Coax, 100 meter (2 x N connectors)	802.11b/g	
BAT SERIES, Accessories				
Part No.	**Order No.**	**Type**	**Standards**	
BAT54-F MAST MOUNT	943 966-001	Mast Mounting Kit for BAT (IP67) products		
BAT-CLB-2 N (m-m)	943 903-513	Antenna cable 2m, N Male to N Male	802.11a/b/g/n	
BAT-CLB-2 N m-f	943 903-514	Antenna cable 2m, N male - N Female	802.11a/b/g/n	
BAT-CLB-15 N m-f	943 903-515	Antenna cable 15m, N Male - N Female	802.11a/b/g/n	
BAT-PIGTAIL	943 903-360	Used to adapt BAT Rail products to N-style connector	802.11a/b/g/n	
BAT-ANT Protector m-f	943 903-373	RF Surge Arrestor, N male - N Female	802.11a/b/g/n	
BAT-LAN Protector IP68	943 903-374	IP68 RF Surge arrestor, N male to N female	802.11a/b/g/n	

Wireless LAN Contollers

Wireless Local Area Network (WLAN) Contollers

BAT-Contoller

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 Controler (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-rail 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 (in preparation)
- 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

Port-Type and Number			
			
Type	BAT-Controller WLC25	BAT-Controller WLC50	BAT-Controller WLC100
Order Number	942 034-001	942 034-002	942 034-003
Smart Controller Technology	The WLAN Controller uses wireless cell or SSID to support a number of ways of transmitting user data: • Bridged directly to the LAN (maximum performance e.g. for 802.11n-based access points) • Strictly separated from the LAN via VLAN (e.g. for WLAN guest access) • Tunneled centrally to the controller * (layer 3 tunneling across IP networks)		
Supported Access Points	All BAT54 and BAT300 access points		
Interfaces	4 individual ports, 10/100/1000 Mbit/s Ethernet		
USB 2.0 Host Port	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)		
Management Software Included	Serial configuration interface / COM port (8 pole mini-DIN): 9,600–115,000 Baud, can be used to connect an analog /GPRS modem		
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		

* Feature currently in preparation

Security

Firewall/VPN Router

EAGLE20 Series

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.

Features & Benefits

- Scalable security functionality: pure firewall, and VPN router
- 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 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

EAGLE SERIES, Firewall/VPN Router			
Part No.	**Order No.**	**Trusted Port**	**Untrusted/Public Port**
EAGLE20 TX/TX	943 987-001	10/100BASE-TX, RJ45	10/100BASE-TX, RJ45
EAGLE20 TX//MM	943 987-002	10/100BASE-TX, RJ45	100BASE-FX-MM, SC
EAGLE20 TX/SM	943 987-003	10/100BASE-TX, RJ45	100BASE-FX-SM, SC
EAGLE20 MM/TX	943 987-004	100BASE-FX-MM, SC	10/100BASE-TX, RJ45
EAGLE20 MM/MM	943 987-005	100BASE-FX-MM, SC	100BASE-FX-MM, SC

Interfaces	
Item	**Description**
• Supply fault relay output	1 x pluggable terminal block, 6 pin
• V.24 port	1 x RJ11 socket, serial interface for device configuration
• USB interface	1 x USB for connection to ACA 21-USB

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

Service	
Item	**Description**
• Management	Command Line Interface (CLI), web interface, auto configuration adapter (ACA 21-USB), DHCP, HiDiscovery, Industrial HiVision
• Diagnostics	LEDs (power, link status, data, fault, ACA (V24), relay contact (24 VDC/1 A), Log file, Syslog, series configuration check
• Protocols	serial, HTTPS, SSH, SNMP v1/v2/v3), LLDP
• Further features	DHCP server/client, DHCP relay/option 82, DynDNS, firewall-access via V.24 (PPP), SNTP, VLAN support (IEEE 802.1pQ), port-forwarding

Redundancy	
Item	**Description**
• Redundancy functions	Use in redundant network-/ring coupling, firewall redundancy (layer 4), redundant 24 V power supply

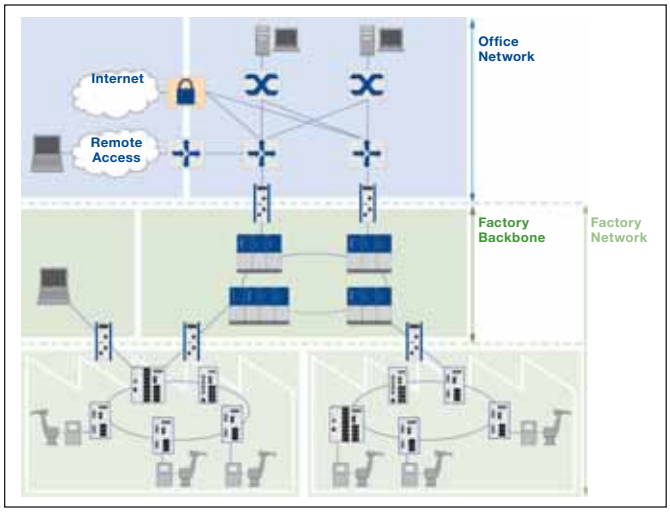


Illustration: Example of firewall/VPN router installation (EAGLE20) in a factory setting.

The Ultimate Zone Level Security™ Switch For Your Control Network

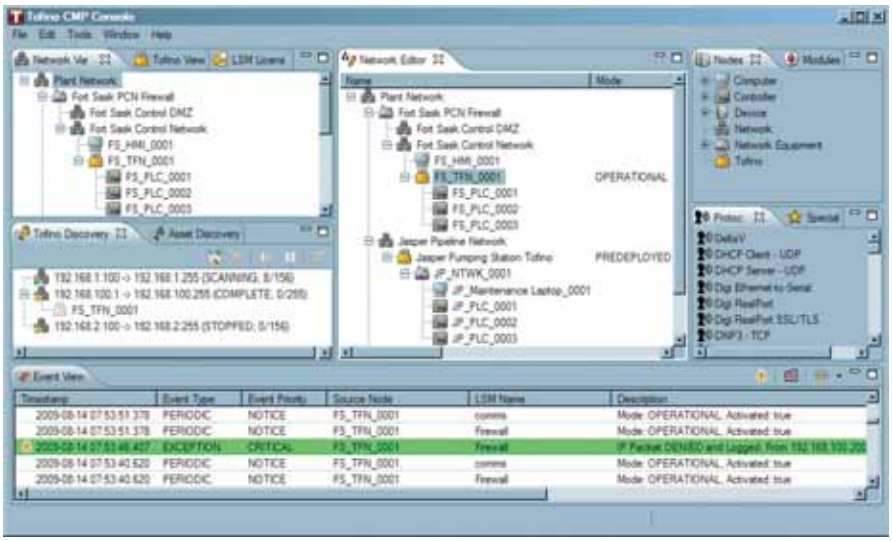
EAGLE Tofino™

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.

Features & Benefits

- Securely track network devices and easily create firewall rules
- Advanced cyber threat and safety protection for your Modbus devices
- A VPN system that is easy to deploy and does not risk industrial processes
- Intuitive drag & drop - limited IT knowledge required
- Enhanced security and safety
  - -Extend Cyber Security down into the control network
- Simplified regulatory and standards compliance
  - -FERC / NERC CIP
  - -ANSI / ISA-99
  - -IEC 62443



Central Management Platform

EAGLE20 Tofino™ Hardware		
Part No.	**Order No.**	**Description**
EAGLE20 Tofino TX/TX	943 987-501	EAGLE20 Tofino: Untrusted port - TX, trusted port - TX
EAGLE20 Tofino TX/MM	943 987-502	EAGLE20 Tofino: Untrusted port - TX, trusted port - MM
EAGLE20 Tofino MM/TX	943 987-504	EAGLE20 Tofino: Untrusted port - MM, trusted port - TX
EAGLE20 Tofino MM/MM	943 987-505	EAGLE20 Tofino: Untrusted port - MM, trusted port - MM
EAGLE Tofino™ Centralized Management Platform		
Part No.	**Order No.**	**Description**
EAGLE Tofino CMP	942 016-003	For up to 3 Tofinos
EAGLE Tofino CMP	942 016-005	For up to 5 Tofinos
EAGLE Tofino CMP	942 016-010	For up to 10 Tofinos
EAGLE Tofino CMP	942 016-020	For up to 20 Tofinos
EAGLE Tofino CMP	942 016-050	For up to 50 Tofinos
EAGLE Tofino CMP	942 016-100	For unlimited Tofinos
EAGLE20 Tofino™ - Loadable Security Modules (LSM's). One Required per EAGLE20 Tofino for Operation		
Part No.	**Order No.**	**Description**
EAGLE Tofino Firewall LSM	942 016-110	Firewall Loadable Security Module for EAGLE Tofino
EAGLE Tofino Security Asset Management LSM	942 016-111	Security Asset Management Loadable Security Module for EAGLE Tofino
EAGLE Tofino Modbus TCP Enforcer LSM	942 016-112	Modbus TCP Enforcer Loadable Security Module for EAGLE Tofino
EAGLE Tofino OPC Enforcer LSM	942 016-117	Modbus OPC Enforcer Loadable Security Module for EAGLE Tofino
EAGLE Tofino VPN Server LSM	942 016-113	Virtual Private Network Server Loadable Security Module for EAGLE Tofino
EAGLE Tofino VPN Client LSM	942 016-114	Virtual Private Network Client Loadable Security Module for EAGLE Tofino
EAGLE Tofino Event Logger LSM	942 016-115	Event Logger Loadable Security Module for EAGLE Tofino
EAGLE20 Tofino™ - VPN License		
Part No.	**Order No.**	**Description**
EAGLE Tofino VPN PC Client License	942 016-116	Virtual Private Network PC Client license for EAGLE Tofino

Ethernet Converters with Serial Interface

IOLAN DS Converters with Serial Interfaces

IOLAN DS / SDS

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

Port-Type and Description				
				
Type	IOLAN DS1 T	IOLAN SDS3 M	IOLAN SDS4 HL	IOLAN SDS16C HV
Order Number	942 036 - 001	942 036 - 201	942 036 - 101	942 036 - 301
Number of Serial Ports	1	3	4	16
Port Interfaces				
Serial Port Interface	Software selectable RS-232/422/485 on DB9M	Software selectable EIA-232/422/485 on RJ45	Software selectable EIA-232/422/485 on RJ45	Software selectable RS232/RS485/RS422 DTE on RJ45 - RS485: full and half duplex
Serial Port Speeds	50 bps to 230 Kbps with customizable baud rate support			
Data Bits	5, 6, 7, 8, 9-bit protocol support			
Parity	Odd, Even, Mark, Space, None			
Flow Control	Hardware, Software, Both			
Local Console Port	RS232 on Serial Port			RS232 on RJ45 with DB9 Adapter (provided)
Network	1x 10/100-base TX Ethernet RJ45			2x 10/100/1000-base TX Ethernet RJ45
	Software selectable Ethernet speed 10/100 Autonegotiation			Software selectable Ethernet, speed 10/100/1000, Autonegotiation
	Software selectable Half/Full/Auto duplex			
Power Supply				
Input Voltage Range	9-30 V DC			88-300 V DC or 85-265 V A, C (47-63 Hz)
Ambient Conditions				
Operating Temperature	-40°C to 70°C	0°C to 55°C	-40°C to 70°C	-40°C to 70°C
Approvals				
	FCC	FCC	FCC	FCC
Safety Standard for IT Equipment	IEC 60950-1	IEC 60950-1	IEC 60950-1	IEC 60950-1
Substation				IEC 61850-3, IEEE1613
Hazardous Locations			ATEX Class 1 Zone 2, ANSI/ISA - 12.12.01 - 2007 Class 1 Division 2	

Ethernet Converters with Serial Interface (Continued)

Adapter for IOLAN DS, SDS

Order Number	Type	Description	Application
942 048 - 001	DBA0010	DB25F	
942 048 - 002	DBA0011	DB25M	Cisco/HP/IBM/Sun
942 048 - 003	DBA0013	DB25M PC-Pinout	Modem
942 048 - 004	DBA0020	DB9F	APC/Checkpoint/Dell/Extreme Networks/F5/Juniper/Nortel/Sun/HP/IBM
942 048 - 005	DBA0021	DB9M	Sun/Zyxel
942 048 - 006	DBA0023	DB9M PC-Pinout	All manufacturers with provided cable for PC/notebook
942 048 - 007	DB9 to PRL/config connector	DB9F	Perle IOLAN and IOLAN C Console *
942 048 - 008	DBA0031	RJ45M-RJ45F Cisco/Sun	Cisco/Sun/Juniper

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

Adapter for IOLAN SDS C

Order Number	Type	Description	Application
942 048 - 009	DBA0010C	DB25F	
942 048 - 010	DBA0011C	DB25M	Cisco/HP/IBM/Sun
942 048 - 011	DBA0013C	DB25M PC-Pinout	Modem
942 048 - 012	DBA0020C	DB9F	APC/Checkpoint/Dell/Extreme Networks/F5/Juniper/Nortel/Sun/HP/IBM
942 048 - 013	DBA0021C	DB9M	Sun/Zyxel
942 048 - 014	DBA0023C	DB9M PC-Pinout	All manufacturers with provided cable for PC/notebook
942 048 - 015	DBA0031C	RJ45M-RJ45F Cisco/Sun	Cisco/Sun/Juniper

DinRail Adapter

Order Number	Type	Application
942 048 - 016	DIN Rail Mount Kit 1	DIN Rail Mounting Kit for 1 Port IOLAN DS
942 048 - 017	DIN Rail Mount Kit 2	DIN Rail Mounting Kit for 4 port IOLAN SDS wall mount models and Stand-Alone Media Converter

Hardened Transceivers and Fiber Modems/Repeaters

Rail Transceivers and Hubs

SPIDER Ethernet Transceiver

Part No.	Order No.
SPIDER 1TX/1FX MM	943 890-001
SPIDER 1TX/1FX SM	943 891-001

- 1 x 10/100Base-TX, RJ45
- 1 x 100Base-FX, MM or SM, SC sockets
- 1 pluggable terminal block, 24 VDC

RT2 Ethernet Transceiver

Part No.	Order No.
RT2-TX/FX	943 658-002
RT2-TX/FX-SM	943 658-032

- 1 x 10/100Base-TX, RJ45
- 1 x 100Base-FX, MM or SM, SC sockets
- 1 pluggable terminal block, redundant 24 VDC inputs, link loss alarm, power loss alarm, fault relay output

Fieldbus Transceivers/Fiber Modems

RS232 Media Converters

Part No.	Order No.	Description
OZDV 2451P	943 316-021	1 electrical and 1 optical port, bus-powered, POF 0-60 m
OZDV 2451G	943 299-021	1 electrical and 1 optical port, bus-powered, Multimode 0-2000 m
OZDV 2471P	943 340-021	1 electrical and 1 optical port, POF 0-100M, HCS 0-2100 m
OZDV 2471G	943 341-021	1 electrical and 1 optical port, Multimode 0-6700 m
OZDV 2471G-1300	933 990-021	1 electrical and 1 optical port, Singlemode 0-32 km

Hardened Fiber Modems/Repeaters (Continued)

RS485 Repeaters		
Part No.	**Order No.**	**Description**
OZD 485 G12 BASIC	943 893-321	1 electrical and 2 optical ports, Multimode-line capable
OZD 485 G12 PRO	943 894-321	1 electrical and 2 optical ports, predictive maintenance, Multimode – redundant ring capable
OZD 485 G12-1300 PRO	943 895-321	1 electrical and 2 optical ports, predictive maintenance, Singlemode – redundant ring capable

PROFIBUS Repeaters		
Part No.	**Order No.**	**Description**
OZD PROFI 12M P11	943 728-221	for plastic fiber,1 electrical,1 optical port
OZD PROFI 12M P12	943 728-321	for plastic fiber,1 electrical, 2 optical ports redundant ring capable
OZD PROFI 12M G11	943 727-221	1electrical, 1 optical port, multimode
OZD PROFI 12M G12	943 727-321	1electrical, 2 optical ports, multimode – redundant ring capable
OZD PROFI 12M G12 EEC	943 730-321	1 electrical, 2 optical ports, multimode – redundant ring capable, EEC*
OZD PROFI 12M G11 1300	943 729-221	1 electrical, 1 optical port, singlemode
OZD PROFI 12M G12 1300	943 729-321	1 electrical, 2 optical ports, singlemode – redundant ring capable
OZD PROFI 12M G12 1300 EEC	943 256-321	1 electrical, 2 optical ports, singlemode – redundant ring capable, EEC*
OZD PROFI 12M P11 PRO	943 904-221	1 electrical, 1 optical port, predictive maintenance, POF
OZD PROFI 12M P12 PRO	943 904-321	1 electrical, 2 optical ports, predictive maintenance, POF, redundant ring capable
OZD PROFI 12M G11 PRO	943 905-221	1 electrical, 1 optical port, predictive maintenance, multimode

PROFIBUS Repeaters (Continued)		
Part No.	**Order No.**	**Description**
OZD PROFI 12M G12 PRO	943 905-321	1 electrical, 2 optical ports, predictive maintenance, multimode, redundant ring capable
OZD PROFI 12M G12 EEC PRO	943 907-321	1 electrical, 2 optical ports, predictive maintenance, multimode, redundant ring capable, EEC*
OZD PROFI 12M G11-1300 PRO	943 906-221	1 electrical, 1 optical port, predictive maintenance, singlemode
OZD PROFI 12M G12-1300 PRO	943 906-321	1 electrical, 2 optical ports, predictive maintenance, singlemode, redundant ring capable
OZD PROFI 12M G12-1300 PRO	943 908-321	1 electrical, 2 optical ports, predictive maintenance, singlemode, redundant ring capable, EEC*

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

Profibus ATEX Zone 1 Repeaters		
Part No.	**Order No.**	**Description**
OZD PROFI G12DU ATEX 1	943 881-321	1 electrical, 2 optical ports, predictive maintenance, multimode, redundant ring capable, cabinet assembly
OZD PROFI G12DK ATEX 1	943 882-321	1 electrical, 2 optical ports, predictive maintenance, multimode, redundant ring capable, plastic IP67 housing for mounting in ATEX-certified housing
OZD PROFI G12DE ATEX 1	943 883-321	1 electrical, 2 optical ports, predictive maintenance, multimode, redundant ring capable, stainless steel IP67 housing
OZD SFK ATEX 1	943 884-001	Plastics cap with inspection window.

Profibus Plug-on Repeaters		
Part No.	**Order No.**	**Description**
OZD ProfiPlug P11	943 924-221	1 electrical, 1 optical port, bus-powered, POF 0 – 75 m, HCS 0 – 100 m
OZD ProfiPlug P21	943 924-321	2 electrical, 1 optical port, bus-powered, POF 0 – 75 m, HCS 0 – 100 m

Hardened Fiber Modems/Repeaters (Continued) / Accessories

Geniusbus Repeaters		
Part No.	**Order No.**	**Description**
OZD GENIUS G12	933 989-021	1 electrical, 2 optical ports, redundant ring capable
OZD GENIUS G12 1300	934 233-021	1 electrical, 2 optical ports, singlemode, redundant ring capable

Modbus + Repeaters		
Part No.	**Order No.**	**Description**
MODBUS PLUS G12	943 740-021	1 electrical, 2 optical ports, redundant ring capable
MODBUS PLUS G12 1300	943 821-021	1 electrical, 2 optical ports, singlemode, redundant ring capable

WorldFIP Repeaters		
Part No.	**Order No.**	**Description**
OZD FIP G3	933 847-321	1 electrical, 2 optical ports, multimode, redundant ring capable
OZD FIP G3 T	933 847-521	1 electrical, 2 optical ports, multimode, redundant ring capable, bus termination included

SFP + XFD Transceiver Modules

SFP + XFD Transceiver Modules		
Part No.	**Order No.**	**Description**
M-FAST SFP-MM/LC	943 865-001	100BASE-FX, 5 km 50/125 µm MM, 4 km 62.5/12.5 µm MM
M-FAST SFP-MM/LC EEC	943 945-001	100BASE-FX, 5 km 50/125 µm MM, 4 km 62.5/12.5 µm MM
M-FAST SFP-SM/LC	943 866-001	100BASE-FX, 25 km 9/125 µm SM
M-FAST SFP-SM/LC EEC	943 946-001	100BASE-FX, 25 km 9/125 µm SM
M-FAST SFP-SM+/LC	943 867-001	100BASE-FX, 25 – 65 km 9/125 µm SM
M-FAST SFP-SM+/LC EEC	943 947-001	100BASE-FX, 25 – 65 km 9/125 µm SM
M-FAST SFP-LH/LC	943 868-001	100BASE-FX, 55 – 140 km 9/125 µm SM
M-FAST SFP-LH/LC EEC	943 948-001	100BASE-FX, 55 – 140 km 9/125 µm SM
Gigabit Ethernet Transceivers		
Part No.	**Order No.**	**Description**
M-SFP-SX/LC	943 014-001	1000Base-SX, 550 m 50/125 µm MM, 275 m 62.5/125 µm MM
M-SFP-SX/LC EEC	943 896-001	1000Base-SX, 550 m 50/125 µm MM, 275 m 62.5/125 µm MM
M-SFP-LX/LC	943 015-001	1000Base-LX, 550 m 50/125 µm MM, 550 m 62.5/125 µm MM, 20 km 9/125 µm SM
M-SFP-LX/LC EEC	943 897-001	1000Base-LX, 550 m 50/125 µm MM, 550 m 62.5/125 µm MM, 20 km 9/125 µm SM
M-SFP-MX/LC	942 035-001	1000Base-MX, 2 km with good quality 50/125u (62.5u) MM
M-SFP-LX+/LC	942 023-001	1000Base-LX, 40km with 9/125u SM
M-SFP-LX+/LC EEC	942 024-001	1000Base-LX, 40km with 9/125u SM, -40 °C to +85 °C
M-SFP-LH/LC	943 042-001	1000Base-LX, 16 – 80 km 9/125 µm SM-LH
M-SFP-LH/LC-EEC	943 898-001	1000Base-LX, 70km with 9/125u SM, -40 °C to +85 °C
M-SFP-LH+/LC	943 049-001	1000Base-LX, 44 – 120 km 9/125 µm SM-LH
M-SFP-TX/RJ45	943 977-001	Gigabit RJ45 SFP

Gigabit Ethernet Bi-Directional Transceivers (Single Fiber Strand)		
Part No.	**Order No.**	**Description**
M-SFP-BIDI-Bundle LX/LC EEC	943 974-101	1000Base-LX, 20 km 9/125 µm SM
M-SFP-BIDI-Bundle LH/LC EEC	943 975-101	1000Base-LX, 23 – 80 km 9/125 µm SM-LH
M-SFP-BIDI Type A LH/LC EEC	943 975-001	1000Base-LX Type A with LC connector, extended temperature range, – 40° C to + 85° C
M-SFP-BIDI Type A LX/LC EEC	943 974-001	1000Base-LX Type A with LC connector, extended temperature range, – 40° C to + 85° C
M-SFP-BIDI Type B LH/LC EEC	943 975-002	1000Base-LX Type B with LC connector, extended temperature range, – 40° C to + 85° C
M-SFP-BIDI Type B LX/LC EEC	943 974-002	1000Base-LX Type B with LC connector, extended temperature range, – 40° C to + 85° C

Accessories

10Gigabit Ethernet Transceivers		
Part No.	**Order No.**	**Description**
M-XFP-ZR/LC	943 921-001	10GBASE-SX, 40 – 80 km 9/125 µm SM
M-XFP-ER/LC	943 920-001	10GBASE-SX, 10 – 40 km 9/125 µm SM
M-XFP-LR/LC	943 919-001	10GBASE-SX, 2 – 10 km 9/125 µm SM
M-XFP-SR/LC	943 917-001	10GBASE-SX, 33 m 50/125 µm MM or 300 m w/modal bandwidth 2000 [MHz x km] fiber

Power Supplies and Programming/Configuration Tools

Power Supplies		
Part No.	**Order No.**	**Description**
RPS15	943 662-015	24 V DC rail power supply unit 1.3A at 100 - 240 V AC
RPS30	943 662-003	24 V DC rail power supply unit 1.3A
RPS80 EEC	943 662-080	24 V DC rail power supply unit 3.0A, – 25° C up to + 70° C
RPS120 EEC	943 662-120	24 V DC rail power supply unit 4.5A, – 25° C up to + 70° C
RPS120 EEC (CC)	943 662-121	Same as RPS120 EEC, accept with Conformal Coating
RPS60/48 V EEC	943 952-001	48 V DC rail power supply unit 1.25A, – 10° C up to + 70° C
RPS90/48V HV, PoE	943 979-001	48 V DC PoE rail power supply unit 1.9A, – 40° C up to + 50° C
RPS90/48V LV, PoE	943 980-001	48 V DC PoE rail power supply unit 1.9A, – 25° C up to + 60° C
PSW 5-24	943 008-001	5 V DC Plug-in rail power supply 0° C up to + 40° C
PC150/36V/48V-IP67	943 968-001	DC/DC converter with 36 V/48 V power output, IP 67 rated
PC150/72V/48V-IP67	943 968-001	DC/DC converter with 72 V/48 V power output, IP 67 rated

ACA - Programming and Configuration Backup

Programming and Configuration Backup		
Part No.	**Order No.**	**Description**
ACA 21-USB EEC	943 271-002	USB configuration adapter for storage/backup and device replacement of (managed) RS, MS and MACH switches as well as EAGLE firewalls
ACA21-M12 EEC	943 913-002	M12 configuration adapter for storage/backup and device replacement of (managed) Octopus switches devices
ACA11 EEC	943 751-002	Similar to above ACA adapters, but communication via the device's RJ11 RS232 interface
ACA11-M12 (EEC)	943 972-001	M12 configuration adapter for storage/backup and device replacement of IP67 BAT (wireless) devices
ACA11-miniDIN (EEC)	943 973-001	Mini DIN configuration adapter for storage/backup and device replacement of DIN rail mounted BAT (wireless) devices
Serial/Terminal Cable	943 301-001	Terminal cable for managing and configuring managed switches via the RJ11 RS232 interface

ACA 21-USB EEC

ACA11-M12 (EEC)

ACA11 EEC

ACA11-miniDIN (EEC)

Serial/Terminal Cable

Switch and Network Management

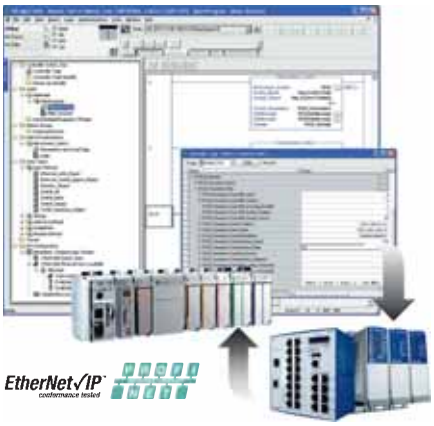
Industrial Profiles

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 automatic 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 Management 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.

Industrial HiVision	
Part No.	**Order No.**
943 156-025	Industrial HiVision, to view up to 25 nodes
943 156-050	Industrial HiVision, to view up to 50 nodes
943 156-100	Industrial HiVision, to view up to 100 nodes
943 156-250	Industrial HiVision, to view up to 250 nodes
943 156-500	Industrial HiVision, to view up to 500 nodes

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.

Hirschmann Competence Center

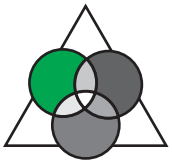
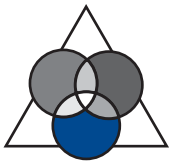
As the use and complexity of industrial networks have increased, so have the pressures on users to design, implement and maintain them. No longer are plant-level Ethernet networks simply a means of gathering data. Industrial applications now monitor and control highly sophisticated and complex operations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

Hirschmann Competance Center	Your optimal network solution	Know-how for reliable operation of your network	Protection against downtimes	Lasting cost control
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	• 24 x 7 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

Part No.	No. of Pairs	Shielding		Conductor		Installation		Environmental Issues									Industrial Grade Jacket		
		Un-shielded	Shielded *	Solid	Stranded **	Installation Stress Resistance	Pull Tension	Oil Resistance	UV Sunlight Resistance	Weld Splatter Resistance	CMX/ Outdoor	Underground (burial)	Gasoline Resistance	LSZH	MSHA	Hi/Lo Temp	Heavy	Upjacket	Armored
DataTuff Industrial Ethernet Category 5e Cable - EtherNet/IP™																			
7932A	2	●		●		●	20	●	●								●		
7933A	2		●	●		●	20	●	●								●		
7923A	4	●		●		●	40	●	●		●				●		●		
7934A	4	●		●		●	40	●	●			●					●		
7928A	4	●		●		●	40	●	●				●			●	●		
11700A	4	●		●		●	40	●	●		●				●			●	
7921A	4		●	●		●	75	●	●		●						●		
7935A	4	●		●		●	40		●					●			●		
7957A	4		●	●		●	75	●	●		●						●		
7958A	4		●	●			35	●	●		●						●		
DataTuff Industrial Ethernet Category 5e Cable																			
7918A	4	●		●			35	●	●		●				●		●		
7924A	4	●			●	●	40	●	●		●						●		
7930A	4	●			●		25	●	●		●						●		
7937A	4		●	●		●	40	●	●			●						●	
7922A (PLTC)	4	●		●		●	40	●	●		●						●		
11700A2 (Oil Resistant I&II)	4	●		●		●	40	●	●									●	
121700A	4	●		●		●	40	●	●										●
121700R	4	●		●		●	40	●	●										●
7929A	4		●	●		●	35	●	●		●				●		●		
7936A	4		●	●		●	40		●					●			●		
7938A (High-Flex)	4		●		●	●	50	●	●	●								●	
7939A	4		●		●	●	40	●	●		●						●		
7919A	4		●	●			25	●	●		●				●		●		
DataTuff Industrial Ethernet Category 6 Cable - EtherNet/IP™																			
7940A	4	●		●		●	45	●	●								●		
7953A	4		●	●		●	45	●	●		●						●		
DataTuff Industrial Ethernet Category 6 Cable																			
7927A	4	●		●		●	45	●	●								●		
7931A	4	●		●		●	40	●	●				●			●	●		
11872A	4	●		●		●	45											●	
121872A	4	●		●		●	45	●	●										●

Table 1: Ethernet Cable Guide

* 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 #CB 006

EtherNet/IP is a trademark of ControlNet International, Ltd under license by Open DeviceNet Vendor Association, Inc.

TrayOptic® Cable Options from Belden

TrayOptic Heavy-Duty, All-Dielectric Fiber Optic Cables

	Belden Part Number					Outside Diameter		Weight		Max.Install Load	
No of Fibers	OM1 62.5/125 um Std./1Gb	OM2 50/125 um Std./1Gb	OM3 50/125 um 10 Gb-300 m	OM4 50/125 um 10 Gb-550 m	OS2 Single-mode Enhanced	Inch	mm	lb/1000 ft.	kg/km	lb	N
TrayOptic Series											
Riser (NEC/CEC OFCR/OFC FT.4) PVC Jacket											
2	I100255	I1A0255	I1C0255	I1E0255	I1W0255	0.44	11.18	88	131	600	2700
4	I100455	I1A0455	I1C0455	I1E0455	I1W0455	0.44	11.18	88	131	600	2700
6	I100655	I1A0655	I1C0655	I1E0655	I1W0655	0.44	11.18	88	131	600	2700
8	I400855	I4A0855	I4C0855	I4E0855	I4W0855	0.44	11.18	88	131	600	2700
12	I601255	I6A1255	I6C1255	I6E1255	I6W1255	0.44	11.18	88	131	600	2700
18	I601855	I6A1855	I6C1855	I6E1855	I6W1855	0.44	11.18	88	131	600	2700
24	I602455	I6A2455	I6C2455	I6E2455	I6W2455	0.44	11.18	88	131	600	2700
36	I603655	I6A3655	I6C3655	I6E3655	I6W3655	0.44	11.18	88	131	600	2700
48	I604855	I6A4855	I6C4855	I6E4855	I6W4855	0.54	13.72	136	202	600	2700
60	I606055	I6A6055	I6C6055	I6E6055	I6W6055	0.54	13.72	136	202	600	2700
72	I607255	I6A7255	I6C7255	I6E7255	I6W7255	0.54	13.72	136	202	600	2700
Riser (NEC/CEC OFCR/OFC FT.4) CPE Jacket											
2	I100266	I1A0266	I1C0266	I1E0266	I1W0266	0.44	11.18	83	124	600	2700
4	I100466	I1A0466	I1C0466	I1E0466	I1W0466	0.44	11.18	83	124	600	2700
6	I100666	I1A0666	I1C0666	I1E0666	I1W0666	0.44	11.18	83	124	600	2700
8	I400866	I4A0866	I4C0866	I4E0866	I4W0866	0.44	11.18	83	124	600	2700
12	I601266	I6A1266	I6C1266	I6E1266	I6W1266	0.44	11.18	83	124	600	2700
18	I601866	I6A1866	I6C1866	I6E1866	I6W1866	0.44	11.18	83	124	600	2700
24	I602466	I6A2466	I6C2466	I6E2466	I6W2466	0.44	11.18	83	124	600	2700
36	I603666	I6A3666	I6C3666	I6E3666	I6W3666	0.44	11.18	83	124	600	2700
48	I604866	I6A4866	I6C4866	I6E4866	I6W4866	0.54	13.72	129	192	600	2700
60	I606066	I6A6066	I6C6066	I6E6066	I6W6066	0.54	13.72	129	192	600	2700
72	I607266	I6A7266	I6C7266	I6E7266	I6W7266	0.54	13.72	129	192	600	2700

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/industrial**. For Belden Technical Support: **1-800-BELDEN-1**

Product/Feature/Approval Matrix

	WIRED (TP AND/OR FIBER)	WIRELESS	DIN RAIL	PANEL	19" RACK	MAXIMUM DATE SPEED	MAXIMUM PORT DENSITY	UNMANAGED	MANAGED/LAYER 2	MANAGED/LAYER 3 (ROUTING)	12 V DC	24 V DC	36 V DC	48 V DC	110/250 V DC	60/120/250 V DC	18-30 V AC	110/230 V AC	REDUNDANT POWER INPUTS	POE (POWER SOURCE)	POE (POWERED DEVICE)	40°C/-40°F	-20°C/32°F	0°C/-4°F	50°C/122°F	60°C/140°F	70°C/158°F	85°C/185°F	CUL508	CUL1604 (CLASS 1 DIV 2 HAZARDOUS LOCATION)	GL (GERMANIC LLOYD)	IEC 61850-3 (SUBSTATION)	IEEE 1613 (SUBSTATION)	EN50155 (RAIL, ONBOARD)	EN50121-4 (RAIL, TRACK-SIDE)	ATEX100a, ZONE 2 (HAZARDOUS LOCATION)	CUL 60950
SPIDER	●		●	○	○	100	5	●			●	●							●			●	●	●	●	●	●		●								
SPIDER II	●		●	○	○	G	10	●			●	●							●	●		●	●	●	●	●	●		●								
RS2-5TX	●		●	○	○	100	5	●			●	●	●						●					●	●	●			●	●						●
RS2-TX	●		●		○	100	8	●			●	●	●						●			●	●	●	●	●	●		●	●	●					●
RS20	●		●		○	100	25	●	●		●	●	●	●			●		●	●		●	●	●	●	●	●		●	●	●	●	●		●	
RS30	●		●		○	G	26	●	●		●	●	●	●			●		●	●		●	●	●	●	●	●		●	●	●	●	●		●	
RSR	●		●	○	○	G	10		●		●	●	●	●	●	●		●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
MS20	●		●		○	100	24		●			●	●	●		●			●	●		●	●	●	●	●	●		●	●	●	●	●		●	
MS30	●		●		○	G	26		●			●	●	●		●			●	●		●	●	●	●	●	●		●	●	●	●	●		●	
MS4128	●		●		○	G	28		●	●		●	●	●		●			●	●				●	●	●			●	●						
OCTOPUS	●			●		G	24	●	●		●	●	●	●		●			●	●		●	●	●	●	●	●		●	●	●		●	●	●	
MACH100	●			○	●	G	26		●									●		●				●	●				●							●
MACH1000	●			○	●	G	28		●	●	●	●	●	●	●	●		●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
MACH4000	●			○	●	10G	48		●	●		●		●				●	●	●				●	●	●			●		●			●	●
BAT		●	●	●	○	300	2		●		●	●								●	●		●	●	●	●				●	●	●	●	●	●
EAGLE	●		●		○	100	2		●	●	●	●	●	●			●		●			●	●	●	●	●			●		●					

○ ○ ***Hollow markers indicate that a non-standard/accessory mounting option is available.***

All DIN rail mount switches can be mounted in a 19" rack by using the Rack Mount Adapter (accessory). The Spider, Spider II and RS2-5TX series have holes in their housings to enable panel mounting. The RSR has an adapter plate and the MACHs can have their front rack mount flanges turned 90° (additional flanges for rear are available for added support).

Be Certain with Belden

Regarding the details in this catalog: Alterations may have been made to the product after the editorial deadline for this publication, namely 08/15/2009. The manufacturer reserves the right to alter the construction and form, manufacture different shades and amend the scope of delivery during the delivery period insofar as the alterations and differences are acceptable to the buyer while allowing for the seller's interests. Insofar as the seller or the manufacturer uses signs or numbers to mark the order or the ordered item, no rights may be derived from this alone. The illustrations may also contain accessories and special equipment which are not part of the mass-produced scope of delivery. Color differences are attributable to technical aspects of the printing process. This publication may also contain types and support services that are not made available/rendered in some countries. The information/details in this publication merely contain general descriptions or performance factors which, when applied in an actual situation, do not always correspond with the described form, and may be amended by way of the further development of products. The desired performance factors shall only be deemed binding if these are expressly agreed on conclusion of the contract. This catalog will be used internationally. However, comments on statutory, legal and fiscal provisions and effects only apply to the Federal Republic of Germany at the time of the editorial deadline for this publication. Please consult your pertinent seller about the provisions and effectsthat apply to your country, and regarding the latest binding version.

HIRSCHMANN
A BELDEN BRAND

www.belden.com

GLOBAL LOCATIONS

For worldwide Industrial Sales and Technical Support, visit: www.belden.com/industrial

AMERICAS

Hirschmann, A BELDEN BRAND
1540 Orchard Drive
Chambersburg, PA 17201
Phone: 717-217-2299
Fax: 717-217-2279
www.belden.com/industrial/hirschmann

For technical or sales inquiries, please email
info.hirschmann@belden.com

For training and registration
www.hicomamericas.com

INETOVED7 Edition 03/2011