HIRSCHMANN

A **BELDEN** BRAND

Leading Networking Solutions for Industrial & Mission Critical Applications

Edition 8

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

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Belden® Combines the Strength of Hirschmann™ Switches and Belden Ethernet Cables for a Complete End-to-End Connectivity Solution.

You Can Depend On Us To Keep Your Mission-Critical Systems Up And Running.

More Convenience and More Solutions for Networks in Harsh Environments and Large-scale Infrastructures

Belden Industrial Solutions

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

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

Our Synergy Ensures Continuous Performance

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

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

Offering Comprehensive Service & Support

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

- Network Design
- Training
- Technical Support
- System Performance

Network Design

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

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

Training

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

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

Technical Support

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

System Performance

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

For more information on our service and support offering, including our warranties, please go to the Belden web site at **www.belden.com** to locate a Belden sales representative near you.

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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 configure a single switch or multiple switches at the same time, significantly simplifying commissioning.

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

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Ethernet Products at a Glance

Unmanaged DIN Rail Mount Switches

SPIDER, SPIDER II

Cost-effective, plug & play unmanaged switches

- SPIDER 2, 3 and 5 ports
- SPIDER 2 and 5 ports with PoE PD
- SPIDER II 8, 9 and 10 ports
- SPIDER II PoE 4 PoE and 4 standard ports
- SPIDER II GIGA 5 and 7 ports, all Gigabit

RS2, RS20, RS30

Feature-rich unmanaged switches with selectable port types, features and approvals

- RS2 5 and 8 ports
- RS20 4, 8, 9, 16, 17, 24 or 25 ports
- RS30 10, 18, or 26 ports, two of which are Gigabit

Managed DIN Rail Mount Switches

RS20, RS30, RS40

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

RSP Series

- RSP20: 3 x FE SFP slots, 4 x FE SFP and 4 x10/100 TX ports, or 8x 10/100 TX ports
- RSP30: 3 x FE/GE SFP slots, 4 x FE SFP/4 x10/100 TX ports, or 8 x10/100 TX ports
- RSP25: 3 x FE SFP slots, 4 x FE SFP/4 x10/100 TX ports, or 8 x10/100 TX ports - Fast MRP, PRP, HSR (pending)
- RSP35: 3 x FE/GE SFP slots, 4 x FE SFP/4 x10/100 TX ports, or 8 x10/100 TX ports - Fast MRP, PRP, HSR (pending)

IP 67/Waterproof Switches

OCTOPUS

- OCTOPUS 5TX and 10TX unmanaged, 5- and 10-ports, 12 D-code
- OCTOPUS 8M/16M/24M managed, 8, 16 and 24 ports M12 D-code
- OCTOPUS 8M-6POE and 8M-8POE managed, 8 ports, M12 D-code, 6 and 8 of which are PoE
- OCTOPUS 16M-8POE and 24M-8POE managed, 16 and 24 ports, M12 D-code, 8 of which are PoE
- OCTOPUS OS20, 8 ports of M12 D-code and 2 multimode or singlemode ports
- OCTOPUS OS30, 8 ports of M12 D-code and 2 Gigabit multimode or singlemode ports

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

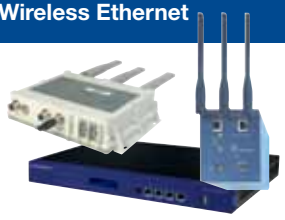
- MAR1020, up to 24 ports, optionally 4 can be PoE (MAR1022)
- MAR1030, up to 28 ports, up to four of which are Gigabit, optionally 4 of the 10/100 ports can be PoE (MAR1032)
- MAR1120, up to 20 ports on rear of switch, with 4 being optional PoE (MAR1122)
- MAR1130, up to 24 ports on rear of switch, 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 Gigabit ports
- MACH4002-24G+3X, up to 24 Gigabit ports and three 10 Gigabit XFP ports
- MACH4002-48G up to 48 Gigabit ports
- MACH4002-48G+3X up to 48 Gigabit ports and three 10 Gigabit XFP ports

Wireless Ethernet



BAT Access Point/Client/ Bridge

- 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
- OpenBAT-C
- OpenBAT-R
- Extensive antenna and accessory offering
- Wireless Local Area Network (WLAN) Controllers

Security, Firewall and VPN Appliance

EAGLE / EAGLE Tofino

Network segmentation, VPN and deep packet inspection.

- EAGLE20 - Transparent or router firewall with VPN functionality. Configurable by web interface or Industrial HiVision
- EAGLE Tofino - Graphical drag and drop device management enables configuration with little IT knowledge. Supports deep packet inspection for major industrial protocols.

Fiber Transceivers/Modems

FiberINTERFACES

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

Embedded Ethernet

Embedded Ethernet Modules and Switches

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

Modular Industrial Patch Panel (MIPP)

MIPP - Modular Industrial Patch Panel

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

Network Management Software

Industrial HiVision

Network visualization and configuration software with integrated OPC server.

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

SPIDER Series Unmanaged DIN Rail Mount Ethernet Switches

Entry-level Industrial Ethernet Unmanaged Switches

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

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

Technical Specifications

Physical Characteristics	SPIDER Series xTX-x	SPIDER Series 1TX/1FX-x	SPIDER Series 4TX/1FX-x	SPIDER Series 8TX-x	SPIDER Series 5TX-Giga	SPIDER Series 8TX-PoE
Available Ports	3, 5	2	5	8-10	5, 7	8
Mounting	Din Rail					
Dimensions (W x H x D)	25 x 114 (126 for ST fiber models) x 79 mm			35 x 154 (168 for ST fiber models) x 121 mm		
Weight	113 g	105 g	120 g	less than 270 g		560 g
IP Rating	IP 30					
Ambient Conditions						
Operating Temperature	0 °C to +60 °C, -40 °C to +70 °C for EEC models, or -10 °C to +60 °C for SPIDER II 8TX PoE					
Storage/Transport Temperature	-40 °C to +70 °C, -40 °C to +85 °C for EEC models, or -20 °C to +70 °C for SPIDER II 8TX PoE					
Relative Humidity (non-condensing)	0 % - 95 %					
Conformal Coating	n/a					
Interfaces						
V.24 Interface	n/a					
USB Interface	n/a					
Power Requirements						
Operating Voltage	9.6-32 V DC					18-32 V DC
PoE (802.3af) ports supported	Yes (variant applicable)		n/a			Yes
PoE Plus (802.3at) ports supported	n/a					
Regulatory Approvals						
Safety of Industrial Control Equipment	cUL 508					
Hazardous Locations	n/a					
Germanischer Lloyd	n/a					
Transportation	n/a					
Railway (track)	n/a					
Substation	n/a					
Switching/Routing						
	Unmanaged					
Reliability						
MTBF Range	239 to 360 Years	138 to 265 Years	129 to 194 Years	88 to 185 Years	114.3 Years	
Warranty	5 Years Standard.					

NOTE: These are the prominent technical specifications. For complete technical specifications visit: **www.beldensolutions.com/hirschmann**

SPIDER Series Unmanaged DIN Rail Mount Ethernet Switches

Entry-level Industrial Ethernet Unmanaged Switches

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

All Copper/RJ45 and FIBER		
Part No.	**Order No**	**Ports**
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 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 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

FAST Ethernet Switches via PoE		
Part No.	**Order No**	**Ports**
SPIDER 5TX PD EEC	942 051-001	5 x10/100BaseTX Ports,1x PoE PD integrated port
SPIDER 1TX/1FX-MM PD EEC	942 051-002	1x10/100BaseTX PoE PD Port and 1x100BaseFX multimode SC
SPIDER 1TX/1FX-SM PD EEC	942 051-003	1x10/100BaseTX PoE PD Port and 1x100BaseFX singlemode 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).

RS2 Unmanaged DIN Rail Mount Ethernet Switches

Feature-rich Unmanaged Switches

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

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

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

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 Mbps SM-SC, link loss alarm, power loss alarm, fault relay output, ext. temp. –40° C to +70° C
RS2-5TX/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
RS2-4TX/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
RS2-4TX/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
RS2-4TX/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 Unmanaged DIN Rail Mount Ethernet Switches

Standard and Customizable Unmanaged Switches

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

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

All Copper/RJ45		
Part No.	**Order No**	**Ports/Features**
RS20-1600T1T1SDAU	943 434-047	16 x 10/100 Mbps RJ45
Multimode (MM)		
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 (SM)		
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

RS20 Compact OpenRail Managed Ethernet Switches

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

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

Technical Specifications

Physical Characteristics	RS20 Series 4 Ports	RS20 Series 8 and 9 Ports	RS20 Series 16, 17, 24 and 25 Ports
Available Ports	4-25		
Mounting	DIN Rail		
Dimensions (W x H x D)	47 x 131 x 111 mm	74 x 131 x 111 mm	110 x 131 x 111 mm
Weight	400 g	410 g	630 g
IP Rating	IP 20		
Ambient Conditions			
Operating Temperature	0 °C to + 60 °C or -40 °C to + 70 °C		
Storage/Transport Temperature	-40 °C to + 70 °C		
Relative Humidity (non-condensing)	10 % to 95 %		
Conformal Coating	Yes (variant dependent)		
Interfaces			
V.24 Interface	1 x RJ11 Socket		
USB Interface	1 x USB (ACA21-USB Adaptor)		
Power Requirements			
Operating Voltage	12/24/48 V DC (9.6-60) V and 24 V AC (18-30) V (redundant)		
Regulatory Approvals			
Safety of Industrial Control Equipment	cUL 508		
Hazardous Locations	Class 1 Div 2 (cUL1604)		
Germanischer Lloyd	Germanischer Lloyd		
Transportation	NEMA TS2		
Railway (track)	EN 50121-4		
Substation	IEC 61850-3 | IEEE 1613		
Reliability			
MTBF Range	65.5 to 74.9 years	43.9 to 62.5 years	22.1 to 44.8 years
Warranty	5 Years Standard. Lifetime for purchases made within the United States or Canada and after May 1, 2011. Registration of switch within 6 months of purchase is required: **www.registermyswitch.com**		

NOTE: These are the prominent technical specifications. For complete technical specifications visit: **www.beldensolutions.com/hirschmann**

RS20 Compact OpenRail Managed Ethernet Switch Configurations

Fast Ethernet Uplink Ports, All Copper

RS20- 04 00 T1 T1 S D A P E H XX.X

Design/Models
RS20- = Fast-Ethernet Uplink Ports, All Copper

Fast Ethernet Port Configurations
04 = 04 x 10/100 Mbit
08 = 08 x 10/100 Mbit
16 = 16 x 10/100 Mbit
24 = 24 x 10/100 Mbit

Gigabit Ethernet Ports
00 = none (not present)

Type 1 Uplink Port
T1 = 1 x Twisted-Pair RJ45

Type 2 Uplink Port
T1 = 1 x Twisted-Pair RJ45

Temperature Range Options
S = 0° C up to + 60° C
T = – 40° C up to + 70° C
E = – 40° C up to + 70° C inclusive Conformal Coating

Power Supply
D = 9.6-60 V DC and 18-30 V AC

Approvals
A = cUL508, cUL1604 Class 1 Div 2
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

Software Version (see page 53 for additional Management Software Functionality details)
E = Enhanced, additional filters and redundancy
P = Professional, DHCP server, additional security and diagnostics, advanced filtering and redundancy

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

OEM Type
H = Standard

Software Release
XX.X = Current Software Release

NOTE: The last three part number categories (**Configuration**, **OEM Type**, and **Software Release**) are optional.

RS20 Compact OpenRail Managed Ethernet Switch Configurations

Fast Ethernet Uplink Ports with 1-2 Fiber Ports

RS20- 04 00 L2 M2 S D A P E H XX.X

Design/Models
RS20- = Fast-Ethernet Uplink Ports with 1-2 Fiber Ports

Fast Ethernet Port Configurations
04 = 04 x 10/100 Mbit
08 = 08 x 10/100 Mbit
16 = 16 x 10/100 Mbit
24 = 24 x 10/100 Mbit

Gigabit Ethernet Ports
00 = none (not present)

Type 1 Uplink Port
M2 = 1 x Multimode SC
M4 = 1 x Multimode ST
S2 = 1 x Singlemode SC
S4 = 1 x Singlemode ST
L2 = 1 x Long Haul SC
G2 = 1 x Long Haul + SC

Type 2 Uplink Port
T1 = 1 x Twisted-Pair RJ45
M2 = 1 x Multimode SC
M4 = 1 x Multimode ST
S2 = 1 x Singlemode SC
S4 = 1 x Singlemode ST
L2 = 1 x Long Haul SC

Temperature Range Options
S = 0° C up to + 60° C
T = – 40° C up to + 70° C
E = – 40° C up to + 70° C inclusive Conformal Coating

Power Supply
D = 9.6-60 V DC and 18-30 V AC

Approvals
A = cUL508, cUL1604 Class 1 Div 2
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

Software Version (see page 53 for additional Management Software Functionality details)
E = Enhanced, additional filters and redundancy
P = Professional, DHCP server, additional security and diagnostics, advanced filtering and redundancy

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

OEM Type
H = Standard

Software Release
XX.X = Current Software Release

NOTE: The last three part number categories (**Configuration**, **OEM Type**, and **Software Release**) are optional.

RS20 Compact OpenRail Managed Ethernet Switch Configurations

Fast Ethernet Uplink Ports with 3 Fiber Ports

RS20- 09 00 UU M2 S D A P E H XX.X

Design/Models
RS20- = Fast-Ethernet Uplink Ports with 3 Fiber Ports

Fast Ethernet Port Configurations
09 = 09 x 10/100 Mbit
17 = 17 x 10/100 Mbit
25 = 25 x 10/100 Mbit

Gigabit Ethernet Ports
00 = none (not present)

Type 1 Uplink Port
MM = 2 x Multimode SC
NN = 2 x Multimode ST
VV = 2 x Singlemode SC
UU = 2 x Singlemode ST

Type 2 Uplink Port
M2 = 1 x Multimode SC
M4 = 1 x Multimode ST
S2 = 1 x Singlemode SC
S4 = 1 x Singlemode ST
L2 = 1 x Long Haul SC
G2 = 1 x Long Haul + SC

Temperature Range Options
S = 0° C up to + 60° C
T = – 40° C up to + 70° C
E = – 40° C up to + 70° C inclusive Conformal Coating

Power Supply
D = 9.6-60 V DC and 18-30 V AC

Approvals
A = cUL508, cUL1604 Class 1 Div 2
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

Software Version (see page 53 for additional Management Software Functionality details)
E = Enhanced, additional filters and redundancy
P = Professional, DHCP server, additional security and diagnostics, advanced filtering and redundancy

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

OEM Type
H = Standard

Software Release
XX.X = Current Software Release

NOTE: The last three part number categories (**Configuration**, **OEM Type**, and **Software Release**) are optional.

RS22 Compact OpenRail Managed Ethernet Switch Configurations

Fast Ethernet Uplink Ports, All Copper with PoE

RS22- 09 00 UU M2 S P A P H F XX.X

Design/Models
RS22- = Fast-Ethernet Uplink Ports with PoE

Fast Ethernet Port Configurations
09 = 09 x 10/100 Mbit
17 = 17 x 10/100 Mbit
25 = 25 x 10/100 Mbit

Gigabit Ethernet Ports
00 = none (not present)

Type 1 Uplink Port
MM = 2 x Multimode SC
NN = 2 x Multimode ST
VV = 2 x Singlemode SC
UU = 2 x Singlemode ST

Type 2 Uplink Port
T1 = 1 x Twisted-Pair RJ45
M2 = 1 x Multimode SC
M4 = 1 x Multimode ST
S2 = 1 x Singlemode SC
S4 = 1 x Singlemode ST
L2 = 1 x Long Haul SC
G2 = 1 x Long Haul + SC

Temperature Range Options
S = 0° C up to + 60° C
T = – 40° C up to + 70° C
E = – 40° C up to + 70° C inclusive Conformal Coating

Power Supply
P = 47-52 V DC

Approvals
A = cUL508, cUL1604 Class 1 Div 2
H = cUL508 · cUL1604 · Class1 Div 2 / GL: German Lloyd · IEC 61850-3: Substation / IEEE 1613: Substation - EN 50121-4: Railway (track)

Software Version (see page 53 for additional Management Software Functionality details)
E = Enhanced, additional filters and redundancy
P = Professional, DHCP server, additional security and diagnostics, advanced filtering and redundancy

Configuration
H = Standard

OEM Type
F = Steel Cabinet

Software Release
XX.X = Current Software Release

NOTE: The last three part number categories (**Configuration**, **OEM Type**, and **Software Release**) are optional.

RS30 Compact OpenRail Managed Ethernet Switches

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

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

Technical Specifications

Physical Characteristics	RS30 Series 8 Ports	RS30 Series 16 and 24 Ports
Available Ports	8-24	
Mounting	DIN Rail	
Dimensions (W x H x D)	74 x 131 x 111 mm	110 x 131 x 111 mm
Weight	410 g	630 g
IP Rating	IP 20	
Ambient Conditions		
Operating Temperature	0 °C to + 60 °C, -40 °C to + 70 °C, or -40 °C to + 70 °C (optional Conformal Coating)	
Storage/Transport Temperature	-40 °C to + 70 °C	
Relative Humidity (non-condensing)	10 % to 95 %	
Conformal Coating	Yes (variant dependent)	
Interfaces		
V.24 Interface	1 x RJ11 Socket	
USB Interface	1 x USB (ACA21-USB Adaptor)	
Power Requirements		
Operating Voltage	12/24/48 V DC (9,6-60) V and 24 V AC (18-30) V (redundant)	
Regulatory Approvals		
Safety of Industrial Control Equipment	cUL 508	
Hazardous Locations	Class 1 Div 2 (cUL1604)	
Germanischer Lloyd	Germanischer Lloyd	
Transportation	NEMA TS2	
Railway (track)	EN 50121-4	
Substation	IEC 61850-3 | IEEE 1613	
Reliability		
MTBF Range	30.6 to 51.9 years	22.9 to 39.1 years
Warranty	5 Years Standard. Lifetime for purchases made within the United States or Canada and after May 1, 2011. Registration of switches are required: **www.registermyswitch.com**	

NOTE: These are the prominent technical specifications. For complete technical specifications visit: **www.beldensolutions.com/hirschmann**

RS30 Compact OpenRail Managed Ethernet Switch Configurations

Gigabit Ethernet Uplink Ports

RS30- 08 02 OO ZZ S D A P E H XX.X

Design/Models
RS30- = Gigabit Ethernet Uplink Ports

Fast Ethernet Port Configurations
08 = 08 x 10/100 Mbit
16 = 16 x 10/100 Mbit
24 = 24 x 10/100 Mbit

Gigabit Ethernet Ports
02 = 02 x 1000 Mbit

Type 1 Uplink Port
T1 = 1 x Twisted-Pair RJ45
O6 = 1 X SFP-Slot GE
OO = 2 x SFP-Slot GE

Type 2 Uplink Port
ZZ = 2 X SFP-Slot FE

Temperature Range Options
S = 0° C up to + 60° C
T = – 40° C up to + 70° C
E = – 40° C up to + 70° C inclusive Conformal Coating

Power Supply
D = 9.6-60 V DC and 18-30 V AC

Approvals
A = cUL508, cUL1604 Class 1 Div 2
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

Software Version (see page 53 for additional Management Software Functionality details)
E = Enhanced, additional filters and redundancy
P = Professional, DHCP server, additional security and diagnostics, advanced filtering and redundancy

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

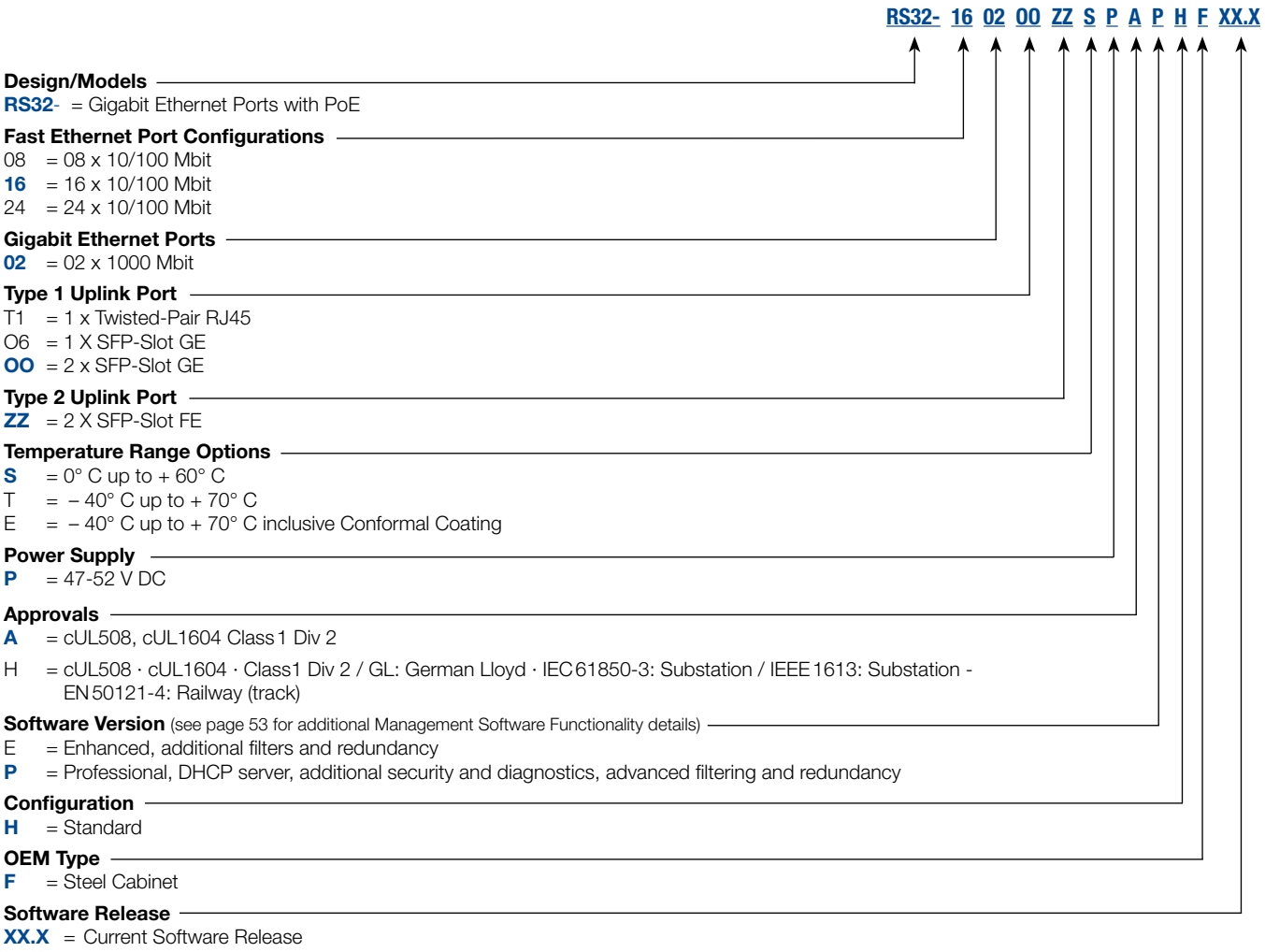
OEM Type
H = Standard

Software Release
XX.X = Current Software Release

NOTE: The last three part number categories (**Configuration**, **OEM Type**, and **Software Release**) are optional.

RS32 Compact OpenRail Managed Ethernet Switch Configurations

Gigabit Ethernet Uplink Ports with PoE: RS32



NOTE: The last three part number categories (**Configuration**, **OEM Type**, and **Software Release**) are optional.

RS40 Compact OpenRail Managed Ethernet Switches

All Ports are Gigabit

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

300ms HiPer-Ring

EtherNet/IP conformance tested

PROFINET

Technical Specifications

Physical Characteristics	RS40 Series Standard Temperature	RS40 Series Extended Temperature
Available Ports	9	
Mounting	DIN Rail	
Dimensions (W x H x D)	74 x 131 x 111 mm	110 x 131 x 111 mm
Weight	530 g	600 g
IP Rating	IP 20	
Ambient Conditions		
Operating Temperature	0 °C to + 60 °C, -40 °C to + 70 °C	-40 °C to + 70 °C (optional Conformal Coating)
Storage/Transport Temperature	-40 °C to + 70 °C	
Relative Humidity (non-condensing)	10 % to 95 %	
Conformal Coating	Yes (variant dependent)	
Interfaces		
V.24 Interface	1 x RJ11 Socket	
USB Interface	1 x USB (ACA21-USB Adaptor)	
Power Requirements		
Operating Voltage	12/24/48 V DC (9,6-60) V and 24 V AC (18-30) V (redundant)	
PoE (802.3af) ports supported	n/a	
PoE Plus (802.3at) ports supported	n/a	
Regulatory Approvals		
Safety of Industrial Control Equipment	cUL 508	
Hazardous Locations	Class 1 Div 2 (cUL1604)	
Germanischer Lloyd	Germanischer Lloyd	
Transportation	n/a	
Railway (norm)	n/a	
Substation	IEC 61850-3	
Switching/Routing		
Software Version	Layer 2	
Reliability		
MTBF Range	25.8 to 27.1 years	
Warranty	5 Years Standard. Lifetime for purchases made within the United States or Canada and after May 1, 2011. Registration of switches are required: **www.registermyswitch.com**	

NOTE: These are the prominent technical specifications. For complete technical specifications visit: **www.beldensolutions.com/hirschmann**

RS40 Compact OpenRail Managed Ethernet Switch Configurations

Full Gigabit Ethernet Swithces: RS40

RS40- 00 09 CC CC S D A P E H XX.X

Design/Models
RS40- = Full Gigabit Ethernet Switch

Fast Ethernet Port Configurations
00 = 00 X 10/100 Mbit

Gigabit Ethernet Ports
09 = 09 x 1000 Mbit

Type 1 Uplink Port
CC = 2 x SFP Combo Port GE

Type 2 Uplink Port
CC = 2 x SFP Combo Port GE

Temperature Range Options
S = 0° C up to + 60° C
T = – 40° C up to + 70° C
E = – 40° C up to + 70° C inclusive Conformal Coating

Power Supply
D = 9.6-60 V DC and 18-30 V AC

Approvals
A = cUL508, cUL1604 Class 1 Div 2
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

Software Version (see page 53 for additional Management Software Functionality details)
E = Enhanced, additional filters and redundancy
P = Professional, DHCP server, additional security and diagnostics, advanced filtering and redundancy

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

OEM Type
H = Standard

Software Release
XX.X = Current Software Release

NOTE: The last three part number categories (**Configuration**, **OEM Type**, and **Software Release**) are optional.

RSB20 Series Basic Managed DIN Rail-Mount Switches

Fast Ethernet Uplink Ports

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

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

300ms HiPer-Ring

Technical Specifications

Physical Characteristics	RSB20 Series
Available Ports	8-9
Mounting	DIN Rail
Dimensions (W x H x D)	47 x 131 x 111 mm
Weight	400 g
IP Rating	IP 20
Ambient Conditions	
Operating Temperature	0 °C to + 60 °C, -40 °C to + 70 °C, or -40 °C to + 70 °C (inclusive Conformal Coating)
Storage/Transport Temperature	-40 °C to + 85 °C
Relative Humidity (non-condensing)	10 % to 95 %
Conformal Coating	Yes (variant dependent)
Interfaces	
V.24 Interface	1 x RJ11 Socket
USB Interface	n/a
Power Requirements	
Operating Voltage	24V DC (18-32V)
PoE (802.3af) ports supported	n/a
PoE Plus (802.3at) ports supported	n/a
Regulatory Approvals	
Safety of Industrial Control Equipment	cUL 508
Hazardous Locations	Class 1 Div 2 - cUL 1604
Germanischer Lloyd	n/a
Transportation	n/a
Railway (norm)	n/a
Substation	n/a
Switching/Routing	
Software Version	Layer 2
Reliability	
MTBF Range	58.8 to 88 years
Warranty	5 Years Standard.

NOTE: These are the prominent technical specifications. For complete technical specifications visit: **www.beldensolutions.com/hirschmann**

RSB20 Series Basic Managed DIN Rail-Mount Switch Configurations

Fast Ethernet Uplink Ports

All Copper/RJ45		
Part No.	**Order No**	**Ports/Features**
RSB20-0800T1T1SAAB	942 014 001	8TX
RSB20-0800T1T1SAABE	942 014 017	8TX E, pre-configured MC filtering for EtherNet/IP
RSB20-0800T1T1TAABE	942 014 025	8TX E, pre-configured MC filtering for EtherNet/IP
RSB20-0800T1T1TAAB	942 014 009	8TX EEC
Multimode (MM)		
Part No.	**Order No**	**Ports/Features**
RSB20-0800M2M2SAAB	942 014 002	6TX/2FX MM
RSB20-0800M2M2SAABE	942 014 018	6TX/2FX MM E, pre-configured MC filtering for EtherNet/IP
RSB20-0800M2M2TAABE	942 014 026	6TX/2FX MM E, pre-configured MC filtering for EtherNet/IP
RSB20-0800M2M2TAAB	942 014 010	6TX/2FX MM EEC
RSB20-0900M2TTSAAB	942 014 005	8TX/1FX MM
RSB20-0900M2TTSAABE	942 014 021	8TX/1FX MM E, pre-configured MC filtering for EtherNet/IP
RSB20-0900M2TTTAABE	942 014 029	8TX/1FX MM E, pre-configured MC filtering for EtherNet/IP
RSB20-0900M2TTTAAB	942 014 013	8TX/1FX MM EEC
RSB20-0900MMM2SAAB	942 014 007	6TX/3FX MM
RSB20-0900MMM2SAABE	942 014 023	6TX/3FX MM E, pre-configured MC filtering for EtherNet/IP
RSB20-0900MMM2TAABE	942 014 031	6TX/3FX MM E, pre-configured MC filtering for EtherNet/IP
RSB20-0900MMM2TAAB	942 014 015	6TX/3FX MM EEC
Singlemode (SM) Fiber and Copper		
Part No.	**Order No**	**Ports/Features**
RSB20-0800S2S2SAAB	942 014 003	6TX/2FX SM
RSB20-0800S2S2SAABE	942 014 019	6TX/2FX SM E, pre-configured MC filtering for EtherNet/IP
RSB20-0800S2S2TAABE	942 014 027	6TX/2FX SM E, pre-configured MC filtering for EtherNet/IP
RSB20-0800S2S2TAAB	942 014 011	6TX/2FX SM EEC
RSB20-0900S2TTSAAB	942 014 006	8TX/1FX SM
RSB20-0900S2TTSAABE	942 014 022	8TX/1FX SM E, pre-configured MC filtering for EtherNet/IP
RSB20-0900S2TTTAABE	942 014 030	8TX/1FX SM E, pre-configured MC filtering for EtherNet/IP
RSB20-0900S2TTTAAB	942 014 014	8TX/1FX SM EEC
Singlemode (SM) /Multimode (MM) Fiber and Copper		
Part No.	**Order No**	**Ports/Features**
RSB20-0900VVM2SAAB	942 014 008	6TX/2FX SM/1 FX MM
RSB20-0900VVM2SAABE	942 014 024	6TX/2FX SM/1 FX MM E, pre-configured MC filtering for EtherNet/IP
RSB20-0900VVM2TAABE	942 014 032	6TX/2FX SM/1 FX MM E, pre-configured MC filtering for EtherNet/IP
RSB20-0900VVM2TAAB	942 014 016	6TX/2FX SM/1 FX MM EEC
SFP		
Part No.	**Order No**	**Ports/Features**
RSB20-0900ZZZ6SAAB	942 014 004	6TX/3SFP
RSB20-0900ZZZ6SAABE	942 014 020	6TX/3SFP E, pre-configured MC filtering for EtherNet/IP
RSB20-0900ZZZ6TAABE	942 014 028	6TX/3SFP E, pre-configured MC filtering for EtherNet/IP
RSB20-0900ZZZ6TAAB	942 014 012	6TX/3SFP EEC

MS20 Managed Modular DIN Rail Mount Ethernet Switches

The MS20 series of Ethernet switches have eight 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.

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

MS20-08 MS20-16 MS20-16 (including backplane extension MB-2T)

All Ports are 10/100 Mbps		
Part No.	**Order No**	**Ports/Features**
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, EN50155
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, EN50155

MS30 Managed Modular DIN Rail Mount Ethernet Switches

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

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

MS30-08

MS30-16

MS30-16 (including backplane extension MB-2T)

All Ports are 10/100 Mbps		
Part No.	**Order No**	**Ports/Features**
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)

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

Managed Modular DIN Rail Mount Switches

PowerMICE Gigabit Layer 2/3 Switches

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

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
MS4128-L2P ATEX	943 009-101	Layer 2/Professional	28	4 X 1000 BASE-SX with SFP modules or 4 x 10/100/1000 BASE-TX and 24 Fast ETHERNET (100 Mbit/s) ports (with MB-2T)
MS4128-L3E ATEX	943 009-201	Layer 3/Enhanced	28	Same as 101 except Layer 3 enhanced software
MS4128-L3P ATEX	943 009-301	Layer 3/Professional	28	Same as 201 except professional software

MICE Media Modules

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

MS Modules: ALL COPPER

Part No.	Order No.	Ports/Speed
MM2-4TX1	943 722-101	4 x 10/100 Mbps RJ45
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			
Type	**Part No.**	**Order No.**	**Ports/Speed**
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

SM Modules: SINGLEMODE			
Type	**Part No.**	**Order No.**	**Ports/Speed**
SM	MM2-2FXS2	943 719-101	2 x 100 Mbps SM SC
SM	MM3-2FXS2/2TX1	943 762-101	2 x 100 Mbps SM SC, 2 x RJ45
SM	MM3-2FXS2/2TX1-EEC	943 762-151	2 x 100 Mbps SM SC, 2 x RJ45, ext. temp.*
SM	MM3-1FXS2/3TX1	943 838-101	1 x 100 Mbps SM SC, 3 x RJ45
SM	MM3-4FXS2	943 836-101	4 x 100 Mbps SM SC
SM	MM3-1FXL2/3TX1	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	MM3-1FXS2/3TX1-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	MM4-2TX/SFP	943 622-001	2 x Gigabit RJ45/SFP combo ports** for use with MS30 and MS4128
GIGABIT	MM4-4TX/SFP	943 010-001	4 x Gigabit RJ45/SFP combo ports** for use with MS4128 only

MS Managed Modular DIN Rail Mount Switches

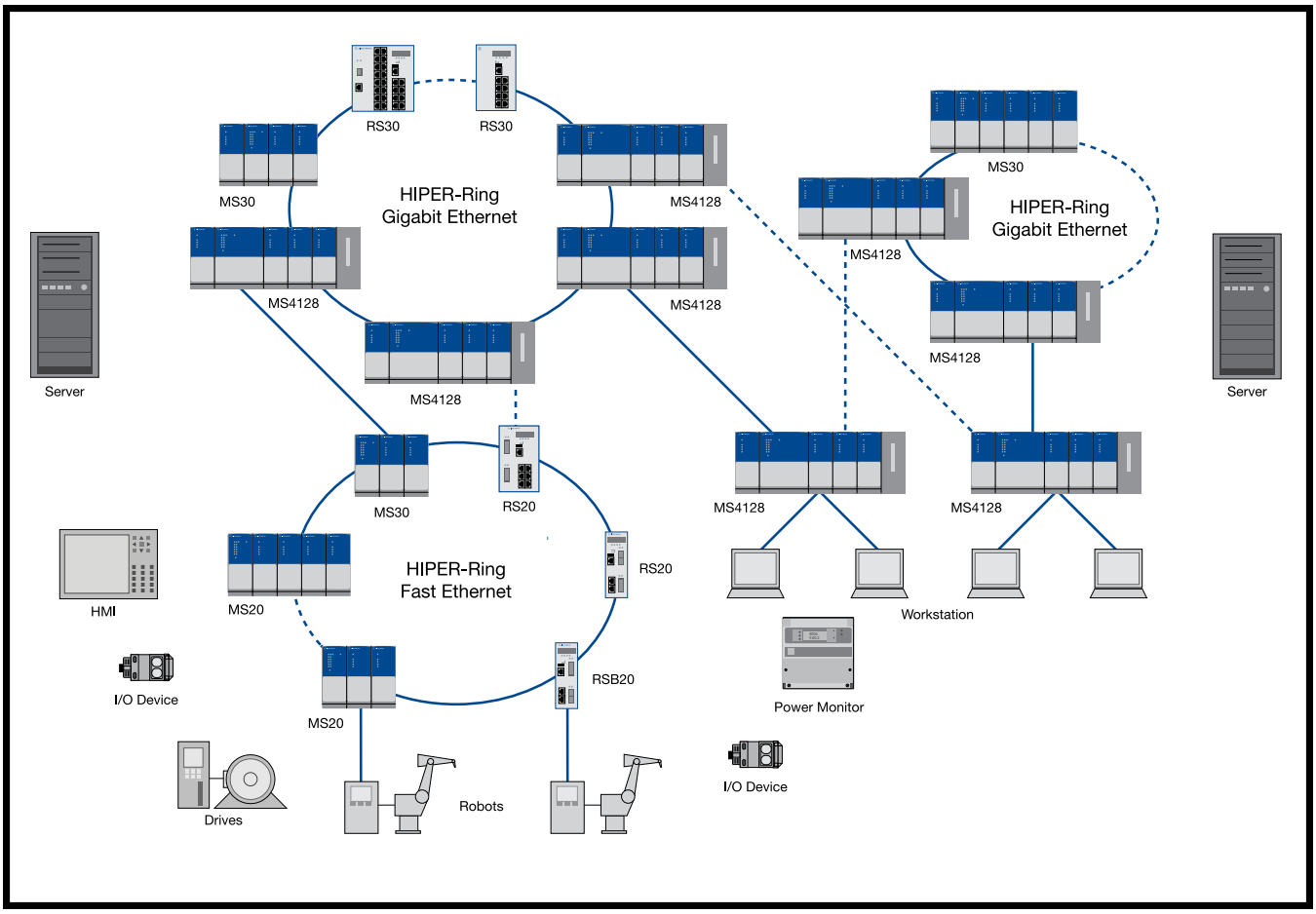
MS Modules: SPECIAL PURPOSE			
Type	**Part No.**	**Order No.**	**Ports/Speed**
REALTIME	MM23-T1T1T1T1SAAH PTPv2		IEEE1588 Version 2 realtime module, 4x 10/100 RJ45, replacement for 943 117-001
REALTIME	MM23-M2M2T1T1SAAH PTPv2		IEEE1588 Version 2 realtime module, 2x multimode, SC sockets, replacement for 943 117-002
REALTIME	MM23-S2S2T1T1SAAH PTPv2		IEEE1588 Version 2 realtime module, 2x singlemode, SC sockets, replacement for 943 117-003
REALTIME	MM23-F4F4T1T1SAAH PTPv2		IEEE1588 Version 2 realtime module, 2x multimode, ST sockets, replacement for 943 117-004
REALTIME	MM33-O7O79999SA PTPv2		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 1: 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 2: **For every SFP used, one copper port is lost. SFPs need to be purchased separately.

Fast Ethernet MICE Media Modules, Digital IO		
Part No.	**Order No.**	**Ports**
MM24-IOIOIOIOSZHH	MM24-IOIOIOIOSZHH	Port 1: 1 x digital input, 1 x digital output Port 2: 1 x digital input, 1 x digital output Port 3: 1 x digital input, 1 x digital output Port 4: 1 x digital input, 1 x digital output
MM24-IOIOIOIOTZHH	MM24-IOIOIOIOTZHH	Same as above, except with extended temperature range -40° C to + 70° C
MM24-IOIOIOIOEZHH	MM24-IOIOIOIOEZHH	Same as above, except with extended temperature range and conformal coating

MS Managed Modular DIN Rail Mount Switches



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

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

HIRSCHMANN
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RSR Series Über-Rugged™ Managed DIN Rail Mount Ethernet Switches

Fast Ethernet Uplink Ports and Gigabit Ethernet Uplink Ports

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

The term "Uber-Rugged" 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.

BLAZING 10ms HiPer-Ring

Technical Specifications

Physical Characteristics	RSR20 Series	RSR30 Series
Available Ports	8-9	9-10
Mounting	DIN Rail	
Dimensions (W x H x D)	120 x 145 x 115 mm	
Weight	appr. 1 kg	
IP Rating	IP 30	
Ambient Conditions		
Operating Temperature	0 °C to + 60 °C, -40 °C to + 85 °C, or -40 °C to + 85 °C (optional Conformal Coating)	
Storage/Transport Temperature	-40 °C to + 85 °C	
Relative Humidity (non-condensing)	10 % to 95 %	
Conformal Coating	Yes (variant dependent)	
Interfaces		
V.24 Interface	1 x RJ11 Socket	
USB Interface	1 x USB (ACA21-USB Adaptor)	
Power Requirements		
Operating Voltage	24/36/48 V DC or 60/120/250 V DC / 110/230 V AC	
PoE (802.3af) ports supported	n/a	
PoE Plus (802.3at) ports supported	n/a	
Regulatory Approvals		
Safety of Industrial Control Equipment	cUL 508	
Hazardous Locations	Class 1 Div 2 - cUL 1604	
Germanischer Lloyd	Germanischer Lloyd	
Transportation	NEMA TS2	
Railway (norm)	EN 50121-4	
Substation	IEC 61850-3; IEEE 1613	
Switching/Routing		
Software Version	Layer 2	
Reliability		
MTBF Range	45.6 to 61.8 years	49.2 to 57.9 years
Warranty	5 Years Standard. Lifetime for purchases made within the United States or Canada and after May 1, 2011. Registration of switches are required: **www.registermyswitch.com**	

NOTE: These are the prominent technical specifications. For complete technical specifications visit: **www.beldensolutions.com/hirschmann**

RSR 20 Über-Rugged™ Managed DIN Rail Mount Ethernet Switch Configurations

Fast Ethernet DIN Rail Switch: RSR 20

RSR20- 08 00 T1 T1 T1 S C C H P H H XX.X

Design/Models
RSR20- = Rail Switch Rugged Fast Ethernet

Fast Ethernet Port Configurations
08 = 8 x 10/100 Mbit
09 = 9 x 10/100 Mbit

Gigabit Ethernet Ports
00 = 0 x 1000 Mbit

Type 1 Uplink Port

T1	= 1 x Twisted-Pair RJ45	MM	= 2 x Multimode SC
M2	= 1 x Multimode SC	JJ	= 2 x Multimode MTRJ
M4	= 1 x Multimode ST	NN	= 2 x Multimode ST
S2	= 1 x Singlemode SC	UU	= 2 x Singlemode SC
S4	= 1 x Singlemode ST	VV	= 2 x Singlemode ST
L2	= 1 x Long Haul SC	LL	= 2 x Singlemode Long Haul SC
G2	= 1 x Long Haul + SC	GG	= 2 x Singlemode Long Haul+ SC (200km)

Type 2 Uplink Port
T1 = 1 x Twisted-Pair RJ45 (only if T1 is selected for Type 1 Uplink Port)
M2 = 1 x Multimode SC
M3 = 1 x Multimode MTRJ (only if JJ selected above)
M4 = 1 x Multimode ST
S2 = 1 x Singlemode SC
S4 = 1 x Singlemode ST
L2 = 1 x Singlemode Long Haul SC
G2 = 1 x Singlemode Long Haul+ SC (200km)

Remaining Ports
T1 = 1 x Twisted-Pair RJ45

Temperature Range Options
S = 0° C up to + 60° C
U = -40° C up to + 85° C
F = -40° C up to + 85° C (includes conformal coating)

Voltage Range 1
C = 24/36/48 Vdc
K = 60/120/250 Vdc and 110/230 Vac

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

Approvals
H = UL508, GL, IEC 61850; IEEE 1613; EN 50121

Software Version (see page 53 for additional Management Software Functionality details)
P = Professional

Configuration
H = Standard

OEM Type
H = Standard

Software Release
XX.X = Current Software Release

NOTE: The last three part number categories (**Configuration**, **OEM Type**, and **Software Release**) are optional.

RSR 30 Über-Rugged™ Managed DIN Rail Mount Ethernet Switch Configurations

Gigabit Ethernet DIN Rail Switch: RSR 30

RSR30- 06 02 CC 06 T1 S C C H P H H XX.X

Design/Models
RSR30- = Rail Switch Rugged Gigabit Ethernet

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

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

Type 1 Uplink Port
CC = 2 x Combo Port Gigabi
OO = 2 x SFP Slot Gigabit
06 = SFP Slot Gigabit
07 = Combo Port Gigabit

Type 2 Uplink Port
06 = SFP Slot Gigabit
07 = Combo Port Gigabit
ZZ = 2 x SFP Slot Gigabit (only RSR30-08)

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

Temperature Range Options
S = 0° C up to + 60° C
U = -40° C up to + 85° C
F = -40° C up to + 85° C (includes conformal coating)

Voltage Range 1
C = 24/36/48 Vdc
K = 60/120/250 Vdc and 110/230 Vac

Voltage Range 2
C = 24/36/48 Vdc
K = 60/120/250 Vdc and 110/230 Vac (only if K is selected for Voltage Range 1)
9 = None (only if K is selected above)

Approvals
H = UL508, GL, IEC 61850; IEEE 1613; EN 50121

Software Version (see page 53 for additional Management Software Functionality details)
P = Professional

Configuration
H = Standard

OEM Type
H = Standard

Software Release
XX.X = Current Software Release

NOTE: The last three part number categories (**Configuration**, **OEM Type**, and **Software Release**) are optional.

RSP Series Managed Industrial DIN Rail Switch with Fanless Design (Available Q3, 2012)

Fast and Gigabit Ethernet Networks

The new RSP family of switches with robust hardware and a powerful operating system, are able to withstand extremely harsh environmental conditions. For the first time, the integration of new redundancy protocols allows uninterrupted data communication. These new techniques, PRP (Parallel Redundancy Protocol) and HSR (High-availability Seamless Redundancy), are based on the international IEC62439 standard and therefore guarantee future security and interoperability.

Precision time synchronization in accordance with IEEE 1588v2, synchronizes sensors, drives, and measuring equipment. Gigabit ethernet provides for a fast connection to the backbone, while connections to terminal equipment use 100 BASE-TX - either alone or in combination with 100 BASE-FX.

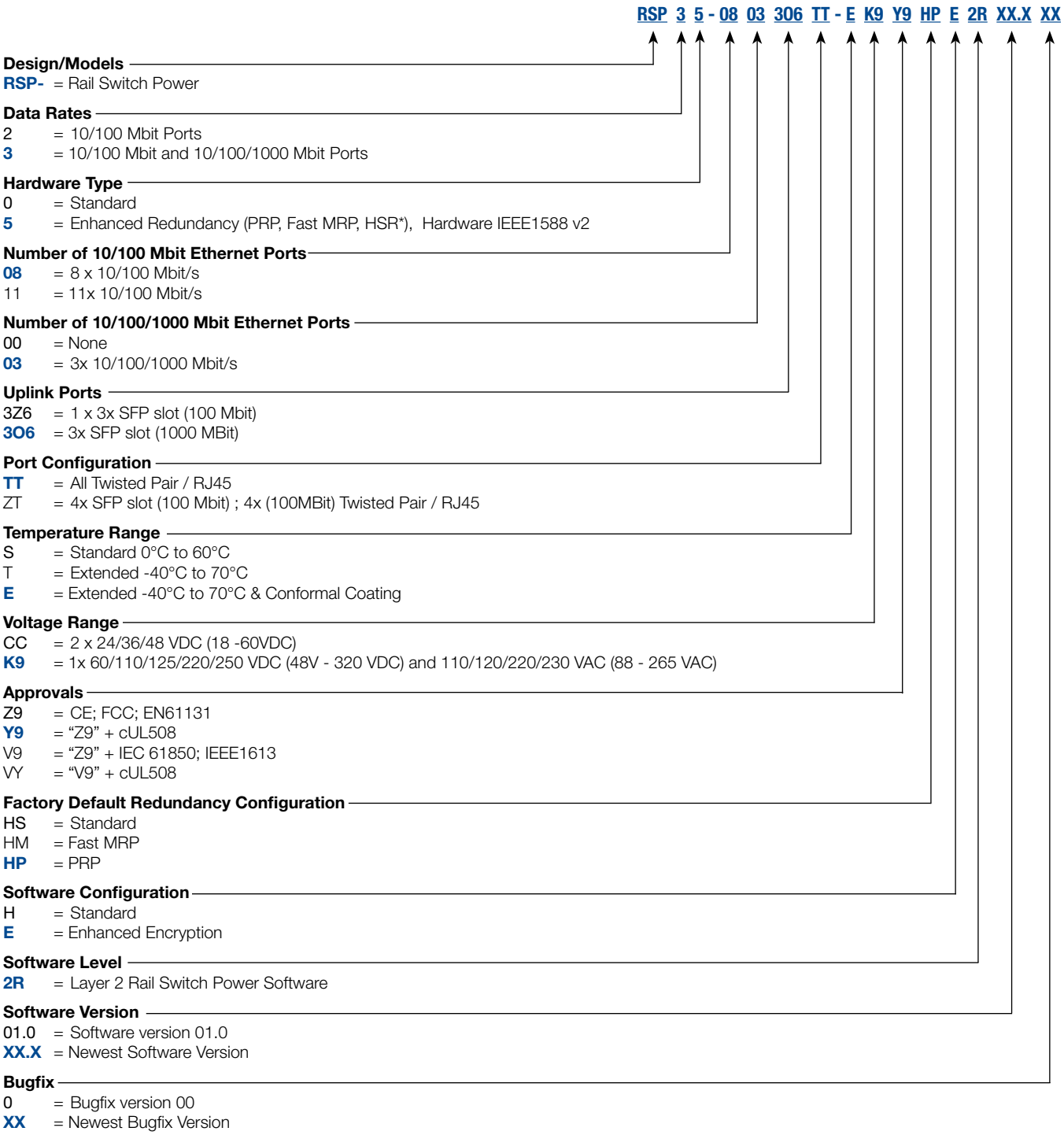
Technical Specifications

Physical Characteristics	RSP Series Standard Temperature	RSP Series Extended Temperature
Available Ports	11	
Mounting	DIN Rail	
Dimensions (W x H x D)	90 x 164 x 120 mm	98 x 164 x 120 mm
Weight	1.2 kg	1.5 kg
IP Rating	IP 30	
Ambient Conditions		
Operating Temperature	0 °C to +60 °C, -40 °C to +70 °C, or -40 °C to +70 °C (inclusive Conformal Coating)	
Storage/Transport Temperature	-40 °C to +70 °C	
Relative Humidity (non-condensing)	10 % to 95 %	
Conformal Coating	Yes (variant dependent)	
Interfaces		
V.24 Interface	1 x RJ11 Socket	
SD Card Slot	1x to connect auto-configuration adapter ACA31 (SD-card)	
Power Requirements		
Operating Voltage	24/36/48 V DC redundant, or 60/120/250 V DC and 110/230 V AC	
PoE (802.3af) ports supported	n/a	
PoE Plus (802.3at) ports supported	n/a	
Regulatory Approvals		
Safety of Industrial Control Equipment	cUL 508 (pending)	
Hazardous Locations	n/a	
Germanischer Lloyd	n/a	
Transportation	NEMA TS2 (pending)	
Railway (norm)	EN50121-4 (pending)	
Substation	IEC 61850-3, IEEE 1613	
Switching/Routing		
Software Version	Layer 2	
Enhanced Redundancy Functions	Fast MRP, HSR, PRP (variant dependent)	
Reliability		
MTBF Range	Pending	
Warranty	5 Years Standard.	

NOTE: These are the prominent technical specifications. For complete technical specifications visit: **www.beldensolutions.com/hirschmann**

RSP Series Managed Industrial DIN Rail Switch Configurator

Fast and Gigabit Ethernet Networks



Design/Models
RSP- = Rail Switch Power

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

Hardware Type
0 = Standard
5 = Enhanced Redundancy (PRP, Fast MRP, HSR*), Hardware IEEE1588 v2

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

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

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

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

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

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

Approvals
Z9 = CE; FCC; EN61131
Y9 = “Z9” + cUL508
V9 = “Z9” + IEC 61850; IEEE1613
VY = “V9” + cUL508

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

Software Configuration
H = Standard
E = Enhanced Encryption

Software Level
2R = Layer 2 Rail Switch Power Software

Software Version
01.0 = Software version 01.0
XX.X = Newest Software Version

Bugfix
0 = Bugfix version 00
XX = Newest Bugfix Version

OCTOPUS IP67 / IP54 Industrial On-Machine Ethernet Switches

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.

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.

OCTOPUS Fast Ethernet Unmanaged Waterproof IP67 / IP54 Switches

	Part No.	Order No.	Ports/Functions
	OCTOPUS 5TX EEC	943 892-001	5 x 10/100 Mbps M12-coding, Unmanaged
	OCTOPUS OS20-001000T5T5TAFUHB	942 025-001	10 x 10/100 BASE-TX, M12 D coding, 4-pole
	OCTOPUS OS20-001000T5T5TNEUHB	942 025-004	10 x 10/100 BASE-TX, M12 D coding, 4-pole, (110 V version)

OCTOPUS PoE Fast Ethernet Unmanaged Waterproof IP67 / IP54 Switches

	Part No.	Order No.	Ports/Functions
	OCTOPUS OS24-081000T5T5TFFUHB **Available: Q4, 2012**	942 025-003	8 x10/100 Base-TX PoE (Phantom Power) and 2 x10/100 Base-TX (24 V version)
	OCTOPUS OS24-081000T5T5TNEUHB **Available: Q4, 2012**	942 025-004	8 x10/100 Base-TX PoE (Phantom Power) and 2 x10/100 Base-TX (110 V version)

OCTOPUS IP67 / IP54 Industrial On-Machine Ethernet Switches

OCTOPUS Fast Ethernet Managed Waterproof IP67 / IP54 Switches

	Part No.	Order No.	Ports/Functions
	OCTOPUS 8M	943 931-001	8 x 10/100 BASE-TX, M12 D-coding, 4-pole
	OCTOPUS 8M Train	943 983-001	8 x 10/100 BASE-TX, M12 D-coding, 4-pole, (EN 50155)
	OCTOPUS OS20-000900T5T5TAFBHH	942 025-005	9 x 10/100 BASE-TX, M12 D-coding, 4-pole
	OCTOPUS OS20-000900T5T5TNEBHH	942 025-006	9 x 10/100 BASE-TX, M12 D-coding, 4-pole, (110 V version)
	OCTOPUS OS20-0010001M1MTREPHH	943 988-001	8 x 10/100 BASE-TX, M12 D coding, 4-pole, 2 x 100 BASE FX Multimode Ports IAW IEC 63076-3-106, Version 1
	OCTOPUS OS20-0010004M4MTREPHH	943 988-003	8 x 10/100 BASE-TX, M12 D coding, 4-pole, 2 x 100 BASE FX Multimode Ports IAW IEC 63076-3-106, Version 4
	OCTOPUS OS20-0010001S1STREPHH	943 988-002	8 x 10/100 BASE-TX, M12 D coding, 4-pole, 2 x 100 BASE FX Singlemode Ports IAW IEC 63076-3-106, Version 1
	OCTOPUS OS20-0010004S4STREPHH	943 988-004	8 x 10/100 BASE-TX, M12 D coding, 4-pole, 2 x 100 BASE FX Singlemode Ports IAW IEC 63076-3-106, Version 4
	OCTOPUS 16M	943 912-001	16 x 10/100 BASE-TX, M12 D-coding, 4-pole
	OCTOPUS 16M-Train	943 984-001	16 x 10/100 BASE-TX, M12 D-coding, 4-pole, (EN 50155)
	OCTOPUS 24M	943 923-001	24 x 10/100 BASE-TX, M12 D coding, 4-pole
	OCTOPUS 24M Train	943 985-001	24 x 10/100 BASE-TX, M12 D coding, 4-pole, (EN 50155)

OCTOPUS PoE Fast Ethernet Managed Waterproof IP67 / IP54 Switches

	Part No.	Order No.	Ports/Functions
	OCTOPUS 8M-6PoE	943 967-101	6 x 10/100 BASE-TX PoE (phantom power) and 2 x 10/100 BASE-TX , M12 D coding, 4-pole
	OCTOPUS 8M-8PoE	943 967-001	8 x 10/100 BASE-TX PoE (phantom power), M12 D coding, 4-pole

OCTOPUS IP 67 / IP 54 Industrial On-Machine Ethernet Switches

	OCTOPUS OS24-080900T5T5TFFBHH **Available: Q4, 2012**	942 025-007	8 x10/100 Base-TX PoE-Plus (Phantom Power) and 1x10/100 Base-TX (24 V version)
	OCTOPUS OS24-080900T5T5TNEBHH **Available: Q4, 2012**	942 025-008	8 x10/100 Base-TX PoE-Plus (Phantom Power) and 1x10/100 Base-TX (110 V version)
	OCTOPUS 16M-8PoE	943 960-001	8 x 10/100 BASE-TX PoE (phantom power) and 8 x 10/100 BASE-TX, M12 D coding, 4-pole
	OCTOPUS 24M-8 PoE	942 063-001	8 x 10/100 BASE-TX PoE (phantom power) and 16x 10/100 BASE-TX, M12 D-coding, 4 pole

OCTOPUS Gigabit Ethernet Managed Waterproof IP67 / IP54 Switches

	Part No.	Order No.	Ports/Functions
	OCTOPUS OS30-0008021A1ATREPHH	943 988-005	8 x 10/100 BASE-TX, 2x Gigabit Multimode Ports IAW IEC 63076-3-106, Version 1
	OCTOPUS OS30-0008024A4ATREPHH	943 988-007	8 x 10/100 BASE-TX, 2x Gigabit Multimode Ports IAW IEC 63076-3-106, Version 4
	OCTOPUS OS30-0008021B1BTREPHH	943 988-006	8 x 10/100 BASE-TX, 2x Gigabit Singlemode Ports IAW IEC 63076-3-106, Version 1
	OCTOPUS OS30-0008024B4BTREPHH	943 988-008	8 x 10/100 BASE-TX, 2x Gigabit Singlemode Ports IAW IEC 63076-3-106, Version 4

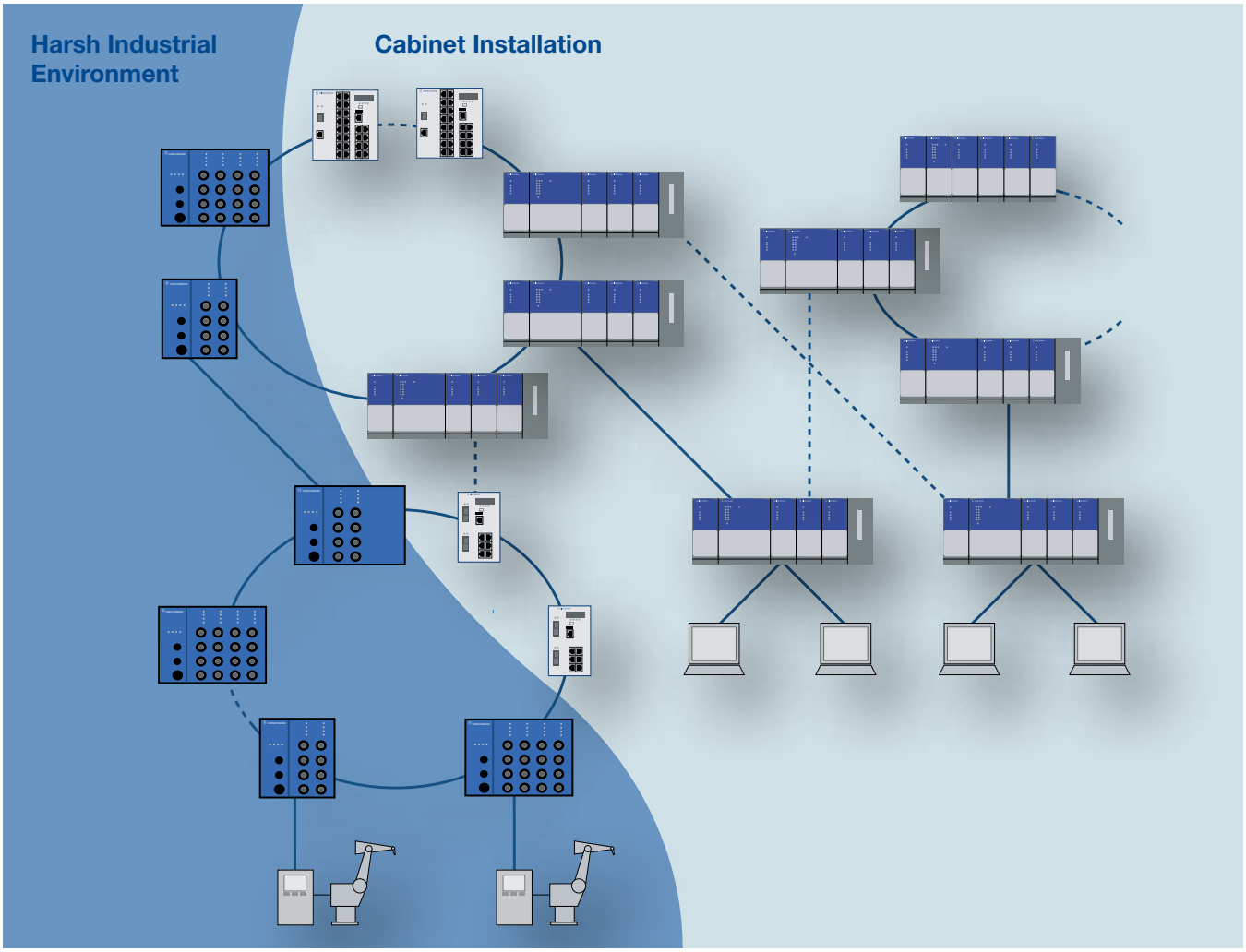
OCTOPUS PoE Gigabit Ethernet Managed Waterproof IP67 / IP54 Switches

	Part No.	Order No.	Ports/Functions
 	OCTOPUS OS32-080802T6T6TPEPHH **Available: Q3, 2012**	942 069-002	8 x10/100 BASE-TX PoE (phantom power) and 2 x1000 BASE-TX
	OCTOPUS OS32-081602T6T6TPEPHH **Available: Q3, 2012**	942 069-001	8 x10/100 BASE-TX PoE (phantom power) and 8 x10/100 BASE-TX 2 x1000 BASE-TX
	OCTOPUS OS32-080802O6O6TPEPHH **Available: Q3, 2012**	942 069-004	8x 10/100 BASE-TX PoE (phantom power) and 2x SFP- sockets for 10/100 BASE-FX and 1000 BASE-X housing IEC 63076-3106 v1
	OCTOPUS OS32-081602O6O6TPEPHH **Available: Q3, 2012**	942 069-003	8x 10/100 BASE-TX PoE (phantom power) and 8x 10/100 BASE-TX and 2x SFP- sockets for 10/100 BASE-FX and 1000 BASE-X housing IEC 63076-3106 v1

OCTOPUS IP 67 Connectivity Solutions

Part No.	Order No.	Description
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

OCTOPUS IP 67 Industrial On-Machine Ethernet Switches



Whenever reliable, intelligent, and efficient data transmission has to be guaranteed under extreme condtions, the OCTOPUS family offers a robust solution. Sturdy housing and connector technology together with powerful management functionality make the OCTOPUS the best solution when high network availability is necessary. In addition to being ideal for environmentally challenging applications at the field level, the OCTOPUS is also ideal for transportation applications, such as traffic/system control and on-board communication systems.

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..

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 sunlight and 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.

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, unshielded, 2-and 4 pair, 24 AWG cable, stranded copper alloy conductors, polyolefin insulation, teal jacket. Warranted to 10 million flex cycles @ 20X OD and 1M flex cycles @ 10X OD.
M224THFSTJT...M	RJ45 to M12	
M224THFSTMT...M	M12 to M12	
J224THFSTPT...M	RJ45 to M12 (Panel Receptacle)	

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

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

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 sunlight and 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.

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 sunlight and 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.

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 sunlight and 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.

Industrial Ethernet Media Cordset Configurator

Hirschmann by Belden

J 2 24 PVC ST J T 00.3M

Connector Type 1
J = RJ45
M = M12

Number of Conductors (Pairs)
2 = 2 pair
4 = 4 pair

Wire Gauge
24 = 24 AWG cable

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

Stranding/Shielding
ST = Stranded, Unshielded
TL = Stranded, Shielded

Connector Type 2
J = RJ45
M = M12
P = M12 Panel Mount Receptacle

Cable Jacket Color
T = Teal
B = Black*
G = Grey*
R = Red*
U = Blue*
N = Orange*

Cable Lengths

00.3M = 0.3 meters	10.0M = 10 meters	60.0M = 60 meters
00.5M = 0.5 meters	12.0M = 12 meters	65.0M = 65 meters
01.0M = 1 meter	15.0M = 15 meters	70.0M = 70 meters
02.0M = 2 meters	20.0M = 20 meters	75.0M = 75 meters
03.0M = 3 meters	25.0M = 25 meters	80.0M = 80 meters
04.0M = 4 meters	30.0M = 30 meters	90.0M = 90 meters
05.0M = 5 meters	40.0M = 40 meters	
06.0M = 6 meters	50.0M = 50 meters	
07.0M = 7 meters	55.0M = 55 meters	

* Denotes special order. Minimum quantaties apply.

RJ45 to RJ45

RJ45 to M12

M12 to M12

RJ45 to M12 (Panel Receptacle)

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.

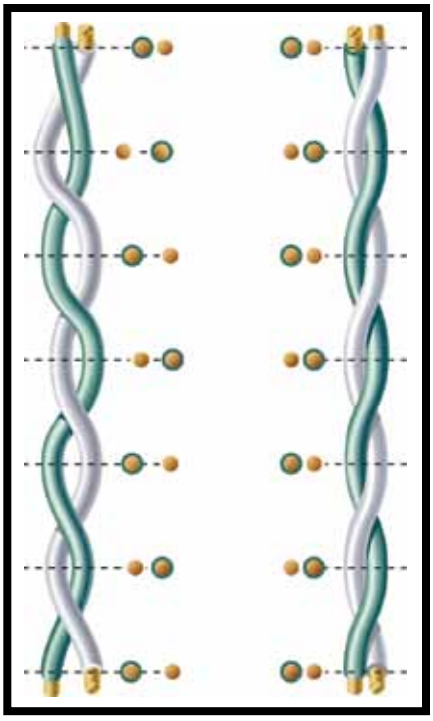


Illustration 3: Side-by-side comparison. Non-Bonded Pair versus Bonded-Pair cable.

HIRSCHMANN
A BELDEN BRAND

MACH100 19" Industrial Workgroup Rack-Mount Switches

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

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

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

Technical Specifications

Physical Characteristics	MACH102 Series 102-8TP-x	MACH102 Series 102-24TP-x	MACH104 Series 104-20TX-x	MACH104 Series 104-16TX-PoEP-x
Available Ports	10-26	26	24	20-22
Mounting	19" Control Cabinet			
Dimensions (W x H x D)	448 x 44 x 310 mm			448 x 44 x 345 mm
Weight	appr. 3.75 kg	appr. 4 kg	appr. 4.4 kg	appr. 4.5 kg
IP Rating	IP 20	IP20	IP30	IP20
Ambient Conditions				
Operating Temperature	0 °C to +50 °C			
Storage/Transport Temperature	-20 °C to + 85 °C			
Relative Humidity (non-condensing)	10 % to 95 %			
Conformal Coating	n/a			
Interfaces				
V.24 Interface	1 x RJ11 Socket			
USB Interface	1 x USB (ACA21-USB Adaptor)			
Power Requirements				
Operating Voltage	110-240 V AC			
PoE (802.3af) ports supported	Yes (variant applicable)			16 ports
PoE Plus (802.3at) ports supported	n/a			8 ports
Regulatory Approvals				
Safety of Industrial Control Equipment	cUL 508			Pending
Hazardous Locations	n/a			
Germanischer Lloyd	n/a			
Transportation	n/a			
Railway (track)	n/a			
Substation	n/a			
Reliability				
MTBF Range	21.6 to 26.5 years	19.1 to 22.8 years	13.7 to 24 years	14.6 to 21.4 years
Warranty	5 Years Standard. Lifetime (except for media modules) for purchases made within the United States or Canada and after May 1, 2011. Registration of switch is required: **www.registermyswitch.com**			

NOTE: These are the prominent technical specifications. For complete technical specifications visit: **www.beldensolutions.com/hirschmann**

MACH100 19" Industrial Workgroup Rack-Mount Switch Configurations

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

MODULAR: MACH100 Fast/Gigabit Industrial Workgroup Switches		
Part No.	**Order No.**	**Ports/Functions**
MACH102-8TP	943 969-001	8 x 10/100 BASE-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 943 969-001, but w/ redundant 110/220 VAC power supply
FIXED PORTS: MACH100 Fast/Gigabit Industrial Workgroup Switches		
Part No.	**Order No.**	**Ports/Functions**
MACH102-8TP-F	943 969-201	8 x 10/100 BASE-TX RJ45 ports and 2 x GE combo ports (100 or 1000 MBps SFPs)
MACH102-8TP-FR	943 969-301	Same as 943 969-201, but w/ redundant 110/220 VAC power supply
MACH102-24TP-F	943 969-401	24 x 10/100 BASE-TX RJ45 ports and 2 x GE combo ports (100 or 1000 MBps SFPs)
MACH102-24TP-FR	943 969-501	Same as 943 969-401, but w/ redundant 110/220 VAC power supply
FIXED PORTS: MACH100 Gigabit Industrial Workgroup Switches		
Part No.	**Order No.**	**Ports/Functions**
MACH104-20TX-F	942 003-001	20 x GE TX Ports, 4 x GE RJ45/SFP combo ports
MACH104-20TX-FR	942 003-101	Same as 942 003-001, but with redundant power supply
FIXED PORTS: MACH100 Gigabit Industrial Workgroup Switches with PoE		
Part No.	**Order No.**	**Ports/Functions**
MACH104-20TX-F-4PoE	942 003-201	Same as MACH104-20TX-F, 4 of the 20 10/100/1000 ports are 802.11af PoE
FIXED PORTS: MACH100 Gigabit Industrial Workgroup Switches with PoE-Plus		
Part No.	**Order No.**	**Ports/Functions**
MACH104-16TX-PoEP	942 030-001	20 Ports in total; 16x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP
MACH104-16TX-PoEP -E	942 027-001	20 Ports in total; 16x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP)
MACH104-16TX-PoEP -R	942 026-001	20 Ports geamt; 16 x (10/100/1000 BASE-TX, RJ45) PoEPlus und 4 x Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 oder 100/1000 BASE-FX, SFP)
MACH104-16TX-PoEP +2X	942 031-001	22 Ports in total; 16x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP) and 2 x 10GE XFP
MACH104-16TX-PoEP +2X -R	942 033-001	22 Ports in total; 16x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP) and 2 x 10GE XFP
MACH104-16TX-PoEP +2X -E	942 032-001	22 Ports in total; 16x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP) and 2 x 10GE XFP
MEDIA MODULES		
Part No.	**Order No.**	**Ports/Functions**
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

NOTE: SFPs need to be purchased separately.

MACH 1000 19" Über-Rugged™ Rack-Mount Switches

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

The MACH1000 is available in a 24-port custom configurable design with two or four additional Gigabit uplink (RJ45 and/or SFP for fiber) and PoE ports. The MACH1000 is also available in an all-Gigabit version, offering 16 10/100/1000 RJ45/SFP combo ports to provide countless copper/fiber combinations.

These Über-Rugged™ switches are available with Layer 2 or Layer 3 capabilities. The fan-less design and extremely efficient components are optimized for minimal heat generation and high MTBF (mean time between failure). The switches offer sub-10 second boot times and select variants offer PTP IEEE 1588V2 with BCand TC, precision 30ns.

Technical Specifications

Physical Characteristics	MAR1020 Series 1x2x	MAR1030 Series 1x3x	MAR1040 Series 1x4x
Available Ports	2-24	2-28	16 (Full Gigabit)
Mounting	19" Control Cabinet		
Dimensions (W x H x D)	445 x 44 x 308 mm		
Weight	appr. 5 kg		
IP Rating	IP 30		
Ambient Conditions			
Operating Temperature	0 °C to + 60 °C, -40 °C to + 85 °C, or -40 °C to + 85 °C (inclusive Conformal Coating)		
Storage/Transport Temperature	-40 °C - + 85 °C		
Relative Humidity (non-condensing)	10 % - 95 %		
Conformal Coating	Yes (variant dependent)		
Interfaces			
V.24 Interface	1 x RJ11 Socket		
USB Interface	1 x USB (ACA21-USB Adaptor)		
Power Requirements			
Operating Voltage	24/36/49 V DC or 110/250 V DC/110/230 V AC		
PoE (802.3af) ports supported	Yes (variant applicable)		
PoE Plus (802.3at) ports supported	n/a		
Regulatory Approvals			
Safety of Industrial Control Equipment	cUL 508		
Hazardous Locations	Pending	Pending	cULus ISA12.12.01
Germanischer Lloyd	Germanischer Lloyd		
Transportation	NEMA TS2 (non-PoE models)		
Railway (norm)	EN 50121-4		
Substation	IEC 61850-3; IEEE 1613 (non-PoE models)		
Switching/Routing			
Software Version	Layer 2	Layer 2	Layer 2 or 3
Reliability			
MTBF Range	21.5 to 38.9 years	20 to 47.6 years	27.1 to 27.8 years
Warranty	5 Years Standard. Lifetime for purchases made within the United States or Canada and after May 1, 2011. Registration of switch is required: www.registermyswitch.com		

NOTE: These are the prominent technical specifications. For complete technical specifications visit: **www.beldensolutions.com/hirschmann**

MACH1000 19" Über-Rugged™ Rack-Mount Switch Configurations

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

MAR1020- 99 MMMMMMMVVZZTTTTTTTTTTTT99 U G C H P H H XX.X

Design/Models

MAR1020- = Fast Ethernet uplink
MAR1022- = Fast Ethernet uplink with 4 ports PoE
MAR1120- = Fast 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)

Gigabit Ethernet Ports

99 = none (not present)

Fast Ethernet Port Configurations (1 to 24 Ports)

MM = 2 x Multimode 100 Mbps SC
VV = 2 x Singlemode 100 Mbps SC
ZZ = 2 x SFP Slot 100 Mbps SFP
TT = 2 x Twisted Pair (TX) 10/100 Mbps RJ45
99 = none (not present)
RR = 2 x Twisted Pair (TX) 10/100 Mbps M12
FF = 2 x Multimode 10 Mbps ST
JJ = 2 x Multimode 100 Mbps MTRJ
UU = 2 x Singlemode 100 Mbps ST
LL = 2 x Singlemode LH 100 Mbps SC
GG = 2 x Singlemode LH+ 100 Mbps SC

Temperature Range Options

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

Power Supply 1 (options)

C = 24/36/48 VDC (spring clip)
G = 110/250 VDC/110/230 VAC (spring clip)
L = 24/36/48 VDC (plug-in connector)
M = 110/250 VDC/110/230 VAC (plug-in connector)

Power Supply 2 (options)

C = 24/36/48 VDC (spring clip)
G = 110/250 VDC/110/230 VAC (spring clip)
9 = none (not present)

Approvals

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

Software Version (see page 53 for additional Management Software Functionality details)

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

Configuration

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

OEM Type

H = Standard
X = Customer Specific

Software Release

XX.X = Current Software Release

NOTE: The last three part number categories (**Configuration**, **OEM Type**, and **Software Release**) are optional.

MACH 1000 19" Über-Rugged™ Rack-Mount Switch Configurations

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

MAR1030- CC MMMMMMMVVZZTTTTTTTTTTTT99 U G C H P H H XX.X

Design/Models

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

Gigabit Ethernet Ports

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

Fast Ethernet Port Configurations (1 to 24 Ports)

MM = 2 x Multimode 100 Mbps SC
VV = 2 x Singlemode 100 Mbps SC
ZZ = 2 x SFP Slot 100 Mbps SFP
TT = 2 x Twisted Pair (TX) 10/100 Mbps RJ45
99 = none (not present)
RR = 2 x Twisted Pair (TX) 10/100 Mbps M12
FF = 2 x Multimode 10 Mbps ST
JJ = 2 x Multimode 100 Mbps MTRJ
NN = 2 x Multimode 100 Mbps ST
UU = 2 x Singlemode 100 Mbps ST
LL = 2 x Singlemode LH 100 Mbps SC
GG = 2 x Singlemode LH+ 100 Mbps SC

Temperature Range Options

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

Power Supply 1 (options)

C = 24/36/48 VDC (spring clip)
G = 110/250 VDC/110/230 VAC (spring clip)
L = 24/36/48 VDC (plug-in connector)
M = 110/250 VDC/110/230 VAC (plug-in connector)

Power Supply 2 (options)

C = 24/36/48 VDC (spring clip)
G = 110/250 VDC/110/230 VAC (spring clip)
9 = none (not present)

Approvals

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

Software Version (see page 53 for additional Management Software Functionality details)

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

Configuration

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

OEM Type

H = Standard
X = Customer Specific

Software Release

XX.X = Current Software Release

NOTE: The last three part number categories (**Configuration**, **OEM Type**, and **Software Release**) are optional.

MACH 1000 19” Über-Rugged™ Rack-Mount Switch Configurations

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

MAR1040- 4C4C4C4C4C9999 S M L H R H H XX.X

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

Gigabit Ethernet Ports
4C4C4C4C9999 = 16 RJ45/SFP combo ports (supports 100 and 1000 Mbps SFPs)

Temperature Range Options
S = 0° C up to + 60° C
T = – 40° C up to + 70° C
E = – 40° C up to + 70° C inclusive Conformal Coating

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

Power Supply 2 (options)
L = 24/36/48 VDC (plug-in connector)
M = 110/250 VDC/110/230 VAC (plug-in connector)
9 = none (not present)

Approvals
H = cUL 508 (pending), cUL 1604 Class 1 Div 2 (pending), GL (pending), EN 50121-4, EN50155 (pending), NEMA TS, IEC 61850-3, IEEE1613

Software Version (see page 53 for additional Management Software Functionality details)
P = Layer 2 Professional: extended diagnostics, redundancy and security features
R = Layer 3 Professional: Routing capabilities

Configuration
H = Standard

OEM Type
H = Standard

Software Release
XX.X = Current Software Release

NOTE: The last three part number categories (**Configuration**, **OEM Type**, and **Software Release**) are optional.

MACH4000 Series Gigabit Backbone Layer 2/3 Rack-Mount Switches

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

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

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

300ms HiPer-Ring

PoE

Technical Specifications

Physical Characteristics	MACH4000 Series
Available Ports	8-52
Mounting	19" Control Cabinet
Dimensions (W x H x D)	480 x 88 x 435 mm
Weight	7.5 kg
IP Rating	IP 20
Ambient Conditions	
Operating Temperature	0 °C to + 60 °C
Storage/Transport Temperature	-25 °C to + 70 °C
Relative Humidity (non-condensing)	10 % to 95 %
Conformal Coating	n/a
Interfaces	
V.24 Interface	1 x RJ11 Socket
USB Interface	1 x USB (ACA21-USB Adaptor)
Power Requirements	
Operating Voltage	24V DC or 48V DC or 110-240V AC (variant applicable)
PoE (802.3af) ports supported	Yes (variant applicable)
PoE Plus (802.3at) ports supported	n/a
Regulatory Approvals	
Safety of Industrial Control Equipment	cUL 508
Hazardous Locations	n/a
Germanischer Lloyd	Germanischer Lloyd
Transportation	n/a
Railway (norm)	n/a
Substation	n/a
Switching/Routing	
Software Version	Layer 2 or 3
Reliability	
MTBF Range	11.1 to 18.9 years
Warranty	5 Years Standard.

NOTE: These are the prominent technical specifications. For complete technical specifications visit: **www.beldensolutions.com/hirschmann**

MACH4000 Series Gigabit Backbone Layer 2/3 Rack-Mount Switch Configurations

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

MACH4000 - High Density Layer 2/3 Gigabit Backbone Switch Chassis		
Part No.	**Order No.**	**Layer/Software**
MACH4002 48+4G-L2P	943 859-101	Layer 2, Professional Management
MACH4002 48+4G-L3E	943 859-201	Layer 3, Enhanced Management
MACH4002 48+4G-L3P	943 859-301	Layer 3, Professional Management

- Fixed ports: 4x Gigabit Ethernet combo ports*
  (1000 Mbps SFP socket or 10/100/1000 Mbps RJ45) and 16x 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 52. For software functionality – see page 53)

MACH4002-24G-L2P	943 916-101	Layer 2, Professional Management
MACH4002-24G-L3E	943 916-201	Layer 3, Enhanced Management
MACH4002-24G-L3P	943 916-301	Layer 3, Professional Management

- Fixed ports: 8x Gigabit Ethernet combo ports*
  (SFP dual speed socket or TP 10/100/1000 Mbps)
- Media modules: 2x sockets (8 ports max each) for total 16 ports 10/100/1000 Mbps
  (Media modules sold separately – see page 52. For software functionality – see page 53)

MACH4002-24G+3X-L2P	943 915-101	Layer 2, Professional Management
MACH4002-24G+3X-L3E	943 915-201	Layer 3, Enhanced Management
MACH4002-24G+3X-L3P	943 915-301	Layer 3, Professional Management

- Fixed ports: 3x10Gigabit Ethernet XFP socket and 8 Gigabit Ethernet ports
  TP/RJ45 10/100/1000 Mbps
- Media modules: 2x sockets (8 ports max each) for total 16 ports 10/100/1000 Mbps
  (Media modules sold separately – see page 52. For software functionality – see page 53)

MACH4002-48G-L2P	943 911-101	Layer 2, Professional Management
MACH4002-48G-L3E	943 911-201	Layer 3, Enhanced Management
MACH4002-48G-L3P	943 911-301	Layer 3, Professional Management

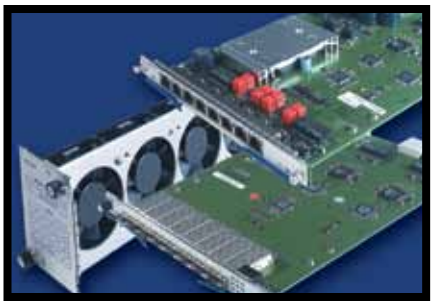
- Fixed ports: 16 Gigabit Ethernet (8 Gigabit Ethernet combo ports* 100/1000 Mbps
  SFP dual speed socket or 10/100/1000 Mbps + 8 Gigabit 10/100/1000 Mbps RJ45)
- Media modules: Four sockets (8 ports max each) for total 32 ports 10/100/1000 Mbps
  (Media modules sold separately – see page 52. For software functionality – see page 53)

MACH4002-48G+3X-L2P	943 878-101	Layer 2, Professional Management
MACH4002-48G+3X-L3E	943 878-201	Layer 3, Enhanced Management
MACH4002-48G+3X-L3P	943 878-301	Layer 3, Professional Management

- 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 52. For software functionality – see page 53)

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

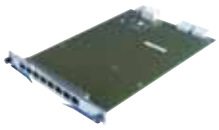
MACH4000 Media Modules, Power Supplies and Accessories



M4-S... Internal Power Supplies

M4-POWER. Power Chassis

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



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	8x10/100/1000 Mbps RJ45 (no 1000 Mbps with MACH4002 48+4G)
M4-FAST 8-SFP	943 864-001	8x100 Mbps SFP sockets*
M4-FAST 8TP-RJ45-PoE	943 873-001	8x10/100 Mbps RJ45 ports with Power over Ethernet
M4-GIGA 8-SFP	943 879-001	8x100/1000 Mbps SFP sockets* (not for MACH4002 48+4G)

NOTE: *SFP/XFP Fiberoptic transceivers sold separately (see Accessories on page 65 for 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
MACH4002-48G+3X-L3P	943 878-301	Layer 3, Professional Management chassis

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-50mm	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

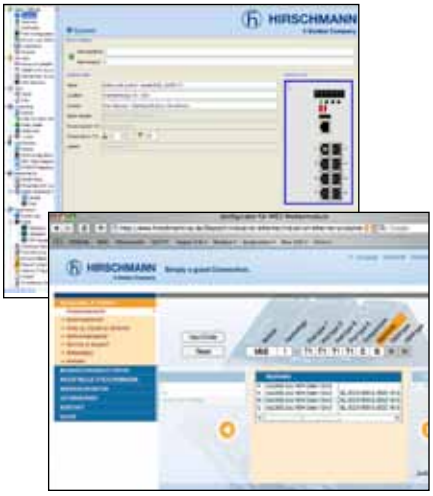
Management Software Functionality

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 DIN Rail Mount 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 - supporting 802.11n.

BAT54 Rail

OpenBAT-R (Available Q3, 2012)

- 1 or 2x WLAN 802.11n
- Clear Space® technology
- Gigabit and Fiber Combo port, USB, V.24
- Modular design
- 3 power supply types, relay ports
- -40°C to +70°C

OpenBAT-R

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

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

OpenBAT Series, Rail Mount Access Point/Client/Bridge		
Part No.	**Order No.**	**Description**
OpenBAT-C Available Q3, 2012	942 072-001	Wireless LAN Client Supports 2,4GHz and 5GHz frequency bands with up to 150Mbps bandwidth, using the 802.11n WLAN standard.
OpenBAT-R Available Q3, 2012	943 953-999	One or two WLAN interfaces, up to 8 SSIDs per WLAN interface, one or two LAN ports 10/100/1000BASE-TX, RJ45, Power over Ethernet according to IEEE 802.3af as Combo Port to be equipped with an SFP for support of fiber interface.

BAT Series, DIN Rail Mount Access Point/Client/Bridge, 802.11a/b/g/h/i/n		
Part No.	**Order No.**	**Description**
BAT54-Rail	943 926-021	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	943 926-022	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).

Wireless DIN Rail Mount Ethernet Access Point/Clients

BAT Series

BAT300-F

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

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, DIN Rail Mount Access Point/Client/Bridge, 802.11a/b/g/h/i/n (continued)		
Part No.	**Order No.**	**Description**
BAT54-Rail Client-FCC	943 926-522	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).

BAT Series, IP67 Hard Mount Access Point/Client/Bridge		
Part No.	**Order No.**	**Description**
BAT54-F	943 959-112	Dualband Ruggedized Industrial Wireless LAN Access Point/Client with two independent radio modules with IEEE 802.11a/b/g/h/i for installation in harsh environment.
BAT54-F FCC	943 959-012	Dualband Ruggedized Industrial Wireless LAN Access Point/Client with two independent radio modules with IEEE 802.11a/b/g/h/i for installation in harsh environment, with FCC-approval for USA and Canada.
BAT54-F X2	943 959-102	Dualband Ruggedized Industrial Wireless LAN Access Point/Client with two independent radio modules with IEEE 802.11a/b/g/h/i for installation in hazardous environment.
BAT54-F X2 FCC	943 959-002	Dualband Ruggedized Industrial Wireless LAN Access Point/Client with two independent radio modules with IEEE 802.11a/b/g/h/i for installation in hazardous environment, with FCC-approval for USA and Canada.
BAT300-F	943 959-118	Dualband Ruggedized Industrial Wireless LAN Access Point/Client with one radio module with IEEE 802.11n for installation in harsh environment.
BAT300-F FCC	943 959-018	Dualband Ruggedized Industrial Wireless LAN Access Point/Client with one radio module with IEEE 802.11n for installation in harsh environment, with FCC-approval for USA and Canada.

Wireless Ethernet Antennas

BAT Series

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 Local Area Network (WLAN) Contollers

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

HIRSCHMANN
A BELDEN BRAND

Industrial Firewall/VPN Router System

EAGLE20 Series

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

Product Features

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

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.

Industrial Firewall/VPN Router System

EAGLE20 Series

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 (V.24), 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

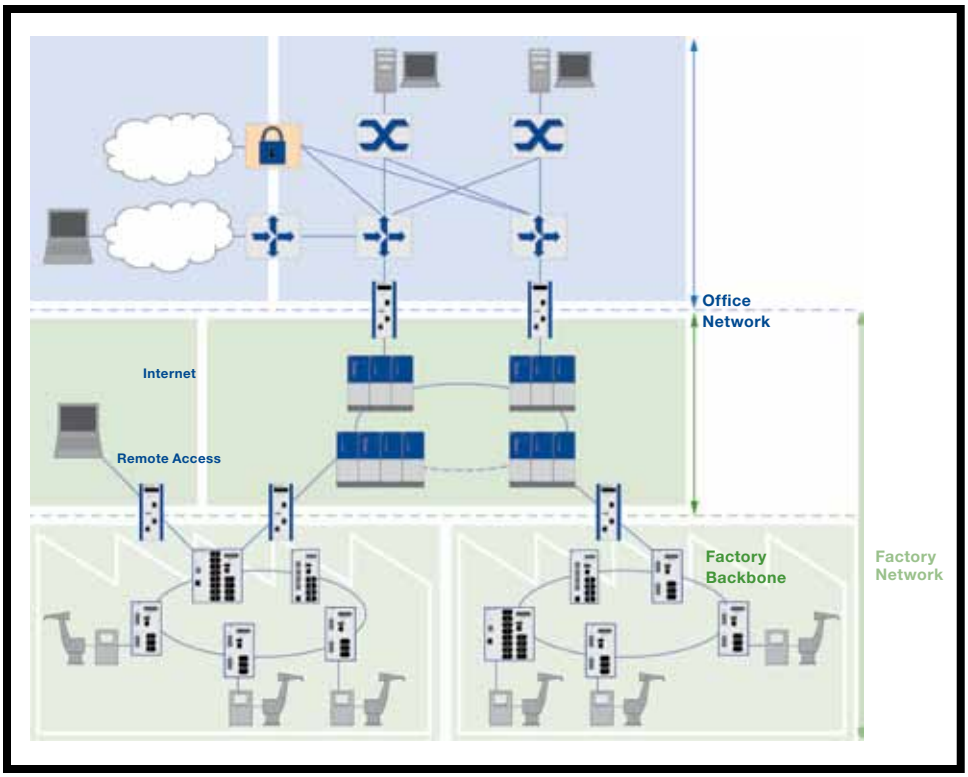


Illustration: Example of firewall/VPN router installation (EAGLE20) in a factory setting.

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The Ultimate Zone Level Security For Your Control Network

EAGLE Tofino™

The Tofino Industrial Security Solution is a distributed security solution that quickly and cost-effectively implements cyber security protection within your control network.

Tofino's flexible architecture allows you to create security zones - Zone Level Security - throughout your control network to protect critical system components. Tofino helps you meet and exceed NERC CIP requirements and ANSI/ISA-99 Standards. And best of all, it helps you avoid expensive down time and achieve optimal performance in your plant.

Features & Benefits

- Securely track network devices and easily create firewall rules
- Deep packet inspection for Modbus/TCP and OPC
- A security system that is easy to deploy and does not risk industrial processes
- Intuitive drag and drop configuration software - only limited
- Extends Cyber Security down to the control network
- Simplified regulatory and standards compliance

  -FERC / NERC CIP
  -ANSI / ISA-99
  -IEC 62443

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
EAGLE Tofino Security Asset Management LSM	942 016-111	Security Asset Management Loadable Security Module
EAGLE Tofino Modbus TCP Enforcer LSM	942 016-112	Modbus TCP Enforcer Loadable Security Moduleo
EAGLE Tofino OPC Enforcer LSM	942 016-117	Modbus OPC Enforcer Loadable Security Module
EAGLE Tofino VPN Server LSM	942 016-113	Virtual Private Network Server Loadable Security Module
EAGLE Tofino VPN Client LSM	942 016-114	Virtual Private Network Client Loadable Security Module
EAGLE Tofino Event Logger LSM	942 016-115	Event Logger Loadable Security Module
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

IOLAN DS / SDS Ethernet Converters with Serial Interfaces

Easy and reliable connection of end devices with serial interfaces to Ethernet networks is now possible with the new series of IOLAN DC converters. Thanks to a variety of different serial interfaces, bandwidths, security functions, protection standards, temperature ranges and special approvals, the IOLAN DC converters provide ideal solutions for a variety of applications, including factory and process automation, building automation, and automation for new energy applications.

Product Features

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

Technical Specifications

Physical Characteristics	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
Available Ports	1	3	4	16
Ambient Conditions				
Operating Temperature	-40°C to 70°C	0°C to 55°C	-40°C to 70°C	-40°C to 70°C
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
Power Supply				
Input Voltage Range	9-30 V DC			88-300 V DC or 85-265 V A, C (47-63 Hz)
Approvals				
FCC	FCC			
Safety Standard for IT Equipment	IEC 60950-1			
Substation	n/a			IEC 61850-3, IEEE1613
Hazardous Locations	n/a		ATEX Class 1 Zone 2, ANSI/ISA - 12.12.01 - 2007 Class 1 Division 2	n/a

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 Rail Transceivers, Hubs, and Fieldbus Tranceivers/Modems

SPIDER Ethernet Transceiver		
Part No.	**Order No.**	**Description**
SPIDER 1TX/1FX MM	943 890-001	1x 10/100Base-TX RJ45, 1x 100Base-FX Multimode, SC sockets
SPIDER 1TX/1FX SM	943 891-001	1x 10/100Base-TX RJ45, 1x 100Base-FX Singlemode, SC sockets

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

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

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

Hardened Fiber Modems/Repeaters (Continued)

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.

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

10 Gigabit 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

Accessories

Power Supplies and Programming/Configuration Tools

Power Supplies		
Part No.	**Order No.**	**Description**
RPS15	943 662-015	24 V DC rail power supply unit 1.3 A at 100 - 240 V AC
RPS30	943 662-003	24 V DC rail power supply unit 1.3 A
RPS80 EEC	943 662-080	24 V DC rail power supply unit 3.0 A, –25° C up to +70° C
RPS120 EEC	943 662-120	24 V DC rail power supply unit 4.5 A, –25° C up to +70° C
RPS120 EEC (CC)	943 662-121	Same as RPS120 EEC, except with Conformal Coating
RPS60/48 V EEC	943 952-001	48 V DC rail power supply unit 1.25 A, –10° C up to +70° C
RPS90/48V HV, PoE	943 979-001	48 V DC PoE rail power supply unit 1.9 A, –40° C up to +50° C
RPS90/48V LV, PoE	943 980-001	48 V DC PoE rail power supply unit 1.9 A, –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
Power Cord	942 000-001	Power Cord for pluggable connection for the power supply of the MACH1000 family and RSR20/RSR30 family. Cable length 2 meters.

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 switch 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

Embedded Ethernet Modules and Switches

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

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

Example of Embedded Ethernet Switch EES25 on development kit

Embedded Ethernet Modules

Type	Order No.	Description
EEM Profinet IO **Available Q3, 2012**	942 019-001	Embedded Ethernet Module for integration of PROFINET functionality in automation devices
EEM EtherNet/IP **Available Q3, 2012**	942 019-002	Embedded Ethernet Module for integration of EtherNetI/P functionality in automation devices
EEM EtherCAT **Available Q3, 2012**	942 019-003	Embedded Ethernet Module for integration of EtherCAT functionality in automation devices
EEM Development Kit **Available Q3, 2012**	942 017-001	Baseboard development kit for Embedded Ethernet Modules (EEM)
EEM XC161 Adaptor **Available Q3, 2012**	942 018-001	Optional Adaptor for Phytec CPU

Embedded Ethernet Switches

Type	Order No.	Description
EES20-0600UHIHSH2E **Available Q3, 2012**	942 050-001	Managed Fast Ethernet Switch according to IEEE 802.3, store-and-forward-switching. 6 x Fast Ethernet ports, configurable as 100BaseTX or 100BaseFX, RX+/RX-and TX+/TX- signals per port. RSTP, Media Redundancy Protocol (MRP, IEC 62439-2), 200 ms recovery.
EES25-0600UHIHMH2E **Available Q3, 2012**	942 050-002	Managed Fast Ethernet Switch according to IEEE 802.3, store-and-forward-switching. 6 x Fast Ethernet ports, configurable as 100BaseTX or 100BaseFX, RX+/RX-and TX+/TX- signals per port. RSTP, Media Redundancy Protocol (MRP, IEC 62439-2), 10 ms recovery.
EES25-0600UHIHPH2E **Available Q3, 2012**	942 050-003	Managed Fast Ethernet Switch according to IEEE 802.3, store-and-forward-switching. 6 x Fast Ethernet ports, configurable as 100BaseTX or 100BaseFX, RX+/RX-and TX+/TX- signals per port. RSTP, Media Redundancy Protocol (MRP, IEC 62439-2), 200 ms recovery, Parallel Redundancy Protocol (PRP, IEC 62439-3) RedBox.
EES Development Kit **Available Q3, 2012**	942 049-001	Development Kit for Embedded Ethernet Switches (EES)

Modular Industrial Patch Panel (MIPP)

The new MIPP is a termination panel for cables that need connecting to active equipment such as switches. Thanks to the modular design, MIPP can be linked to create a large single patch panel, to which, for the first time ever, both fiber and copper cables can be connected.

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

Product Configurator

	MODULE 1	MODULE 2	MODULE 3	MODULE 4	MODULE 5	MODULE 6
MIPP-	XX-	1L1P-				

Design/Model
MIPP - =Modular Industrial Patch Panel

Housing Type
X = No Housing
W = Wall Mount Plate included
D = Standard DIN Rail

Mode (Note: A double module requires two places)

X	= No Housing	H	= 2 x Double module fiber
A	= 1 x Single module	I	= 3 x Double module fiber
B	= 2 x Single module	J	= 1 x SM + 1 x DM fiber
C	= 3 x Single module	K	= 1 x SM + 2 x DM fiber
D	= 4 x Single module	L	= 2 x SM + 1 x DM fiber
E	= 5 x Single module	M	= 2 x SM + 2 x DM fiber
F	= 6 x Single module	N	= 3 x SM + 1 x DM fiber
G	= 1 x Double module fiber	O	= 4 x SM + 1 x DM fiber

Note: SM = Single module and DM = Double module

Module Type
1 = Single module (fiber or blind)
2 = Double module (fiber or blind)
C = Single copper module

Adapter and Keystone Type
L = LC Duplex adapters
S = SC Duplex adapters (Fiber)
U = Unshielded keystones
S = Shielded keystones (Copper)
N = Blind module

Fiber Type / Category Type for Copper

1	= MM/OM1	E	= CAT5e
2	= MM/OM2	D	= CAT6
3	= MM/OM3	A	= CAT6A
4	= MM/OM4	N	= Blind module
9	= SM/OS2		

Accessories and Number of Keystones
P = Pigtails
B = Brilliance Field Installable Connectors
2 = 2 keystones
4 = 4 keystones
N = No accessories

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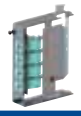
Description of Parts Configured:

MIPP patch panel, no housing, (1) OM1 single fiber module, (6) LC duplex adapters, (1) pack of 12 pigtails.

MIPP Technical Information

Housing Type and Description						
Description	Modular Industrial Patch Panel, DIN Rail					
Number of Single Modules	1	2	3	4	5	6
						
Mechanical Construction						
Material Housing	Aluminium					
Dimensions (WxHxD)	42 x 138 x 122 mm	72 x 138 x 122 mm	102 x 138 x 122 mm	132 x 138 x 122 mm	162 x 138 x 122 mm	192 x 138 x 122 mm
Dimensions with Adapters and Gland, max. (HxD)	165 x 133 mm	165 x 133 mm	165 x 133 mm	165 x 133 mm	165 x 133 mm	165 x 133 mm
Mounting	DIN Rail					
Appr. Weight (incl. Modules)	500 g	800 g	1100 g	1400 g	1700 g	2000 g
Protection Class	IP20					
Module Type and Description						
Type	Single Module	Single Module	Double Module	Double Module	Single Module	Single Module
Description	6 x SC Duplex	6 x LC Duplex	12 x SC Duplex	12 x LC Duplex	4 x RJ45 Keystone Jack, Unshielded	4 x RJ45 Keystone Jack, Shielded
						
Mechanical Construction						
Material	Aluminium					
Adapter/Keystone Types	• Blue SC adapter OS2 UPC zirconia ceramic • Beige SC adapter OM1/OM2 PC phosphor bronze • Aqua SC adapter OM3/OM4 PC zirconia ceramic	• Blue LC adapter OS2 UPC zirconia ceramic • Beige LC adapter OM1/OM2 PC phosphor bronze • Aqua LC adapter OM3/OM4 PC zirconia ceramic	• Blue SC adapter OS2 UPC zirconia ceramic • Beige SC adapter OM1/OM2 PC phosphor bronze • Aqua SC adapter OM3/OM4 PC zirconia ceramic	• Blue LC adapter OS2 UPC zirconia ceramic • Beige LC adapter OM1/OM2 PC phosphor bronze • Aqua LC adapter OM3/OM4 PC zirconia ceramic	• Cat 5e Modular Jack, Keyconnect AX101310, black • Cat 6+ Modular Jack, Keyconnect AX101321, black • Cat 6A/10GX Modular Jack, Keyconnect AX102283, black	• Cat 5e Shielded Modular Jack, Keyconnect AX104595, metal body • Cat 6+ Shielded Modular Jack, Keyconnect AX104596, metal body • Cat 6A/10GX Shielded Modular Jack, Keyconnect AX104562, metal body
Cable Entry	M16 Gland	M16 Gland	M20 Gland	M20 Gland	–	–
Maximum Diameter Cable	10 mm	10 mm	13 mm	13 mm	4 x 7.5 mm	4 x 7.5 mm
Cable Types	Loose-tube, minibreakout or breakout cables of up to 12 fibers	Loose-tube, minibreakout or breakout cables of up to 12 fibers	Loose-tube, minibreakout or breakout cables of up to 24 fibers	Loose-tube, minibreakout or breakout cables of up to 24 fibers	• Cat 5e Unshielded • Cat 6 Unshielded • Cat 6A Unshielded	• Cat 5e Shielded • Cat 6 Shielded • Cat 6A Shielded • Cat 7 Shielded
Accessories						
Pigtails	1 pack of 12 pigtails, 900 micron, 0.6 m in 12 different colours: • SC/UPC SM 9/125, OS2 • SC/PC MM 62.5/125, OM1 • SC/PC MM 50/125, OM2 • SC/PC MM 50/125, OM3 • SC/PC MM 50/125, OM4	1 pack of 12 pigtails, 900 micron, 0.6 m in 12 different colours: • LC/UPC SM 9/125, OS2 • LC/PC MM 62.5/125, OM1 • LC/PC MM 50/125, OM2 • LC/PC MM 50/125, OM3 • LC/PC MM 50/125, OM4	2 packs of 12 pigtails, 900 micron, 0.6 m in 12 different colours: • SC/UPC SM 9/125, OS2 • SC/PC MM 62.5/125, OM1 • SC/PC MM 50/125, OM2 • SC/PC MM 50/125, OM3 • SC/PC MM 50/125, OM4	2 packs of 12 pigtails, 900 micron, 0.6 m in 12 different colours: • LC/UPC SM 9/125, OS2 • LC/PC MM 62.5/125, OM1 • LC/PC MM 50/125, OM2 • LC/PC MM 50/125, OM3 • LC/PC MM 50/125, OM4	–	–

Switch and Network Management

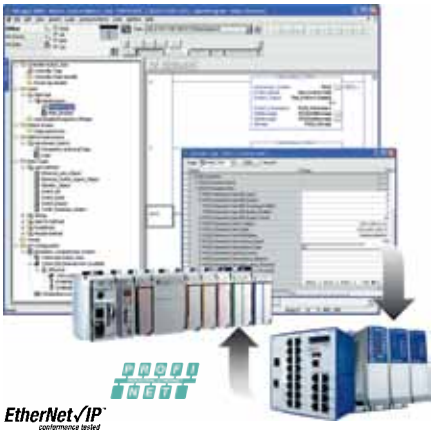
Industrial Profiles

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 Configuration Software

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

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.

Free 30 Day Trial

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

Hirschmann Competence Center

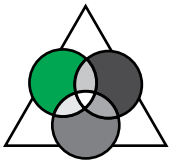
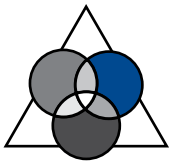
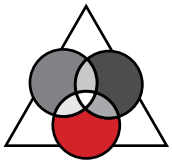
As the use and complexity of industrial networks have increased, so have the pressures on users to design, implement and maintain them. No longer are plant-level Ethernet networks simply a means of gathering data. Industrial applications now monitor and control highly sophisticated and complex operations 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 Competence 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-shield-ed	Shielded *	Solid	Stranded **	Installation Stress Resistance	Pull Tension	Oil Resis-tance	UV Sunlight Resis-tance	Weld Splatter Resis-tance	CMX/ Out-door	Under-ground (burial)	Gasoline Resis-tance	LSZH	MSHA	Hi/Lo Temp	600V UL AWM Rated	Heavy	Upjacket	Armored
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	●	●		●						●	●		
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	●	●		●				●			●		
Industrial Ethernet Category 6 Cable																				
7927A	4	●		●		●	45	●	●									●		
7931A	4	●		●		●	40	●	●				●			●		●		
7940A	4	●		●		●	45	●	●									●		
11872A	4	●		●		●	45												●	
7953A	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 #BP02

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 OFNR/OFN FT.4) PVC Jacket (Indoor/Outdoor)											
2	I100255	I1A0255	I1C0255	I1E0255	I1W0255	0.43	11.00	92	136	600	2700
4	I100455	I1A0455	I1C0455	I1E0455	I1W0455	0.43	11.00	92	136	600	2700
6	I100655	I1A0655	I1C0655	I1E0655	I1W0655	0.43	11.00	92	136	600	2700
8	I400855	I4A0855	I4C0855	I4E0855	I4W0855	0.43	11.00	92	136	600	2700
12	I601255	I6A1255	I6C1255	I6E1255	I6W1255	0.43	11.00	92	136	600	2700
18	I601855	I6A1855	I6C1855	I6E1855	I6W1855	0.43	11.00	92	136	600	2700
24	I602455	I6A2455	I6C2455	I6E2455	I6W2455	0.43	11.00	92	136	600	2700
36	I603655	I6A3655	I6C3655	I6E3655	I6W3655	0.43	11.00	92	136	600	2700
48	I604855	I6A4855	I6C4855	I6E4855	I6W4855	0.54	13.72	128	186	600	2700
60	I606055	I6A6055	I6C6055	I6E6055	I6W6055	0.54	13.72	128	186	600	2700
72	I607255	I6A7255	I6C7255	I6E7255	I6W7255	0.54	13.72	128	186	600	2700
Riser (NEC/CEC OFNR/OFN FT.4) CPE Jacket (Indoor/Outdoor)											
2	I100266	I1A0266	I1C0266	I1E0266	I1W0266	0.43	10.90	89	124	600	2700
4	I100466	I1A0466	I1C0466	I1E0466	I1W0466	0.43	10.90	89	124	600	2700
6	I100666	I1A0666	I1C0666	I1E0666	I1W0666	0.43	10.90	89	124	600	2700
8	I400866	I4A0866	I4C0866	I4E0866	I4W0866	0.43	10.90	89	124	600	2700
12	I601266	I6A1266	I6C1266	I6E1266	I6W1266	0.43	10.90	89	124	600	2700
18	I601866	I6A1866	I6C1866	I6E1866	I6W1866	0.43	10.90	89	124	600	2700
24	I602466	I6A2466	I6C2466	I6E2466	I6W2466	0.43	10.90	89	124	600	2700
36	I603666	I6A3666	I6C3666	I6E3666	I6W3666	0.43	10.90	89	124	600	2700
48	I604866	I6A4866	I6C4866	I6E4866	I6W4866	0.54	13.72	125	192	600	2700
60	I606066	I6A6066	I6C6066	I6E6066	I6W6066	0.54	13.72	125	192	600	2700
72	I607266	I6A7266	I6C7266	I6E7266	I6W7266	0.54	13.72	125	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**. For Belden Technical Support: **1-800-BELDEN-1**

Product, Feature and Approval Matrix

	WIRED (TP AND/OR FIBER)	WIRELESS	DIN RAIL	PANEL	19" RACK	MAXIMUM DATA 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+ (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 (Germanischer 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	●			●	●									●									●									
SPIDER (PD)	●		●	○	○	100	5	●						●									●							●									
RS2-5TX	●		●	○	○	100	5	●			●	●	●						●							●				●	●							●
RS2-TX	●		●		○	100	8	●			●	●	●						●											●	●	●						●
RS20	●		●		○	100	25	●	●		●	●	●	●			●		●	●										●	●	●	●	●		●	●	
RS30	●		●		○	G	26	●	●		●	●	●	●			●		●	●										●	●	●	●	●		●	●	
RS40	●		●		○	G	9		●		●	●	●	●			●		●											●	●	●	●	●			●	
RSB	●		●		○	100	9		●		●	●	●	●					●											●	●							
RSP*	●		●		○	G	11		●			●	●	●		●		●	●											●			●	●		●		
RSR	●		●	○	○	G	10		●		●	●	●	●	●	●		●	●											●	●	●	●	●	●	●		●
MS20	●		●		○	100	24		●			●	●	●		●			●	●										●	●	●	●	●		●	●	
MS30	●		●		○	G	26		●			●	●	●		●			●	●										●	●	●	●	●		●	●	
MS4128	●		●		○	G	28		●	●		●	●	●		●			●	●										●	●	●				●	●	
OCTOPUS	●			●		G	24	●	●		●	●	●	●		●			●	●										●		●			●	●		
MACH100	●			○	●	10G	26		●									●		●	●					●	●				●							●
MACH1000	●			○	●	G	28		●	●	●	●	●	●	●	●		●	●	●										●	●	●	●	●	●	●		
MACH4000	●			○	●	10G	52		●	●		●		●				●	●	●										●		●		●		●		●
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).

***** All approvals for the RSP are pending.

Be Certain with Belden

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