HIRSCHMANN

A **BELDEN** BRAND

Leading Networking Solutions for Industrial & Mission Critical Applications

Edition 10

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

Be certain.
Belden.

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Belden® Solutions

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.

Be Certain with Belden

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 are Robust, Secure and Available.

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.

Media Redundancy Options

Technologies like PRP and HSR provides zero packet loss redundancy and RSTP and MSTP offer office network interoperability.

By using the standardized MRP , redundant network topologies are simplified — resulting in recovery from media failure within 500 ms down to 10 ms (FastMRP).

Sustainable Security Solutions

Comprehensive security features in switches, routers and firewalls according to latest standards like IEC62443 and best practices offers all around protection in mission critical networks. Regular updates of the device software enable customer's networks to be compliant to todays and future regulations.

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 Operating System 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.

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 (3-51 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 10

Cost-effective, plug & play unmanaged switches

- SPIDER 2, 3, 5 or 8 ports
- SPIDER 2 or 5 ports with PoE PD
- SPIDER PoE Injector
- SPIDER II 8, 9, 10, 16 and 18 ports
- SPIDER II PoE 4 PoE and 4 standard ports
- SPIDER II GIGA 5 or 7 ports, all Gigabit

RS2, RS20, RS30 12

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

GECKO 14

Lite managed switch

- GECKO 4TX 4 ports

RSB20 20

Fast Ethernet RSB switches with basic software version

- RSB20 8 or 9 ports

RS20, RS30, RS40, RS22, RS32 15

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

MS20, MS30, MSP30, MSP32 22

Managed modular switches with selectable features and approvals as well as user hot-swappable media modules for almost limitless copper/fiber combinations.

- MS20/30 up to 26 ports, two of which can be Gigabit
- MSP30/32 HiOS advanced Layer 2 and Layer 3 switch, up to 28 ports, four of which can be Gigabit

RSP Series 31

Hardened managed switches with the new HiOS operating system

- RSP: uninterrupted redundancy thanks to PRP and HSR, on all ports IEEE 1588v2 time synchronization, comprehensive security functions, variants with 3 GE SFP and 8 FE ports, up to 7 FE SFP slots, Layer 2 and Layer 3 versions
- RSPS: optional PRP and HSR, on all ports IEEE 1588v2 time synchronization, variants with 6 FE ports, up to 4 FE SFP slots
- RSPL: comprehensive security functions, variants with 2 GE combo and 8 FE ports, up to 4 FE SFP slots
- RSPE: future-proof design and best-possible investment protection thanks to the maximum flexibility provided by the media modules, Layer 2 and Layer 3 versions

RSR20, RSR30 29

Ultra-hardened switches, operating temperature -40°C to +85°C, DC or AC power input

- RSR20: 8 or 9 ports
- RSR30: 9 or 10 ports, two or three of which are Gigabit

IP67 Waterproof Switches

OCTOPUS 42

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

19" Rack Mount Switches

MACH100 49

Hardened Enterprise-grade switches

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

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Product Overview

19" Rack Mount Switches

MACH1000 51

Ultra-hardened switches, fully configurable, operating temperature -40°C to +85°C, optionally for all variants 4 PoE ports

- MAR1020, up to 24 ports
- MAR1030, up to 28 ports, up to four of which are Gigabit
- MAR1120, up to 20 ports on rear of switch
- MAR1130, up to 24 ports on rear of switch, up to four of which are Gigabit
- MAR1040, 16 Gigabit RJ45/SFP combo ports, in Layer 2 or Layer 3 version

MACH4000 55

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

- MACH4002-24G up to 24 Gigabit ports
- MACH4002-24G+3X, up to 24 Gigabit ports and three 10 Gigabit XFP ports
- MACH4002-48G up to 48 Gigabit ports
- MACH4002-48G+3X up to 48 Gigabit ports and three 10 Gigabit XFP ports

Wireless Ethernet

BAT Access Points/Clients 62

- OpenBAT Rugged wireless LAN access point and/or client for use in industrial environments.
- BAT-C WLAN client
- Extensive antenna and accessory offering
- BAT-Planner software suite
- Wireless Local Area Network (WLAN) Controllers

Security, Firewall and VPN Appliance

EAGLE 69

Network segmentation, VPN and deep packet inspection.

- EAGLE20-0400 and EAGLE30-0402: Multi-port Stateful Packet Inspection (SPI) firewalls in convection-cooled metal DIN Rail housings which support 6 LAN ports – two of which are Gigabit and two SHDSL ports
- EAGLE One: Industrial firewall providing Stateful Packet Inspection (SPI) for bridged or routed communication combined with a unique Firewall Learning Mode and comprehensive Network Address Translation (NAT) techniques.

Fiber Transceivers/Modems

FiberINTERFACES 77

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

Embedded Ethernet

Switches 81

- EES Embedded Ethernet Switches
- EES Development Kit

Ethernet Cord Sets

Ethernet Cord Sets 46

Hardened pre-terminated and factory tested cordsets

- 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

Modular Industrial Patch Panel (MIPP)

MIPP 82

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

Network Management Software

Industrial HiVision 85

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
- HiMobile app for iOS, Android and Windows phone
- 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
- 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 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.

All Copper/RJ45		
Part No.	**Order No.**	**Ports**
SPIDER 3TX-TAP	943 899-001	3 x 10/100BASE-TX, TP cable, RJ45 sockets
SPIDER 5TX	943 824-002	5 x 10/100BASE-TX, TP cable, RJ45 sockets
SPIDER 5TX EEC	943 824-102	5 x 10/100BASE-TX, TP cable, RJ45 sockets
SPIDER 8TX	943 376-001	8 x 10/100BASE-TX, TP cable, RJ45 sockets
SPIDER 8TX EEC	943 376-201	8 x 10/100BASE-TX, TP cable, RJ45 sockets
SPIDER II 8TX	943 957-001	8 x 10/100BASE-TX, TP-cable, RJ45 sockets
SPIDER II 8TX EEC	943 958-001	8 x 10/100BASE-TX, TP-cable, RJ45 sockets
SPIDER II 8TX POE	942 008-001	8 x 10/100BASE-TX, 4 x PoE according to IEEE802.3af, TP-cable, RJ45 sockets
SPIDER II 16TX EEC	942 120-001	16 x 10/100BASE-TX, TP-cable, RJ45 sockets

Copper/RJ45 and FIBER		
Part No.	**Order No.**	**Ports**
SPIDER 1TX/1FX	943 890-001	1 x 10/100BASE-TX, TP cable, RJ45 sockets, 1 x 100BASE-FX, MM cable, SC sockets
SPIDER 1TX/1FX EEC	943 927-101	1 x 10/100BASE-TX, TP cable, RJ45 sockets, 1 x 100BASE-FX, MM cable, SC sockets
SPIDER 1TX/1FX-SM	943 891-001	1 x 10/100BASE-TX, TP cable, RJ45 sockets, 1 x 100BASE-FX, SM cable, SC sockets
SPIDER 1TX/1FX SM EEC	943 928-001	1 x 10/100BASE-TX, TP cable, RJ45 sockets, 1 x 100BASE-FX, SM cable, SC sockets
SPIDER 4TX/1FX	943 221-001	4 x 10/100BASE-TX, TP cable, RJ45 sockets, 1 x 100BASE-FX, MM cable, SC sockets
SPIDER 4TX/1FX EEC	943 221-101	4 x 10/100BASE-TX, TP cable, RJ45 sockets, 1 x 100BASE-FX, MM cable, SC sockets
SPIDER 4TX/1FX-ST EEC	943 914-001	4 x 10/100BASE-TX, TP cable, RJ45 sockets, 1 x 100BASE-FX, MM cable, ST sockets
SPIDER 4TX/1FX SM EEC	943 880-001	4 x 10/100BASE-TX, TP cable, RJ45 sockets, 1 x 100BASE-FX, SM cable, SC sockets
SPIDER II 8TX/1FX EEC	943 958-111	8 x 10/100BASE-TX, TP-cable, RJ45 sockets, 1 x 100BASE-FX, MM-cable, SC sockets
SPIDER II 8TX/1FX-ST EEC	943 958-121	8 x 10/100BASE-TX, TP-cable, RJ45 sockets, 1 x 100BASE-FX, MM-cable, ST sockets
SPIDER II 8TX/2FX EEC	943 958-211	8 x 10/100BASE-TX, TP-cable, RJ45 sockets, 2 x 100BASE-FX, MM-cable, SC sockets
SPIDER II 8TX/2FX-ST EEC	943 958-221	8 x 10/100BASE-TX, TP-cable, RJ45 sockets, 2 x 100BASE-FX, MM-cable, ST sockets
SPIDER II 8TX/1FX-SM EEC	943 958-131	8 x 10/100BASE-TX, TP-cable, RJ45 sockets, 1 x 100BASE-FX, SM-cable, SC sockets
SPIDER II 8TX/2FX-SM EEC	943 958-231	8 x 10/100BASE-TX, TP-cable, RJ45 sockets, 2 x 100BASE-FX, SM-cable, SC sockets
SPIDER II 16TX/2DS-S EEC	942 121-001	16 x 10/100BASE-TX, TP-cable, RJ45 sockets, 2 x FE/GE-SFP Slots

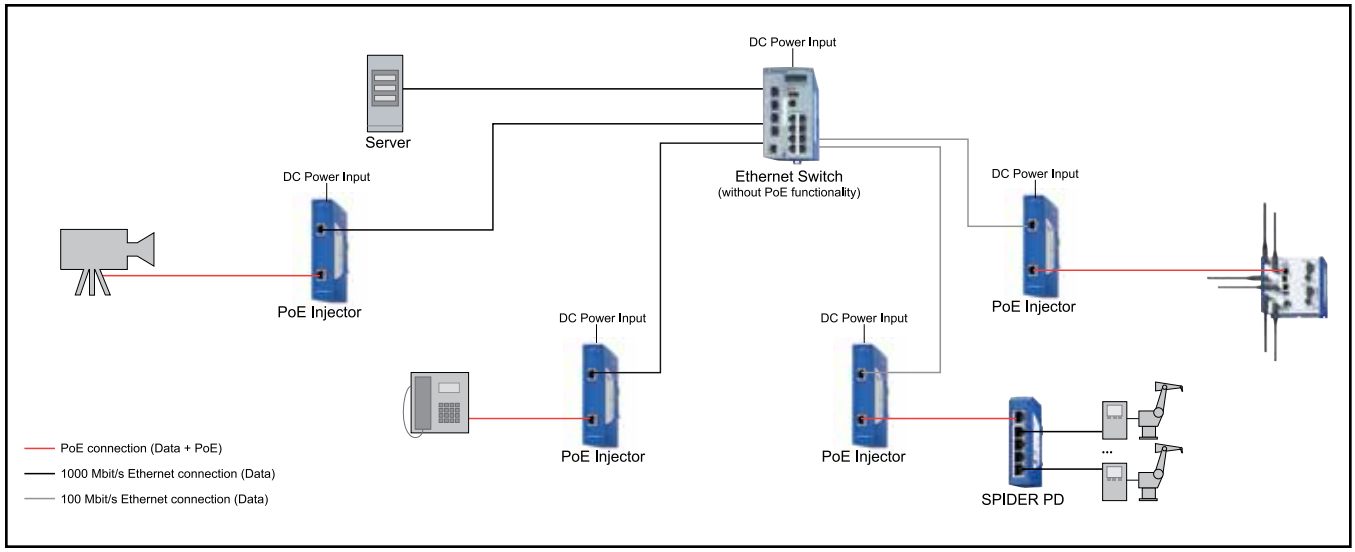
FAST Ethernet Switches via PoE		
Part No.	**Order No.**	**Ports**
SPIDER 5TX PD EEC	942 051-001	5 x 10/100BASE-TX, 1 x PoE PD port according to IEEE802.3af, TP-cable, RJ45 sockets
SPIDER 1TX/1FX-MM PD EEC	942 051-002	1 x 10/100BASE-TX, 1 x PoE PD port according to IEEE802.3af, TP-cable, RJ45 sockets, 1 x 100BASE-FX, MM cable, SC sockets
SPIDER 1TX/1FX-SM PD EEC	942 051-003	1 x 10/100BASE-TX, 1 x PoE PD port according to IEEE802.3af, TP-cable, RJ45 sockets, 1 x 100BASE-FX, SM cable, SC sockets

SPIDER Series Unmanaged DIN Rail Mount Ethernet Switches

FULL GIGABIT		
Part No.	**Order No.**	**Ports**
SPIDER II Giga 5T EEC	943 962-002	5 x 10/100/1000BASE-T, TP-cable, RJ45 sockets
SPIDER II Giga 5T/2S EEC	943 963-002	5 x 10/100/1000BASE-T, TP-cable, RJ45 sockets, 2 x GE-SFP Slots
SPIDER II Giga 5T EEC Pro	943 962-102	5 x 10/100/1000BASE-T, TP-cable, RJ45 sockets, QoS support IEEE802.1D
SPIDER II Giga 5T/2S EEC Pro	943 963-102	5 x 10/100/1000BASE-T, TP-cable, RJ45 sockets, 2 x GE-SFP Slots, QoS support IEEE802.1D
SPIDER II Giga 5T EEC Jumbo	943 962-202	5 x 10/100/1000BASE-T, TP-cable, RJ45 sockets, Jumbo Frame support with up to 9014 Byte user data
SPIDER II Giga 5T/2S EEC Jumbo	943 963-202	5 x 10/100/1000BASE-T, TP-cable, RJ45 sockets, 2 x GE-SFP Slots, Jumbo Frame support with up to 9014 Byte user data

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

PoE Injector		
Part No.	**Order No.**	**Ports**
SPIDER GIGA 2TX PoE EEC	942 059-001	2 x 10/100/1000BASE-T, 1 x PoE+ according to IEEE802.3at, TP-cable, RJ45 sockets



Example of SPIDER Series Installation Illustrating the Use of PoE.

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 Mbit/s 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 Mbit/s 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 Mbit/s RJ45, rugged die-cast metal housing offering wall-mount option
RS2-TX	943 686-003	8 x 10/100 Mbit/s 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 Mbit/s RJ45 and 2 x 100 Mbit/s MM-SC, link loss alarm, power loss alarm, fault relay output, ext. temp. -40°C to +70°C
RS2-3TX/2FX-SM EEC	943 772-001	3 x 10/100 Mbit/s RJ45 and 2 x 100 Mbit/s SM-SC, link loss alarm, power loss alarm, fault relay output, ext. temp. -40°C to +70°C
RS2-5TX/FX	943 732-103	4 x 10/100 Mbit/s RJ45 and 1 x 100 Mbit/s MM-MTRJ, rugged die-cast metal housing offering wall-mount option
RS2-4TX/1FX EEC	943 773-001	4 x 10/100 Mbit/s RJ45 and 1 x 100 Mbit/s MM-SC, link loss alarm, power loss alarm, fault relay output, ext. temp. -40°C to +70°C
RS2-4TX/1FX-ST EEC	943 119-002	4 x 10/100 Mbit/s RJ45 and 1 x 100 Mbit/s MM-ST, link loss alarm, power loss alarm, fault relay output, ext. temp. -40°C to +70°C
RS2-4TX/1FX-SM EEC	943 774-001	4 x 10/100 Mbit/s RJ45 and 1 x 100 Mbit/s SM-SC, link loss alarm, power loss alarm, fault relay output, ext. temp. -40°C to +70°C

RS20 Unmanaged Industrial Ethernet Switches

Configurable Unmanaged Switches with Tailor-made Configurations

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

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

All Copper/RJ45		
Part No.	**Order No.**	**Ports/Features**
RS20-1600T1T1SDAU	943 434-047	16 x 10/100 Mbit/s RJ45

Multimode (MM)		
Part No.	**Order No.**	**Ports/Features**
RS20-0900NNM4TDAU	943 434-058	3 x 100 Mbit/s MM fiber (ST) and 6 x 10/100 Mbit/s RJ45
RS20-0900MMM2TDAU	943 434-059	3 x 100 Mbit/s MM fiber (SC) and 6 x 10/100 Mbit/s RJ45
RS20-1600M2T1SDAU	943 434-049	1 x 100 Mbit/s MM fiber (SC) and 15 x 10/100 Mbit/s RJ45
RS20-1600M2M2SDAU	943 434-048	2 x 100 Mbit/s MM fiber (SC) and 14 x 10/100 Mbit/s RJ45
RS20-1600S2M2SDAU	943 434-052	1 x 100 Mbit/s MM fiber (SC)1 x 100 Mbit/s SM fiber (SC) and 14 x 10/100 Mbit/s RJ45
RS20-1600L2M2SDAU	943 434-055	1 x 100 Mbit/s MM fiber (SC)1 x 100 Mbit/s Long Haul SM fiber (SC) and 14 x 10/100 Mbit/s RJ45

Singlemode (SM)		
Part No.	**Order No.**	**Ports/Features**
RS20-0900VVM2TDAU	943 434-060	3 x 100 Mbit/s SM fiber (SC) and 6 x 10/100 Mbit/s RJ45
RS20-1600S2T1SDAU	943 434-051	1 x 100 Mbit/s SM fiber (SC) and 15 x 10/100 Mbit/s RJ45
RS20-1600S2S2SDAU	943 434-053	2 x 100 Mbit/s SM fiber (SC) and 14 x 10/100 Mbit/s RJ45
RS20-1600L2T1SDAU	943 434-054	1 x 100 Mbit/s Long Haul SM fiber (SC) and 15 x 10/100 Mbit/s RJ45
RS20-1600L2S2SDAU	943 434-056	1 x 100 Mbit/s Long Haul SM fiber (SC) 1 x 100 Mbit/s SM fiber (SC) and 14 x 10/100 Mbit/s RJ45
RS20-1600L2L2SDAU	943 434-057	2 x 100 Mbit/s Long Haul SM fiber (SC) and 14 x 10/100 Mbit/s RJ45
RS20-1600S2M2SDAU	943 434-052	1 x 100 Mbit/s MM fiber (SC), 1 x 100 Mbit/s SM fiber (SC) and 14 x 10/100 Mbit/s RJ45
RS20-1600L2M2SDAU	943 434-055	1 x 100 Mbit/s MM fiber (SC), 1 x 100 Mbit/s Long Haul SM fiber (SC) and 14 x 10/100 Mbit/s RJ45

Lite Managed Industrial Switch - GECKO 4TX

Lite Managed Industrial ETHERNET Rail-Switch, Ethernet/Fast-Ethernet Switch, Store and Forward Switching Mode, fanless design

The new GECKO 4TX industrial Ethernet switch guarantees reliable data communication and enhanced redundancy and diagnostic features. It also offers easy-to-implement management functionality at an outstanding price-performance ratio.

Featuring four Fast Ethernet ports (10/100 Mbit/s) and the ability to mount on a DIN rail, the compact dimensions (25 x 114 x 79 mm) of the GECKO 4TX require little space and in-active ports can be disabled to protect against possible misuse.

The switch can be managed through Simple Network Management Protocol (SNMP) or via HiDiscovery and Industrial HiVision from Hirschmann™. A web interface for HyperText Transfer Protocol Secure (HTTPS) deployment is also available. For monitoring purposes, the switch provides diagnostic and documentation options, such as a system log, Remote Monitoring (RMON) and Link Layer Discovery Protocol (LLDP). Rapid Spanning Tree Protocol (RSTP) and Quality of Service (QoS) functions are also supported.

Benefits at a Glance

- Outstanding price-performance ratio thanks to the Lite Management concept
- SNMP and HiDiscovery/Industrial HiVision, plus a web interface, ensure fast and convenient administration
- RSTP guarantees reliable data communication
- Longer machine uptime due to simple installation and commissioning
- A range of diagnostic functions ensures fast identification of errors, resulting in smooth production processes
- Reduced operating costs due to low power consumption
- Space-saving installation from a compact design
- A wide range of application scenarios due to robust characteristics (i.e., resistance to shocks and vibration, operating temperature range from 0°C to +60°C and IP30 protection rating)
- 24 V DC power supply
- Ideally combined with Ethernet cable from Belden®

Lite Managed Industrial Switch		
Part No.	**Order No.**	**Ports/Features**
GECKO 4TX	942 104-001	4 x 10/100BASE-TX, TP-cable, RJ45 sockets, auto-crossing, auto-negotiation, auto-polarity

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 Information

Product Description			
Type	**RS20 Series 4 Ports**	**RS20 Series 8 and 9 Ports**	**RS20 Series 16, 17, 24 and 25 Ports**
Available Ports	4 to 25		
Construction			
Mounting	DIN Rail		
Protection Class	IP20		
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
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 to 60 V) and 24 V AC (18 to 30 V) (redundant)		
Regulatory Approvals			
Safety of Industrial Control Equipment	cUL508		
Hazardous Locations	ISA12.12.01 Class 1 Div 2		
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		

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

RS30 Compact OpenRail Managed Ethernet Switches

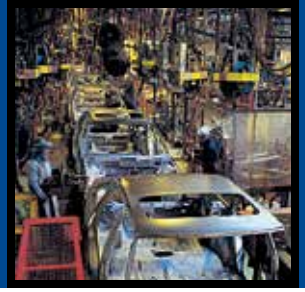
Gigabit Ethernet Uplink Ports with/without PoE

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.

Technical Information

Product Description		
Type	**RS30 Series 8 Ports**	**RS30 Series 16 and 24 Ports**
Available Ports	8 to 24	
Construction		
Mounting	DIN Rail	
Protection Class	IP20	
Dimensions (W x H x D)	74 x 131 x 111 mm	110 x 131 x 111 mm
Weight	410 g	630 g
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 to 60 V) and 24 V AC (18 to 30 V) (redundant)	
Regulatory Approvals		
Safety of Industrial Control Equipment	cUL508	
Hazardous Locations	ISA12.12.01 Class 1 Div 2	
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	

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



RS20/RS22/RS30/RS32 Compact OpenRail Managed Ethernet Switch Configurations

Configurator

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

RS32-	16	02	OO	ZZ	S	P	A	P	H	F	XX.X

Design/Models

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

Fast Ethernet Port Configurations

04 = 04 x 10/100 Mbit/s
08 = 08 x 10/100 Mbit/s
09 = 09 x 10/100 Mbit/s
16 = 16 x 10/100 Mbit/s
17 = 17 x 10/100 Mbit/s
24 = 24 x 10/100 Mbit/s
25 = 25 x 10/100 Mbit/s

Gigabit Ethernet Ports

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

Type 1 Uplink Port

T1 = 1 x Twisted-Pair RJ45
M2 = 1 x Multimode SC
M4 = 1 x Multimode ST
S2 = 1 x Singlemode SC
S4 = 1 x Singlemode ST
L2 = 1 x Long Haul SC
G2 = 1 x Long Haul + SC
O6 = 1 X SFP-Slot GE
OO = 2 x SFP-Slot GE
MM = 2 x Multimode SC
NN = 2 x Multimode ST
VV = 2 x Singlemode S
UU = 2 x Singlemode ST
EE = 2x Singlemode+SC
EE = 1x Singlemode+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
ZZ = 2 X SFP-Slot FE
L2 = Singlemode Long Haul FX DSC (only 100 Mbit)
G2 = Singlemode Long Haul FX DSC 200km (only 100 Mbit)
O6 = SFP slot (only 1000 Mbit)
E2 = 1x Singlemode+ SC

Temperature Range Options

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

Power Supply

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

Approvals

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

Software Version (see page 58 for additional Management Software Functionality details)

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

Configuration

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

OEM Type

H = Standard
F = Steel Cabinet (PoE)

Software Release

XX.X = Current Software Release

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

RS40 Compact OpenRail Managed Ethernet Switches

All Ports are Gigabit

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

Technical Information

Product Description		
Type	**RS40 Series Standard Temperature**	**RS40 Series Extended Temperature**
Switching/Routing	Software Version Layer 2	
Available Ports	9	
Construction		
Mounting	DIN Rail	
Protection Class	IP20	
Dimensions (W x H x D)	74 x 131 x 111 mm	110 x 131 x 111 mm
Weight	530 g	600 g
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 to 60 V) and 24 V AC (18 to 30 V) (redundant)	
Regulatory Approvals		
Safety of Industrial Control Equipment	cUL508	
Hazardous Locations	ISA12.12.01 Class 1 Div 2	
Germanischer Lloyd	Germanischer Lloyd	
Transportation	n/a	
Railway (track)	n/a	
Substation	IEC 61850-3	
Reliability		
MTBF Range	25.8 to 27.1 years	
Warranty	5 years standard	

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

RS40 Compact OpenRail Managed Ethernet Switch Configurations

Configurator

Full Gigabit Ethernet Switches RS40

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

Design/Model

RS40 = Full Gigabit Ethernet Switch

Fast Ethernet Port Configurations

00 = 00 x 10/100 Mbit/s

Gigabit Ethernet Ports

09 = 09 x 1000 Mbit/s

Type 1 Uplink Port

CC = 2 x SFP Combo Port GE

Type 2 Uplink Port

CC = 2 x SFP Combo Port GE

Temperature Range Options

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

Power Supply

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

Approvals

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

Software Version (see page 58 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.

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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.

Technical Information

Product Description	
Type	**RSB20 Series**
Switching/Routing	Software Version Layer 2
Available Ports	8 to 9
Construction	
Mounting	DIN Rail
Protection Class	IP20
Dimensions (W x H x D)	47 x 131 x 111 mm
Weight	400 g
Ambient Conditions	
Operating Temperature	0°C to +60°C, -40°C to +70°C
Storage/Transport Temperature	-40°C to +85°C
Relative Humidity (non-condensing)	10% to 95%
Conformal Coating	No
Interfaces	
V.24 Interface	1 x RJ11 Socket
USB Interface	n/a
Power Requirements	
Operating Voltage	24 V DC (18 to 32 V)
PoE (802.3af) Ports Supported	n/a
PoE Plus (802.3at) Ports Supported	n/a
Regulatory Approvals	
Safety of Industrial Control Equipment	cUL508
Hazardous Locations	ISA12.12.01 Class 1 Div 2
Germanischer Lloyd	n/a
Transportation	n/a
Railway (norm)	n/a
Substation	n/a
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.hirschmann.com**

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 EEC 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 EEC 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 EEC 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 EEC 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 EEC 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 EEC 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 EEC E, pre-configured MC filtering for EtherNet/IP
RSB20-0900VVM2TAAB	942 014-016	6TX/2FX SM/1 FX MM EEC

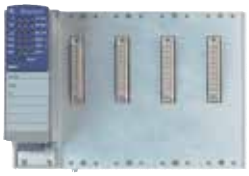
SFP		
Part No.	**Order No.**	**Ports/Features**
RSB20-0900ZZZ6SAAB	942 014-004	6TX/3SFP
RSB20-0900ZZZ6SAABE	942 014-020	6TX/3SFP E, pre-configured MC filtering for EtherNet/IP
RSB20-0900ZZZ6TAABE	942 014-028	6TX/3SFP EEC E, pre-configured MC filtering for EtherNet/IP
RSB20-0900ZZZ6TAAB	942 014-012	6TX/3SFP EEC

MS20 Managed Modular DIN Rail Mount Ethernet Switches

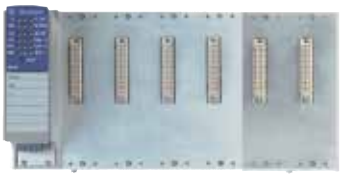
The MS20 series of Ethernet switches have eight to twenty-four 100 Mbit/s max ports. Fully managed (web, SNMP and CLI) IGMP snooping (multicast filtering), VLAN, port mirroring, port control, port security, link alarms, broadcast limiter, traffic diagnostics, HIPER-Ring redundancy, RSTP, etc.

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

MS20-08



MS20-16



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

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

MS30 Managed Modular DIN Rail Mount Ethernet Switches

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

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

MS30-08

MS30-16

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

All Ports are 10/100 Mbit/s		
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.

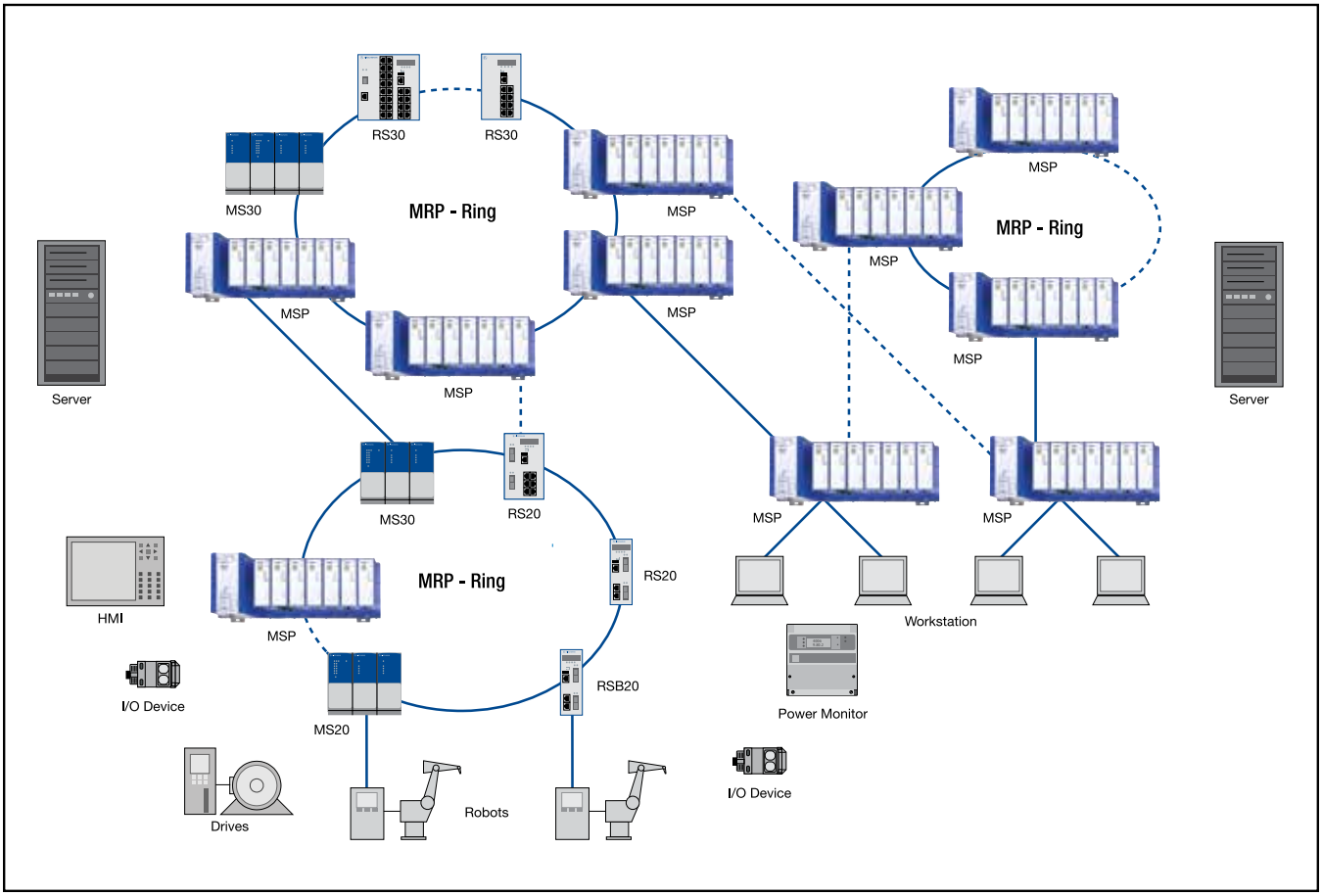
Backplane Extensions		
Part No.	**Order No.**	**Ports/Features**
MB-2T	943 733-102	MS20-16, MS30-16, and MS4128
MB20-2TAHH	943 435-002	Same as above but with -40°C to +70°C

Managed Modular DIN Rail Mount Switches

Modules: Multimode			
Type	**Part No.**	**Order No.**	**Ports/Features**
MM	MM2-2FXM2	943 718-101	2 x 100 Mbit/s MM SC
MM	MM3-4FXM2	943 764-101	4 x 100 Mbit/s MM SC
MM	MM3-4FXM4	943 835-101	4 x 100 Mbit/s MM ST
MM	MM3-1FXM2/3TX1	943 839-101	1 x 100 Mbit/s MM SC, 3 x RJ45
MM	MM3-2FXM4/2TX1	943 837-101	2 x 100 Mbit/s MM ST, 2 x RJ45
MM	MM3-4FLM4	943 760-101	4 x 10 Mbit/s MM ST
MM	MM3-2FXM2/2TX1	943 761-101	2 x 100 Mbit/s MM SC, 2 x RJ45
MM	MM3-2FXM2/2TX1-EEC	943 761-151	2 x 100 Mbit/s MM SC, 2 x RJ45, ext. temperature range
MM	MM3-1FXM2/1FXS2/2TX1	943 929-101	2 x 100 Mbit/s SC (1 x MM and 1 x SM), 2 x RJ45
MM	MM2-4FXM3	943 721-101	4 x 100 Mbit/s MM MTRJ
MM	MM2-2FXM3/2TX1	943 720-101	2 x 100 Mbit/s MM MTRJ, 2 x RJ45
SFP	MM20-Z6Z6Z6Z6SAHH	943 938-001	4 x 100 Mbit/s SFP sockets (SFPs are sold separately), for MS20, MS30 and MS4128
Modules: Singlemode			
Type	**Part No.**	**Order No.**	**Ports/Speed**
SM	MM2-2FXS2	943 719-101	2 x 100 Mbit/s SM SC
SM	MM3-2FXS2/2TX1	943 762-101	2 x 100 Mbit/s SM SC, 2 x RJ45
SM	MM3-2FXS2/2TX1-EEC	943 762-151	2 x 100 Mbit/s SM SC, 2 x RJ45, ext. temperature range
SM	MM3-1FXS2/3TX1	943 838-101	1 x 100 Mbit/s SM SC, 3 x RJ45
SM	MM3-4FXS2	943 836-101	4 x 100 Mbit/s SM SC
SM	MM3-1FXL2/3TX1	943 763-101	1 x 100 Mbit/s SM, SC Long Haul, 3 x RJ45
SM	MM3-1FXLH/3TX1	943 930-101	1 x 100 Mbit/s SM SC Long Haul+, 3 x RJ45
SM	MM3-1FXS2/3TX1-EEC	943 838-151	1 x 100 Mbit/s SM SC, 3 x RJ45, ext. temperature range
SFP	MM20-Z6Z6Z6Z6SAHH	943 938-001	4 x 100 Mbit/s SFP sockets (SFPs are sold separately), for MS20, MS30 and MS4128
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
Modules: Special Purpose			
Type	**Part No.**	**Order No.**	**Ports/Speed**
Realtime	MM23-T1T1T1T1SAAH PTPv2	–	IEEE1588 Version 2 PTP module, 4 x 10/100 RJ45, replacement for 943 117-001
Realtime	MM23-M2M2T1T1SAAH PTPv2	–	IEEE1588 Version 2 PTP module, 2 x multimode, SC sockets, replacement for 943 117-002
Realtime	MM23-S2S2T1T1SAAH PTPv2	–	IEEE1588 Version 2 PTP module, 2 x singlemode, SC sockets, replacement for 943 117-003
Realtime	MM23-F4F4T1T1SAAH PTPv2	–	IEEE1588 Version 2 PTP module, 2 x multimode, ST sockets, replacement for 943 117-004
Realtime	MM33-07079999SA PTPv2	–	IEEE1588 Version 2 PTP module, SFP sockets
Realtime	MM3-4TX1-RT-EEC	943 955-001	4 x RJ45, railway certifications EN 50155, EN 50121-4, IEEE 1588 Version 1
Realtime	MM3-2FXM2/2TX1-RT-EEC	943 955-002	2 x 100 Mbit/s MM SC, 2 x RJ45, IEEE 1588 Version 1, railway certifications EN 50155, EN 50121-4
Realtime	MM3-2FXS2/2TX1-RT-EEC	943 955-003	2 x 100 Mbit/s SM SC, 2 x RJ 45, IEEE 1588 Version 1, railway certifications EN 50155, EN 50121-4
AUI	MM20-A8A89999SAHH	943 840-101	2 x AUI SUB-D 15-pin male D-sub
M12	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 Mbit/s SFP sockets (SFPs are sold separately), for MS20, MS30 and MS4128

Managed Modular DIN Rail Mount Switches

Fast Ethernet MICE Media Modules, Digital I/O		
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



Example of media redundancy utilizing a ring topology.

Managed Modular DIN Rail Mount Switches

MSP30/MSP32 MICE Switch Power

The new Hirschmann MSP30 Layer 3 switch extends the unique security functions of the MSP30 family to include high-performance routing. This functionality is offered in a variety of hardware packages. Unicast dynamic routing (UR) and multicast dynamic routing (MR) offer customers an attractive cost benefit – „Just pay for what you need." With its existing modular IPv6-ready hardware, the MSP30 Layer 3 switch enables complete solutions that meet all network requirements.

HiOS
Hirschmann™ Operating System

MRP

PoE+

PTP V2

IPv6 FIT

L3

Benefits at a Glance

- Extends the proven MSP30 switch family to include high-performance routing (unicast and multicast)
- All-around network protection through security functions such as port security, DHCP Snooping, Dynamic ARP Inspection, IP Source Guard, Ingress/Egress Access Control List (ACL), sFlow, storm control, automatic denial-of-service prevention and port access control via 802.1x, including multi-client authentication, Radius Virtual Local Area Network (VLAN)/ policy assignment and guest/unauthenticated VLAN
- Support of standard redundancy protocols such as Media Redundancy Protocol (MRP) makes it possible to set up networks with sub-rings
- Individual configuration of functions and Ethernet ports, as a result of to modular design
- Click-in mechanism for tool-free module assembly
- Cost-effective powering of terminal equipment via PoE Plus function with up to 120 W
- IP30 industrial protection class
- High level of resistance to shocks and vibrations
- Optionally extended operating temperature range from -40°C to +70°C (standard is from 0°C to +60°C); Printed Circuit Boards (PCBs) are protected against condensation (conformal coating)
- High-grade metal/aluminum housing for mounting on a DIN rail
- Simple configuration and diagnosis using HiDiscovery, Industrial HiVision or web interface
- Convenient management via standard web browser and Single Network Management Protocol (SNMP) interface
- Standards and approvals:
  – Transformer stations: IEC 61850-3, IEEE 1613
  – Hazard ratings: ISA 12.12.01, CSA 22.2 no. 213; ATEX zone 2
  – Traffic approvals: NEMA TS2, EN 50121-4
  – Safety: EN 60950-1, cUL508
  – Marine approvals: GL, BV, DNV, ABS, LR
  – Railroad approvals: EN 50121-4:2006 declaration
- CMSP30 Layer 3 is the next generation of PowerMICE with considerably better hardware performance
- Compatible with the proven industrial cables from Belden®

MSP30/MSP32 MICE Switch Power Configurations

Gigabit Ethernet Uplink Ports, Gigabit Ethernet Uplink Ports with PoE(+) Capability

M	S	P	3	0	-	0	8	0	4	0	S	C	Z	9	9	H	H	E	3	A	X	X	.	X

Design
MSP30 = Gigabit Ethernet Uplink Ports
MSP32 = Gigabit Ethernet Uplink Ports with PoE(+) Capability

Number of Fast Ethernet Ports
08 = 08 x 10/100 Mbit/s
16 = 16 x 10/100 Mbit/s
24 = 24 x 10/100 Mbit/s

Number of Gigabit Ethernet Ports
04 = 04 x 10/100/1000 Mbit/s

Number of 10 Gigabit Ethernet Ports
0 = 10/100/1000/10000 Mbit/s

Temperature Range
S = 0°C to +60°C
T = -40°C to +70°C
E = -40°C to +70°C with conformal coating

Power Supply
C = 24/36/48 V DC (18 to 60 V DC)
P = 47 to 57 V DC (PoE), 53 to 57 V DC (PoE+)

Approvals
Z9 = CE, FCC, EN 61131 (EN 60950)
Y9 = Z9 + cUL508 (UL60950)
W9 = Z9 + ATEX Zone 2
WY = Y9 + ATEX Zone 2
X9 = Y9 + ISA 12.12.01 Class 1 Div. 2
V9 = Z9 + IEC 61850, IEEE 1613
VY = Z9 + IEC 61850, IEEE 1613
VU = VY + GL (ABS, BV, DNS, LR)
VT = VY + EN50121-4
T9 = Z9 + EN50121-4
TY = T9 + cUL508 (UL60950)
U9 = Z9 + GL (ABS, BV, DNS, LR)2
UY = U9 + cUL508 (UL60950)
UW = UY + ATEX Zone 2
UX = UY + ISA 12.12.01 Class 1 Div. 2

Software Packages
99 = Reserved
UR = Unicast Routing
MR = Multicast Routing

Customization
HH = Hirschmann Standard

Configuration
E = Entry (Hirschmann Standard Configuration)

Software Version
3A = HiOS Layer 3 Advanced
2A = HiOS Layer 2 Advanced

Software Release
XX.X = Current Software Release
03.0 = Software Version 03.0
02.0 = Software Version 02.0

NOTE: The categories (**Customization, Hardware Configuration, Software Configuration** and **Software Release**) are optional.

MSM20/MSM24/MSM40/MSM42 MICE Switch Power Media Module Configurations

Fast Ethernet Ports, Fast Ethernet/Gigabit Ethernet Ports, Fast Ethernet/Gigabit Ethernet Ports with PoE+ Capability, Fast Ethernet/Gigabit Ethernet Ports with Enhanced Redundancy and PTP

MSM40-	T1	T1	T1	T1	S	Z9	HH	S	E	99.9	99

Design
MSM20 = Fast Ethernet Ports
MSM24 = Fast Ethernet Digital Input/Output
MSM40 = Fast Ethernet/Gigabit Ethernet Ports
MSM42 = Fast Ethernet/Gigabit Ethernet Ports with PoE(+) Capability

Port Typ 1. Uplink
T1 = Twisted Pair RJ45
C1 = Combo Port Twisted Pair (TX/RJ45 (10/100/1000 Mbit/s) & - Fiber Optic SFP Cage (100/1000 Mbit/s)
G2 = Singlemode Long Haul FX DSC 200 km (100 Mbit/s)
L2 = Singlemode Long Haul FX DSC (100 Mbit/s)
S2 = Singlemode FX DSC (100 Mbit/s)
S4 = Singlemode FX ST (100 Mbit/s)
M2 = Multimode FX DSC (100 Mbit/s)
M4 = Multimode FX ST (100 Mbit/s)
I/O = Digital Input/Output

Port Type 2. Uplink
(see port type 1. Uplink)

Port Type 3. Uplink
(see port type 1. Uplink)

Port Type 4. Uplink
(see port type 1. Uplink)

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

Approvals
Z9 = CE, FCC, EN 61131 (EN 60950)
Y9 = Z9 + cUL508 (UL60950)
W9 = Z9 + ATEX Zone 2
WY = Y9 + ATEX Zone 2
X9 = Y9 + ISA 12.12.01 Class 1 Div. 2
V9 = Z9 + IEC 61850, IEEE 1613
VY = Z9 + IEC 61850, IEEE 1613
VU = VY + GL (ABS, BV, DNS, LR)
VT = VY + EN50121-4
T9 = Z9 + EN50121-4
TY = T9 + cUL508 (UL60950)
U9 = Z9 + GL (ABS, BV, DNS, LR)2
UY = U9 + cUL508 (UL60950)
UW = UY + ATEX Zone 2
UX = UY + ISA 12.12.01 Class 1 Div. 2

Customization
HH = Standard

Hardware Configuration
S = FPGA configuration (S = Standard)
M = FPGA configuration (M = FMRP)
H = FPGA configuration (H = HSR)
P = FPGA configuration (P = PRP)
9 = No FPGA

Software Configuration
E = Entry (without configuration)

Software Release
99.9 = No Software

Maintenance
99 = No Maintenance Version

NOTE: The categories (**Customization, Hardware Configuration, Software Configuration** and **Software Release**) are optional.

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

Fast Ethernet Uplink Ports and Gigabit Ethernet Uplink Ports

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

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

BLAZING 10ms HiPer-Ring · EtherNet/IP™ conformance tested · PROFINET INDUSTRIAL ETHERNET · MRP

Technical Information

Product Description		
Type	**RSR20 Series**	**RSR30 Series**
Switching/Routing	Software Version Layer 2	
Available Ports	8 to 9	9 to 10
Construction		
Mounting	DIN Rail	
Protection Class	IP30	
Dimensions (W x H x D)	120 x 145 x 115 mm	
Weight	appr. 1 kg	
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	cUL508	
Hazardous Locations	Class 1 Div 2 (cUL1604)	
Germanischer Lloyd	Germanischer Lloyd	
Transportation	NEMA TS2	
Railway (norm)	EN 50121-4	
Substation	IEC 61850-3, IEEE 1613	
Reliability		
MTBF Range	45.6 to 61.8 years	49.2 to 57.9 years
Warranty	5 years standard	

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

RSR20/RSR30 Über-Rugged™ Managed DIN Rail Mount Ethernet Switch Configurations

Configurator

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

R	S	3	0	-	0	6	0	2	T	1	Z	Z	Z	6	S	C	C	H	P	H	H	X	X	.	X

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

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

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

Type 1 Uplink Port
T1 = 1 x Twisted-Pair RJ45
M2 = 1 x Multimode SC
M4 = 1 x Multimode ST
S2 = 1 x Singlemode SC
S4 = 1 x Singlemode ST
L2 = 1 x Long Haul SC
G2 = 1 x Long Haul + SC
CC = 2 x Combo Port Gigabit
OO = 2 x SFP Slot Gigabit
06 = SFP Slot Gigabit
07 = Combo Port Gigabit
MM = 2 x Multimode SC
JJ = 2 x Multimode MTRJ
NN = 2 x Multimode ST
UU = 2 x Singlemode SC
VV = 2 x Singlemode ST
LL = 2 x Singlemode Long Haul SC
GG = 2 x Singlemode Long Haul+ SC (200 km)

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 (200 km)
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 Mbit/s) (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 inclusive Conformal Coating

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

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

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

Software Version (see page 58 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 Managed Industrial DIN Rail Switch with Fanless Design

Fast and Gigabit Ethernet Networks

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

Technical Information

Product Description		
Type	**RSP Series Standard Temperature**	**RSP Series Extended Temperature**
Switching/Routing	Software Version Layer 2	
Available Ports	11	
Enhanced Redundancy Functions	Fast MRP, HSR, PRP (variant dependent)	
Construction		
Mounting	DIN Rail	
Protection Class	IP30	
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
Ambient Conditions		
Operating Temperature	0°C to +60°C, -40°C to +70°C, or -40°C to +70°C (inclusive Conformal Coating), IEC 60068-2-2 Dry Heat Test +85°C 16 Hours	
Storage/Transport Temperature	-40°C to +85°C	
Relative Humidity (non-condensing)	10% to 95%	
Conformal Coating	Yes (variant dependent)	
Interfaces		
V.24 Interface	1 x RJ11 Socket	
USB Interface	1 x 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	cUL508 (pending)	
Hazardous Locations	n/a	
Germanischer Lloyd	n/a	
Transportation	NEMA TS2 (pending)	
Railway (norm)	EN 50121-4 (pending)	
Substation	IEC 61850-3, IEEE 1613	
Reliability		
MTBF Range	Pending	
Warranty	5 years standard	

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

RSP Managed Industrial DIN Rail Switch Configurations

Configurator

RSP-	3	5	08	03	3O6	TT	E	K9	Y9	HP	E	2S	XX.X

Design/Model
RSP = Rail Switch Power

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

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

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

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

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

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

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

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

Approvals
Z9 = CE, FCC, EN 61131
Y9 = CE, FCC, EN 61131, cUL508
V9 = CE, FCC, EN 61131, IEC 61850, IEEE 1613
VY = CE, FCC, EN 61131, IEC 61850, IEEE 1613, cUL508

Customization
HM = Fast MRP
HP = PRP
HH = HSR

Software Configuration
H = Standard
E = Enhanced Encryption

Software Level
2S = HiOS Layer 2 Standard
2A = HiOS Layer 2 Advanced
3S = HiOS Layer 3 Standard

Software Release
XX.X = Current Software Release

NOTE: The part number categories (Configuration and Software Release) are optional.

RSPS-Smart Managed Industrial DIN Rail Switch with Fanless Design

Fast and Gigabit Ethernet Networks

The RSP-Smart features six Fast Ethernet ports designed for twisted-pair cables (100 BASE-TX), which can also be equipped with two/four SFP transceivers (100 BASE-FX). All ports support precise time synchronization compliant with IEEE 1588v2. Security mechanisms such as rolebased access protect against unauthorized access. MRP (Media Redundancy Protocol) and RSTP (Rapid Spanning Tree) redundancy methods ensure high network availability. Switch versions also available provide support for the PRP (Parallel Redundancy Protocol) and HSR (High-Availability Seamless Redundancy) redundancy methods, ensuring zero switchover times. Power can be supplied via 24/36/48 V DC or alternatively via 110/250 V DC and 110/230 V AC. Other features of the RSP-Smart include IP30 protection rating, an extended operating temperature range from -40°C to +70°C, compact stainless steel housing and user-friendly configuration and diagnostics.

Technical Information

Product Description		
Type	**RSPS20-xx**	**RSPS25-xx**
Description	Managed, Industrial Switch DIN Rail, fanless Design	
Port Type and Quantity	Ports in total: 6 6 x 10/100 TX, or 4 x 10/100 TX/2 x FE SFP, or 2 x 10/100 TX/4 x FE SFP ports	
More Interfaces		
V.24 Interface	1 x RJ11 socket	
SD Card Slot	1 x to connect auto-configuration adapter ACA31 (SD-card)	
Fast ETHERNET Network Size		
Twisted Pair (TP)	0 to 100 m	
Multimode Fiber (MM)	50/125 µm, 0 to 5000 m, 8 dB link budget 62.5/125 µm, 0 to 4000 m, 11 dB link budget (with M-Fast SFP-MM/LC)	
Singlemode Fiber (SM) 9/125 µm	0 to 25 km, 13 dB link budget (with M-Fast SFP-SM/LC) 25 to 65 km, 10 to 29 dB link budget (with M-Fast SFP-SM+/LC)	
Singlemode Fiber (LH) 9/125µm	40 to 104 km, 10 to 29 dB link budget (with M-Fast SFP-LH/LC)	
Network Size – Cascadibility		
Line-/Star Topology	any	
Ring Structure	>200 switches	
Fault Recovery Time	0 ms with PRP or HSR	
Power Requirements		
Operating Voltage	24/36/48 V DC redundant, or 110/250 V DC and 110/230 V AC	
Ambient Conditions		
Operating Temperature	0°C to 60°C or -40°C to +70°C, IEC 60068-2-2 Dry Heat Test +85°C, 16 Hours, optional conformal coating	
Relative Humidity (non-condensing)	10% to 95%	
Mechanical Construction		
Dimensions (WxHxD)	90 (98) x 164 x 120 mm (EEC)	
Weight	1.2 kg (1.5 kg EEC)	
Protection Class	IP30	
Approvals		
Safety of Industrial Control Equipment	EN 60950-1, cUL508 (pending)	
Substation	IEC 61850-3, IEEE 1613	
Hazardous Location	ISA 12.12.01, CSA 22.2 No. 213 (pending)	
Transportation	NEMA TS2 (pending), EN 50121-4 (pending)	

RSPS-Smart Managed Industrial DIN Rail Switch Configurations

Design/Model
RSPS = Rail Switch Power

Data Rates
2 = 10/100 Mbit/s Ports

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

Number of 10/100 Mbit/s Ethernet Ports
06 = 6 x 10/100 Mbit/s

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

Uplink Ports
2T1 = 2 x 10/100 Mbit/s Twisted Pair / RJ45
2Z6 = 2 x SFP slot (100 Mbit/s)

Port Configuration
TT = All Twisted Pair/RJ45
ZT = 2 x SFP slot (100 Mbit/s), 6 x (100 Mbit/s) Twisted Pair/RJ45

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

Voltage Range
CC = 18 to 60 V DC
M9 = 48-320 V DC and 88-320 V AC
K9 = 48 V to 320 V DC and 88 to 265 V AC

Approvals
Z9 = CE
V9 = NEMA TS2; EN 50121-4; IEC 61850
Z9 = CE; FCC; EN61131
Y9 = "Z9" + cUL508
V9 = "Z9" + IEC 61850; IEEE1613
VY = "Z9" + cUL508 + IEC61850-3; IEEE1613

Customization
HM = Fast MRP
HP = PRP
HH = HSR
HS = Standard

Software Configuration
E = Enhanced Encryption

Software Level
2S = HiOS Layer 2 Standard

Software Release
XX.X = Current Software Release

NOTE: The part number categories (Configuration and Software Release) are optional.

RSPL-Lite Managed Fast Ethernet Power Rail Switches - Lite with Fanless Design

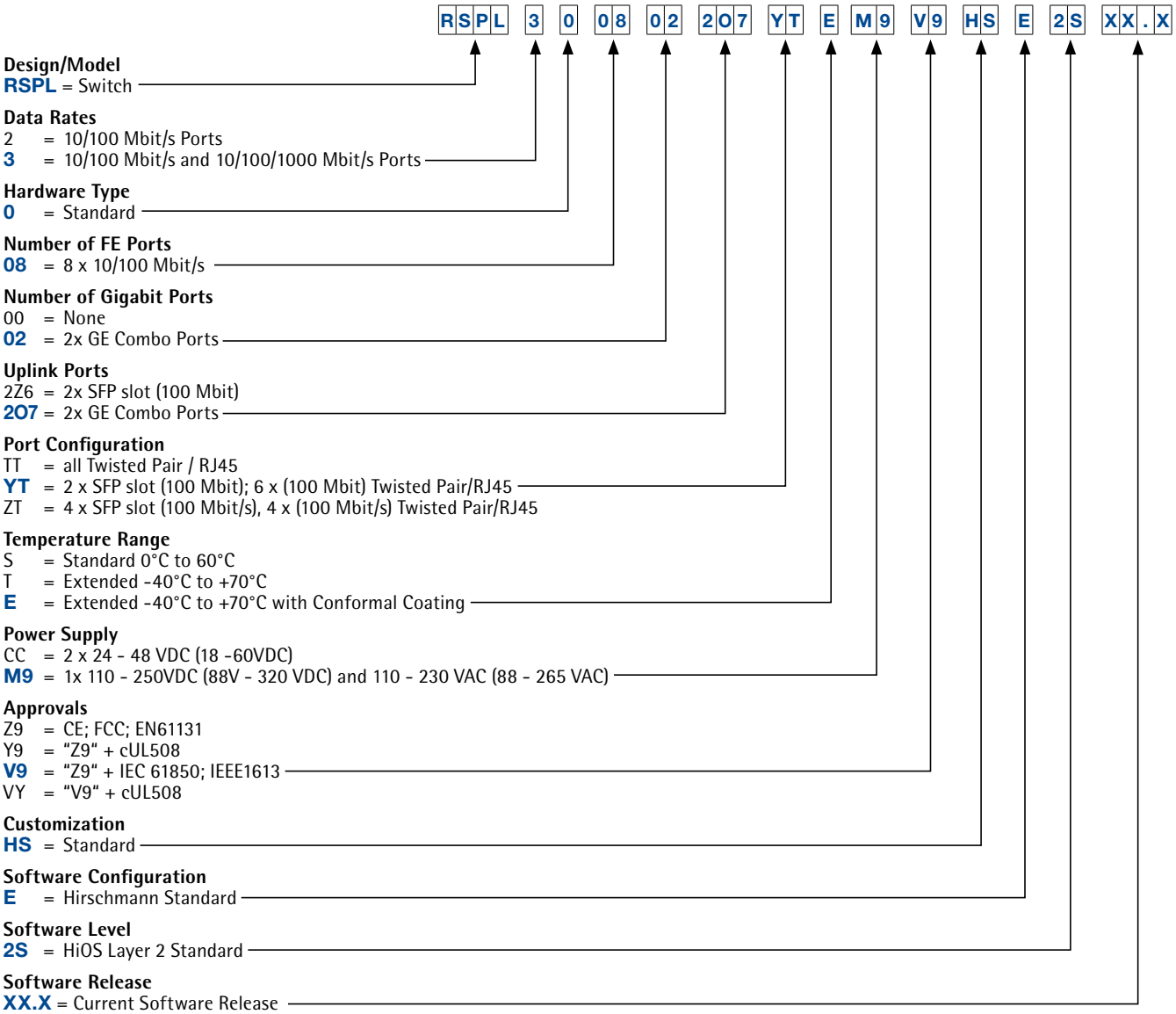
Fast and Gigabit Ethernet Networks

RSPL-Lite switches from Hirschmann™ offer eight Fast Ethernet ports and optionally, 2 Gigabit Combo Ports. The FE ports can be configured either with two SFP slots and six 100 BASE-TX or a combination of four SFP transceivers and four TX ports. The RSPL-Lite switches offer all-round carefree package for the highest level of security while insuring increased productivity and profitability. The switches feature comprehensive security functions like MAC based port security, Authentication (IEEE802.1x), different privilege levels, management authentication via RADIUS, account locking, configurable password policy, audit trail, configurable login attempts, HTTPS certificate management, DoS prevention to provide all-round protection against network attacks.

Technical Information

Product Description		
Type	**RSPL20-xx**	**RSPL30-xx**
Description	Managed, Industrial Switch DIN Rail, fanless design. Fast Ethernet type.	Managed, Industrial Switch DIN Rail, fanless design. Fast Ethernet, Gigabit Uplink type.
Port Type and Quantity	8 Ports in total, Ports Fast Ethernet: 2 x SFP slot (100 Mbit) ; 6 x (100MBit) Twisted Pair / RJ45; Gigabit Ethernet Ports: 0	10 Ports in total, Ports Fast Ethernet: 2 x SFP slot (100 Mbit) ; 6 x (100MBit) Twisted Pair / RJ45; Gigabit Ethernet Ports: 2; Uplink Ports: 2 x Gigabit SFP-Combo Port (100/1000 MBit)
More Interfaces		
Power supply/signaling contact	2 x plug-in terminal block, 2-pin, 1 x plug-in terminal block, 2-pin	
V.24 Interface	1 x RJ11 socket	
SD Card Slot	1 x SD card slot to connect the auto configuration adapter ACA31	
Network size - length of cable		
Twisted Pair (TP)	0 to 100 m	
Multimode fiber (MM) 50/125 µm	see SFP Fiber Module M-Fast SFP-xx	
Multimode fiber (MM) 62.5/125 µm	see SFP Fiber Module M-Fast SFP-xx	
Single mode fiber (SM) 9/125 µm	see SFP Fiber Module M-Fast SFP-xx	
Single mode fiber (LH) 9/125 µm (long haul transceiver)	see SFP Fiber Module M-Fast SFP-xx	
Network Size – Cascadibility		
Line-/Star Topology	any	
Ring structure (HIPER-Ring)	MRP, RSTP	
Power Requirements		
Operating Voltage	2 x 24/36/48 VDC (18-60 VDC)	
Power consumption	10 W	16 W
Power output in Btu (IT) h	24	55
Ambient Conditions		
Operating Temperature	0 °C to 60 °C	
Relative Humidity (non-condensing)	10% to 95%	
Mechanical Construction		
Dimensions (WxHxD)	90 mm x 164 mm x 120 mm	118 mm x 164 mm x 120 mm
Weight	990 g	1170 g
Protection Class	IP30	
Approvals		
Basis Standard	CE, FCC, EN61131	

RSPL-Lite Managed Industrial DIN Rail Switch Configurations



NOTE: The part number categories (Configuration and Software Release) are optional.

RSPE - Expandable Managed Industrial DIN Rail Switch with Fanless Design

Fast and Gigabit Ethernet Networks

The compact and extremely robust RSPE switches comprise a basic device with eight twisted pair ports and four combination ports that support Fast Ethernet or Gigabit Ethernet. The basic device – optionally available with the HSR (High-Availability Seamless Redundancy) and PRP (Parallel Redundancy Protocol) uninterruptible redundancy protocols, plus precise time synchronization in accordance with IEEE 1588 v2 - can be extended to provide up to 28 ports by adding two media modules. Different combinations of copper or fiber ports (plus PoE/PoE+) can be selected depending on the module type.

The RSPE switches also provide comprehensive management, diagnostic and filtering features, as well as numerous redundancy methods, bringing all-around security to your network. The Layer 3 version offers full wired speed IPv4 routing with lowest latency.

Further features include an extended operating temperature range from -40°C to +70°C, high vibration resistance and broad immunity to electrostatic discharges.

These flexible RSPE switches enable you to reduce costs by future-proofing your high-performance networks.

Benefits at a glance

- Future-proof design and best-possible investment protection thanks to the maximum flexibility provided by the media modules
- Up to 28 Fast Ethernet or Gigabit Ethernet ports for twisted pair cable and fiber optic cable (via SFP)
- Maximum productivity for systems and machines thanks to completely interruption-free data communications
- Router redundancy, static port and VLAN based routing for increased reliability and security
- Comprehensive security mechanisms bringing all-around network protection
- Reliable networking of applications with rigorous real-time requirements thanks to precise time synchronization in accordance with IEEE 1588 v2
- Cost-effective powering of devices via PoE/PoE+
- Comprehensive management, diagnosis and filter functions
- Broad immunity to electrostatic discharges plus high vibration resistance
- Operating temperature range from -40° C to +70° C (standard model: 0°C to +60°C)
- Compact stainless steel housing for DIN rail mounting
- Special certifications:
  - Energy sector: IEC 61850-3, IEEE 1613
  - Hazardous areas: ISA-12.12.-01 Class 1 Div. 2 Group A, B, C, D
  - Safety applications: EN61131, EN60950, UL61010-1/-2-201
  - Marine: GL - Germanischer Lloyd Compass Safe Distance
  - Transportation: NEMA TS2, EN 50121-4
- Can be ideally combined with all Ethernet products from Hirschmann, GarrettCom and Belden

RSPE Technical Information

Product Description		
Type	**RSPE30-xx, RSPE32-xx**	**RSPE35-xx, RSPE37-xx**
Description	Modular Managed Industrial Switch DIN Rail, fanless design	
Switching/Routing	HiOS Hirschmann Operating System	
Port type and quantity	Ports in total up to 28, Basic unit: 4 x FE/GE Combo ports plus 8 FE TX ports, expandable with two slots for media modules with 8 FE ports each	
Number of fiber ports	16 fiber ports: 4 GE/FE basic unit plus 12 FE with media modules	
Power over Ethernet (PoE)	PoE, PoE+ option with up to 24 Ports and 120 Watt	
More Interfaces		
V.24 interface	1 x RJ11 socket	
USB and SD card slot	1 x to connect auto-configuration adapter ACA22 (USB) or ACA31 (SD-card)	
Power Requirements		
Operating Voltage	24 - 48 VDC redundant, or 60 - 250 VDC and 110 - 230 VAC optional redundant, PoE/PoE+ with 48/54 VDC	
Power Consumption	maximum 34W plus PoE	maximum 36W plus PoE
Mechanical Construction		
Mounting	DIN Rail	
Protection Class	IP30	
Dimensions (WxHxD)	209 (217) x 164 x 120 mm (EEC)	
Weight	2,2 kg; 2,5 kg EEC, plus media modules	
Software		
Supported HiOS software Levels	Layer 2 Standard (L2S), Layer 2 Advanced (L2A) or Layer 3 Standard (L3S)	
Software Layer 2 Standard		
Management	V.24 web-interface, Telnet, SSHv2, HTTP, HTTPS, TFTP, SCP, SFTP client, SNMP v1/v2/v3, Traps, LLDP-MED, SSH client	
Diagnostics	LED, persistent logging, syslog, signal contact, device status indication, port mirroring N:1, RMON (1,2,3,9), TCPDump, LLDP, SFP management (temperature, optical input and output power), switch dump, configuration check dialog, system information, self tests on cold start, Management Address Conflict Detection, Copper cable test, Port Monitor, duplex mismatch detection, snapshot configuration feature, SFLOW	
Configuration	Command line interface (CLI), WEB based management, fully featured MIB support, BOOTP/DHCP client with auto configuration, DHCP option 82, DHCP server per port and pool per VLAN, HiDiscovery, auto-configuration adapter ACA31 and ACA21, Automatic configuration undo (roll-back), text based configuration file, CLI scripting, Telnet	
Security	MAC based port security, Port-based access control with 802.1x, 802.1x enhancements with Guest/Unauthenticated VLAN and RADIUS VLAN assignment, Integrated Authentication Server (IAS), Basic wired-speed Ingress ACLs (MAC,IPv4) per port and per VLAN, Automatic Denial-of-Service Prevention, Restricted Management Access (ACLs), Different privilege levels, configurable password policies, configurable number of login attempts, account locking, HTTPS certificate management, CLI/SNMP logging, Security Status Monitor, Audit Trail, Remote Authentication via RADIUS, Local User Management	
Redundancy functions	MRP (Media Redundancy Protocol IEC62439-2), RSTP 802.1D-2004 (IEC62439-1), Link Aggregation, Link backup	
Enhanced Redundancy functions		IEC62439-3 redundancy Fast MRP, PRP (Parallel Redundancy Protocol) and HSR (High-Availability Seamless Redundancy)
Industrial profiles	IEC61850 protocol (MMS Server, Switch Model)	
Filter	QoS (8 classes), CoS queue management, interface trust mode, TOS/DSCP prioritization, port priority (IEEE802.1D/p), VLAN (IEEE802.1Q), Voice VLAN, IGMP snooping/querier per VLAN (v1/v2/v3), unkown multicast filtering, independent VLAN learning, static unicast/multicast address entries, fast aging, MVRP (Multiple VLAN Registration Protocol), MMRP (Multiple MAC Registration Protocol), MRP (Multiple Registration Protocol)	
Time synchronization	PTPv2 TC two-step, SNTP server and client, Buffered RTC	
Flow control	Flow control (IEEE802.3X), egress interface shaping, ingress storm protection, Queue-Shaping / max. Queue Bandwidth	
Miscellaneous	Port power down, cable crossing, dual software image support, VLAN unaware mode, access to management restricted by VLAN	
Software Layer 2 Advanced in addition		
Security	Further 802.1x enhancements (Multi-client authentication per port, MAC Authentication Bypass, RADIUS Policy Assignment), DHCP Snooping, Dynamic ARP Inspection, Extended wired speed Ingress ACLs (MAC,IPv4) per port and per VLAN, ACL flow based limiting, Time based ACL	
Redundancy functions	MRP over Link Aggregation, Sub Ring Manager	
Filter	Protocol based VLAN, MAC based VLAN, IP subnet based VLAN, IP Ingress DiffServ classification and policing	
Software Layer 3 Standard in addition		
Layer 3	Full wired speed IPv4 routing with lowest latency; Port based Routing (up to 28 interfaces), VLAN based Routing (up to 8 interfaces), Static Unicast Routing (up to 64 IPv4 routes and 512 ARP Entries), Static Route Tracking, Proxy ARP, VRRP with HiVRRP extension, VRRP tracking, ICMP Filter, Loopback Interface, IGMP Proxy (Multicast Routing)	

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

Configurator

RSPE30/RSPE32/RSPE35/RSPE37 Switch Configurations

R	S	P	E	3	5	-	2	4	0	4	4	O	7	T	9	9	-	T	K	9	V	T	9	9	H	H	P	P	2	A	X	X	.	X

Design

RSPE30 = Standard Version
RSPE32 = Standard Version with PoE(+) Capability
RSPE35 = Standard Version with Enhanced Redundancy HSR, PRP, Fast MRP
RSPE37 = Standard Version with Enhanced Redundancy HSR, PRP, Fast MRP and PoE(+)

Number of Fast Ethernet Ports

24 = 24 x 10/100 Mbit/s

Number of Gigabit Ethernet Ports

04 = 04 x 10/100/1000 Mbit/s

Uplink Ports

4O7 = 04 x Combo Ports (10/100/1000 Mbit/s)

Port Configuration

T99 = 04 x Combo Ports (10/100/1000 Mbit/s)

Temperature Range

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

Power Supply

CC = 02 x 24 to 60 V DC
K9 = 01 x 60 to 250 V DC and 110 to 230 V AC
KK = 02 x 60 to 250 V DC and 110 to 230 V AC
PP = 02 x 47 to 57 V DC (PoE) or 53 to 57 V DC (PoE+)

Approvals

Z9 = CE, FCC, EU Safety
X9 = CE, FCC, EU Safety, US Safety, Hazardous Locations
VY = CE, FCC, EU Safety, US Safety, Substation
VU = CE, FCC, EU Safety, US Safety, Substation, Marine
VT = CE, FCC, EU Safety, US Safety, Substation, Transportation
UY = CE, FCC, EU Safety, US Safety, Marine
UT = CE, FCC, EU Safety, US Safety, Marine, Transportation
Y9 = CE, FCC, EU Safety, US Safety
V9 = CE, FCC, EU Safety, Substation
U9 = CE, FCC, EU Safety, Marine
T9 = CE, FCC, EU Safety, Transportation
TY = CE, FCC, EU Safety, US Safety, Transportation

Software Packages

99 = Reserved

OEM Type

HH = Standard

Hardware Configuration

S = Standard
M = Fast MRP
P = PRP
H = HSR

Software Configuration

E = Hirschmann Standard Configuration

Software Version

2S = HiOS Layer 2 Standard
2A = HiOS Layer 2 Advanced
3S = HiOS Layer 3 Standard

Software Release

XX.X = Current Software Release

NOTE: The last five categories (**OEM type, configurations, software version** and **software release**) are optional.



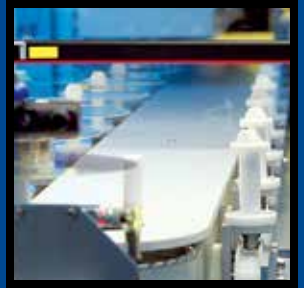
Technical Information

Product Description Media Modules for RSPE			
Type	**RSPM20-4Z64Z6xx**	**RSPM20-4T14Z6xx RSPM22-4T14Z6xx (PoE type)**	**RSPM20-4T14T1xx RSPM22-4T14T1xx (PoE type)**
Port type and quantity	8 FE SFP slots	4 FE SFP slots / 4 FE TX ports (PoE option)	8 FE TX ports (PoE option)
Weight	290 g	220 g	130 g

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

Common Technical Data Basic Units and Media Modules	
Type	**RSPE30, RSPE32, RSPE35, RSPE37, RSPM20, RSPM22**
Gigabit ETHERNET Network Size	
Twisted pair (TP)	0 - 100 m
Multimode fiber (MM) 50/125 µm	0 - 550 m, 7,5 dB link budget; 62.5/125 µm 0 - 275 m, 7,5 dB link budget (with M-SFP-SX/LC)
Single mode fiber (SM) 9/125 µm	0 - 20 km, 11 dB link budget (with M-SFP-LX/LC); 14 - 42 km, 5-20 dB link budget (with M-SFP-LX+/LC)
Single mode fiber (LH) 9/125 µm	23 - 80 km, 5 - 22 dB link budget (with M-SFP-LH/LC); 71 - 128 km, 15 - 30 dB link budget (with M-SFP-LH+/LC)
Fast ETHERNET Network Size	
Twisted pair (TP)	0 - 100 m
Multimode fiber (MM) 50/125 µm	0 - 5000 m, 8 dB link budget; 62.5/125 µm, 0 - 4000 m, 11 dB link budget (with M-Fast SFP-MM/LC)
Singlemode fiber (SM) 9/125 µm	0 - 25 km, 13 dB link budget (with M-Fast SFP-SM/LC); 25-65 km, 10-29 dB link budget (with M-Fast SFP-SM+/LC)
Singlemode fiber (LH) 9/125 µm	47-104 km, 10-29 dB link budget (with M-Fast SFP-LH/LC)
Network Size - Cascadibility	
Line - / star topology	Any
Ring structure	>200 switches MRP
Fault recovery time	0ms with PRP or HSR
Ambient Conditions	
Operating Temperature	0°C to 60°C, or -40° to +70°C, IEC 60068-2-2 Dry Heat Test +85°C 16 Hours, optional Conformal Coating
Storage/Transport Temperature	-40°C to +85°C
Relative Humidity (non-condensing)	5% to 95%
Approvals Configurable	
Safety of industrial Control Equipment	EN60950-1, EN 61131-2 , UL61010-1/-2-201 (pending)
Substation	IEC61850-3, IEEE1613
Ship	GL - Germanischer Lloyd Compass Safe Distance Test – IEC 60945:2002 chapter 11.2 (pending)
Hazardous Locations	ISA-12.12.-01 Class 1 Div. 2 Group A, B, C, D (pending)
Transportation	NEMA TS2, EN50121-4
Scope of Delivery and Accessories	
Device replacement and logging	ACA31 (SD card) 942 074-001, ACA22-USB EEC 942 124-001
Empty module slot cover	RSPM-cover - Order No. 942 131-001
Reliability	
Warranty	5 years (standard)

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



RSPM20/RSPM22 Media Module Configurations

RSPM22-4T1 4T1-T Z9 HH S E XX.X

Design
RSPM20 = Standard Version
RSPM22 = Standard Version with PoE(+) Capability

Port Configuration A
4Z6 = 4 x SFP Slot (100 Mbit/s)
4T1 = 4 x (100 Mbit/s) Twisted Pair (TX)/RJ45

Port Configuration B
4Z6 = 4 x SFP Slot (100 Mbit/s)
4T1 = 4 x (100 Mbit/s) Twisted Pair (TX)/RJ45

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

Approvals
Z9 = CE, FCC, EU Safety
Y9 = CE, FCC, EU Safety, US Safety
X9 = CE, FCC, EU Safety, US Safety, Hazardous Locations
V9 = CE, FCC, EU Safety, Substation
VY = CE, FCC, EU Safety, US Safety, Substation
VU = CE, FCC, EU Safety, US Safety, Substation, Marine
VT = CE, FCC, EU Safety, US Safety, Substation, Transportation
U9 = CE, FCC, EU Safety, Marine
UY = CE, FCC, EU Safety, US Safety, Marine
UT = CE, FCC, EU Safety, US Safety, Marine, Transportation
T9 = CE, FCC, EU Safety, Transportation
TY = CE, FCC, EU Safety, US Safety, Transportation

OEM Type
HH = Customization

Hardware Configuration
S = Standard

Software Configuration
E = Entry (without configuration)

Software Release
XX.X = Current Software Release
99.9 = No Software Release

NOTE: The last four categories (**OEM Type, hardware configuration, software configuration** and **software release**) are optional.

OCTOPUS IP67/IP54 Industrial Ethernet Switches

Specially designed for use at the field level with automation networks, the switches in the OCTOPUS family ensure the highest industrial protection ratings (IP67, IP65 or IP54) regarding mechanical stress, humidity, dirt, dust, shock and vibrations. They are also capable of withstanding heat and cold, while fulfilling the strictest fire prevention requirements. The rugged design of the OCTOPUS switches are ideal for installing directly on machinery, outside of control cabinets and distribution boxes. The switches can be cascaded as often as required – permitting implementation of decentralized networks with short paths to the respective devices to considerably reducing costs for cabling.

The OCTOPUS family includes switches with 5, 8, 9, 10, 16, 18 or 24 Fast Ethernet ports. Gigabit versions are also available which, just like the Fast Ethernet models, feature vibration-resistant M12 connectors for twisted pair cables or fiber-optic ports according to IEC 63076-3-106 v1/v4. The software comes in Basic and Professional versions, providing management, diagnostic and filtering features, as well as redundancy methods and security mechanisms to varying degrees. All switches feature compact water- and dust-resistant housings and have an operating temperature range of -40°C to +70°C.

OCTOPUS Fast Ethernet Unmanaged Waterproof IP67/IP54 Switches

Product	Part No.	Order No.	Ports/Features
	OCTOPUS 5TX EEC	943 892-001	5 x 10/100 Mbit/s 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 IP54 Switches

Product	Part No.	Order No.	Ports/Features
	OCTOPUS OS24-081000T5T5TFFUHB	942 025-003	8 x 10/100 Base-TX PoE (Phantom Power) and 2 x 10/100 Base-TX (24 V version)
	OCTOPUS OS24-081000T5T5TNEUHB	942 025-004	8 x 10/100 Base-TX PoE (Phantom Power) and 2 x 10/100 Base-TX (110 V version)

OCTOPUS IP65/IP67 Industrial Ethernet Switches

OCTOPUS Fast Ethernet Managed Waterproof IP65/67 Switches

Product	Part No.	Order No.	Ports/Features
	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 8M-Train-BP	942 091-001	8 x 10/100 BASE-TX, M12 D-coding, 4-pole (EN 50155), Bypass-Relais
	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 16M-Train-BP	942 092-001	16 x 10/100 BASE-TX, M12 D-coding, 4-pole (EN 50155), Bypass-Relais
	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 24M-Train-BP	942 093-001	24 x 10/100 BASE-TX, M12 D-coding, 4-pole (EN 50155), Bypass-Relais

OCTOPUS PoE Fast Ethernet Managed Waterproof IP65/IP67 Switches

Product	Part No.	Order No.	Ports/Features
	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 IP65/IP67 Industrial Ethernet Switches

OCTOPUS PoE Fast Ethernet Managed Waterproof IP65/IP67 Switches

Product	Part No.	Order No.	Ports/Features
	OCTOPUS OS24-080900T5T5TFFBHH	942 025-007	8 x 10/100 Base-TX PoE-Plus (Phantom Power) and 1 x 10/100 Base-TX (24 V version)
	OCTOPUS OS24-080900T5T5TNEBHH	942 025-008	8 x 10/100 Base-TX PoE-Plus (Phantom Power) and 1 x 10/100 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 16 x 10/100 BASE-TX, M12 D-coding, 4 pole

OCTOPUS Gigabit Ethernet Managed Waterproof IP65/IP67 Switches

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

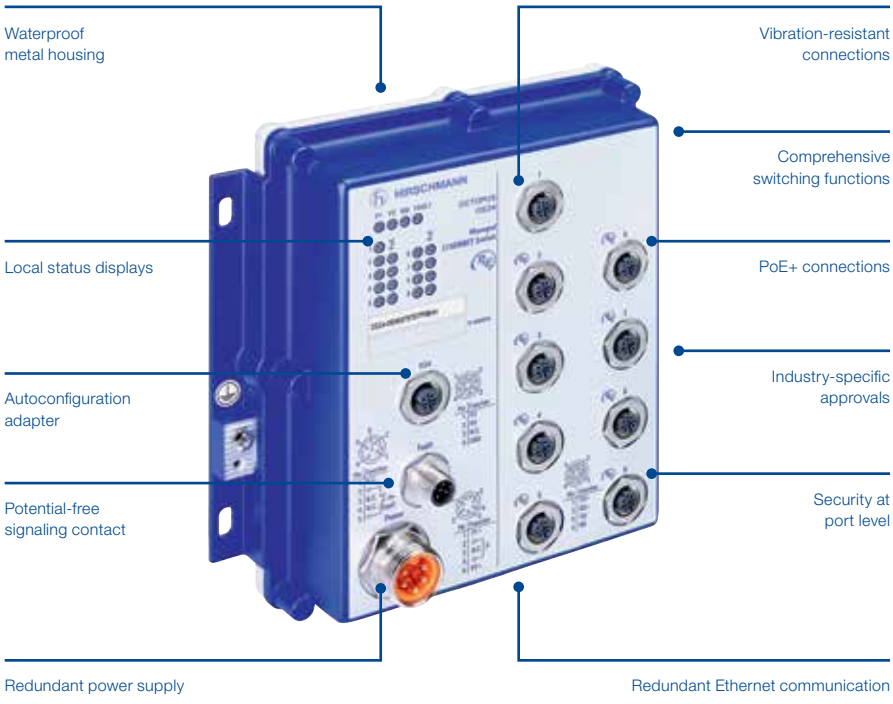
OCTOPUS PoE Gigabit Ethernet Managed Waterproof IP67/IP54 Switches

Product	Part No.	Order No.	Ports/Features
	OCTOPUS OS32-080802T6T6TPEPHH	942 069-002	8 x 10/100 BASE-TX PoE (phantom power) and 2 x 1000 BASE-TX
	OCTOPUS OS32-081602T6T6TPEPHH	942 069-001	8 x 10/100 BASE-TX PoE (phantom power) and 8 x 10/100 BASE-TX, 2 x 1000 BASE-TX
	OCTOPUS OS32-0808020606TPEPHH	942 069-004	8 x 10/100 BASE-TX PoE (phantom power) and 2 x SFP- sockets for 10/100 BASE-FX and 1000, BASE-X housing IEC 63076-3106 v1
	OCTOPUS OS32-0816020606TPEPHH	942 069-003	8 x 10/100 BASE-TX PoE (phantom power) and 8 x 10/100 BASE-TX and 2 x SFP- sockets for 10/100 BASE-FX and 1000 BASE-X housing IEC 63076-3106 v1

OCTOPUS IP54/65/IP67 System Accessories

OCTOPUS IP67/IP54 Connectivity Solutions		
Part No.	**Order No.**	**Description**
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
EM12S 001L0200 OCTOPUS	934 578-001	2 m Fast Ethernet patch cord 2 x M12 D-code
EM12S 001L0500 OCTOPUS	934 578-002	5 m Fast Ethernet patch cord 2 x M12 D-code
EM12S 001L1000 OCTOPUS	934 578-003	10 m Fast Ethernet patch cord 2 x M12 D-code
EM12G 001L0100 OCTOPUS	942 081-001	1 m Gigabit Ethernet patch cord 2 x M12 X-code
EM12G 001L0200 OCTOPUS	942 081-002	2 m Gigabit Ethernet patch cord 2 x M12 X-code
EM12G 001L0500 OCTOPUS	942 081-003	5 m Gigabit Ethernet patch cord 2 x M12 X-code
EM12S OCTOPUS	934 445-001	Field attachable FE M12 connector D-code
EM12G OCTOPUS	942 083-001	Field attachable GE M12 connector X-code

Railway Approved Ethernet Data Cables		
Part No.	**Order No.**	**Description**
Ethernet Rail Transit Cable BE43769	942 037-001	500 m Railway Approved Ethernet Data Cable 100 Mbit/s, Cat 5e, AWG 22/19 Stranded
Ethernet Rail Gigabit Cable BE43800	942 075-500	500 m Railway Approved Ethernet Data Cable 1000 Mbit/s, Cat 5e, AWG 26/19 Stranded



Industrial Ethernet Media Cord Sets

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

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

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

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

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 Cord Set Configurator

Hirschmann by Belden

J	2	2 4	P V C	S T	J	T	0 0 . 3 M

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.

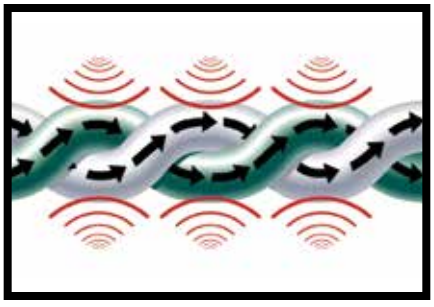


Illustration 2: Example of Bonded Pair. As cable is stretched and pulled, pairs stay intact.

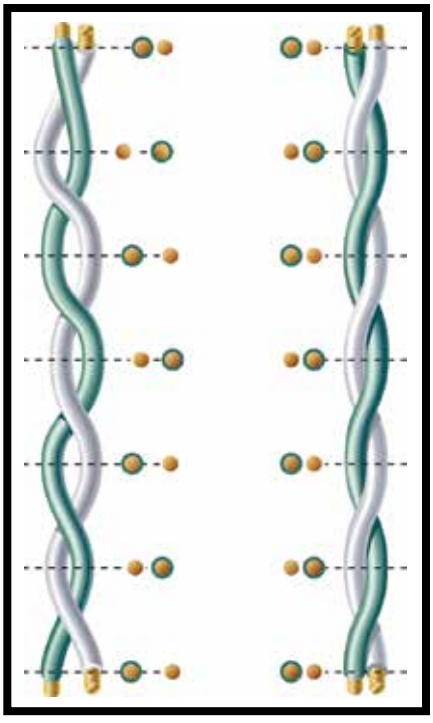


Illustration 3: Side-by-side comparison. Non-Bonded Pair versus Bonded-Pair cable.

MACH100 19” Industrial Workgroup Rack-Mount Switches

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

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

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

Technical Information

Product Description				
Type	**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
Construction				
Mounting	19” Control Cabinet			
Protection Class	IP20			
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
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 Adapter)			
Power Requirements				
Operating Voltage	110 to 240 V AC			
PoE (802.3af) Ports Supported	Yes (variant applicable)			16 ports
PoE Plus (802.3at) Ports Supported	Yes (variant applicable)			8 ports
Regulatory Approvals				
Safety of Industrial Control Equipment	cUL508			
Hazardous Locations	n/a			
Germanischer Lloyd	n/a			
Transportation	n/a			
Railway (norm)	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			

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

MACH100 19” Industrial Workgroup Rack-Mount Switch Configurations

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

Modular: MACH100 Fast/Gigabit Industrial Workgroup Switches		
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 Mbit/s SFPs) and 2 x 8 port media module slots
MACH102-8TP-R	943 969-101	Same as 943 969-001, but with redundant 110/220 V AC 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 Mbit/s SFPs)
MACH102-8TP-FR	943 969-301	Same as 943 969-201, but with redundant 110/220 V AC 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 Mbit/s SFPs)
MACH102-24TP-FR	943 969-501	Same as 943 969-401, but with redundant 110/220 V AC 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 (100 or 1000 Mbit/s SFPs)
MACH104-20TX-FR	942 003-101	Same as 942 003-001, but with redundant power supply
MACH104-20TX-F-L3P	942 003-002	Same as 942 003-001, but with Layer 3 Professional Software
MACH104-20TX-FR-L3P	942 003-102	Same as 942 003-101, but with Layer 3 Professional Software
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
MACH104-20TX-F-4PoE-L3P	942 003-202	Same as 942 003-201, but with Layer 3 Professional Software
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; 16 x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP
MACH104-16TX-PoEP-L3P	942 030-002	Same as 942 030-001, but with Layer 3 Professional Software
MACH104-16TX-PoEP -R	942 026-001	Same as 942 030-001 but with reduntant power supply (max 240W)
MACH104-16TX-PoEP -R-L3P	942 026-002	Same as 942 026-001 but with Layer 3 Professional Software
MACH104-16TX-PoEP -E	942 027-001	Same as 942 030-001 but fanless without power supply
MACH104-16TX-PoEP-E-L3P	942 027-002	Same as 942 027-001 but with Layer 3 Professional Software
MACH104-16TX-PoEP +2X	942 031-001	22 Ports in total; 16 x (10/100/1000 BASE-TX, RJ45) PoEPlus and 4 Gigabit Combo Ports (10/100/1000 BASE-TX, RJ45 or 100/1000 BASE-FX, SFP) and 2 x 10GE XFP
MACH104-16TX-PoEP +2X-L3P	942 031-002	Same as 942 031-001 but with Layer 3 Professional Software
MACH104-16TX-PoEP +2X -R	942 033-001	Same as 942 031-001 but with redundant power supply (max 240W)
MACH104-16TX-PoEP +2X -R-L3P	942 033-002	Same as 942 033-001 but with Layer 3 Professional Software
MACH104-16TX-PoEP +2X -E	942 032-001	Same as 942 031-001 but fanless without power supply
MACH104-16TX-PoEP +2X -E-L3P	942 032-002	Same as 942 032-001 but with Layer 3 Professional Software

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 PoEPlus
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.

MACH1000 19” Über-Rugged™ Rack-Mount Switches

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

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

Technical Information

Product Description			
Type	**MAR1020 Series 1x2x**	**MAR1030 Series 1x3x**	**MAR1040 Series 1x4x**
Switching/Routing	Software Version Layer 2	Software Version Layer 2	Software Version Layer 2 or 3
Available Ports	2-24	2-28	16 (Full Gigabit)
Construction			
Mounting	19” Control Cabinet		
Protection Class	IP30		
Dimensions (W x H x D)	445 x 44 x 308 mm		
Weight	appr. 5 kg		
Ambient Conditions			
Operating Temperature	0°C to +60°C, -40°C to +85°C, or -40°C to +85°C (inclusive Conformal Coating)		
Storage/Transport Temperature	-40°C to +85°C		
Relative Humidity (non-condensing)	10% to 95%		
Conformal Coating	Yes (variant dependent)		
Interfaces			
V.24 Interface	1 x RJ11 Socket		
USB Interface	1 x USB (ACA21-USB Adapter)		
Power Requirements			
Operating Voltage	24/36/49 V DC or 110/250 V DC/110/230 V AC		
PoE (802.3af) Ports Supported	Yes (variant applicable)		
PoE Plus (802.3at) Ports Supported	n/a		
Regulatory Approvals			
Safety of Industrial Control Equipment	cUL508		
Hazardous Locations	cULus ISA12.12.01		
Germanischer Lloyd	Germanischer Lloyd		
Transportation	NEMA TS2 (non-PoE models)		
Railway	EN 50121-4, 50155 (non-PoE models)	EN 50121-4, 50155 (non-PoE models)	EN 50121-4
Substation	IEC 61850-3, IEEE 1613 (non-PoE models)		
Reliability			
MTBF Range	21.5 to 38.9 years	20 to 47.6 years	27.1 to 27.8 years
Warranty	5 years standard		

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

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

Configurator

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

MAR1020-99 MMMMMMVVZZTTTTTTTTTTTTTTTT99 U G C H P E 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 Mbit/s SC
VV = 2 x Singlemode 100 Mbit/s SC
ZZ = 2 x SFP Slot 100 Mbit/s SFP
TT = 2 x Twisted Pair (TX) 10/100 Mbit/s RJ45
99 = none (not present)
RR = 2 x Twisted Pair (TX) 10/100 Mbit/s M12
FF = 2 x Multimode 10 Mbit/s ST
JJ = 2 x Multimode 100 Mbit/s MTRJ
UU = 2 x Singlemode 100 Mbit/s ST
LL = 2 x Singlemode LH 100 Mbit/s SC
GG = 2 x Singlemode LH+ 100 Mbit/s SC

Temperature Range Options

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

Power Supply 1 (options)

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

Power Supply 2 (options)

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

Approvals

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

Software Version (see page 58 for additional Management Software Functionality details)

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

Configuration

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

OEM Type

H = Standard
X = Customer Specific

Software Release

XX.X = Current Software Release

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

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

Configurator

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

M	A	R	1	0	3	0	-	C	C	M	M	M	M	M	M	V	V	Z	Z	T	T	T	T	T	T	T	T	T	T	9	9	U	C	C	H	P	H	H	X	X	.	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 Mbit/s SC
VV = 2 x Singlemode 100 Mbit/s SC
ZZ = 2 x SFP Slot 100 Mbit/s SFP
TT = 2 x Twisted Pair (TX) 10/100 Mbit/s RJ45
99 = none (not present)
RR = 2 x Twisted Pair (TX) 10/100 Mbit/s M12
FF = 2 x Multimode 10 Mbit/s ST
JJ = 2 x Multimode 100 Mbit/s MTRJ
UU = 2 x Singlemode 100 Mbit/s ST
LL = 2 x Singlemode LH 100 Mbit/s SC
GG = 2 x Singlemode LH+ 100 Mbit/s SC

Temperature Range Options

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

Power Supply 1 (options)

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

Power Supply 2 (options)

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

Approvals

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

Software Version (see page 58 for additional Management Software Functionality details)

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

Configuration

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

OEM Type

H = Standard
X = Customer Specific

Software Release

XX.X = Current Software Release

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

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

Configurator

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

MAR1040-4C4C4C4C4C999SMLHRHHXX.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

4C4C4C4C999 = 16 RJ45/SFP combo ports (supports 100 and 1000 Mbit/s SFPs)

Temperature Range Options

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

Power Supply 1 (options)

L = 24/36/48 V DC (plug-in connector)
M = 110/250 V DC, 110/230 V AC (plug-in connector)

Power Supply 2 (options)

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

Approvals

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

Software Version (see page 58 for additional Management Software Functionality details)

P = Layer 2 Professional: extended diagnostics, redundancy and security features
R = Layer 3 Professional: Routing capabilities

Configuration

H = Standard

OEM Type

H = Standard

Software Release

XX.X = Current Software Release

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

MACH4000 Gigabit Backbone Layer 2/3 Rack-Mount Switches

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

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

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

Technical Information

Product Description	
Type	**MACH4000 Series**
Switching/Routing	Software Version Layer 2 or 3
Available Ports	8 to 51
Construction	
Mounting	19” Control Cabinet
Protection Class	IP20
Dimensions (W x H x D)	480 x 88 x 435 mm
Weight	7.5 kg
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 Adapter)
Power Requirements	
Operating Voltage	24 V DC or 48 V DC or 110-240 V 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	cUL508
Hazardous Locations	n/a
Germanischer Lloyd	Germanischer Lloyd
Transportation	n/a
Railway (norm)	n/a
Substation	n/a
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.hirschmann.com**

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

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

MACH4000 – High Density Layer 2/3 Gigabit Backbone Switch Chassis			
Part No.	**Order No.**	**Layer/Software**	**Description**
MACH4002-24G-L2P	943 916-101	Layer 2, Professional Management	Fixed ports: 8 x Gigabit Ethernet combo ports* (SFP dual speed socket or TP 10/100/1000 Mbit/s) Media modules: 2 x sockets (8 ports max each) for total 16 ports 10/100/1000 Mbit/s (Media modules sold separately – see Media modules below. For software functionality – see page 43)
MACH4002-24G-L3E	943 916-201	Layer 3, Enhanced Management	
MACH4002-24G-L3P	943 916-301	Layer 3, Professional Management	
MACH4002-24G+3X-L2P	943 915-101	Layer 2, Professional Management	Fixed ports: 3 x 10Gigabit Ethernet XFP socket and 8 Gigabit Ethernet ports, TP/RJ45 10/100/1000 Mbit/s Media modules: 2 x sockets (8 ports max each) for total 16 ports 10/100/1000 Mbit/s (Media modules sold separately – see Media modules below. For software functionality – see page 43)
MACH4002-24G+3X-L3E	943 915-201	Layer 3, Enhanced Management	
MACH4002-24G+3X-L3P	943 915-301	Layer 3, Professional Management	
MACH4002-48G-L2P	943 911-101	Layer 2, Professional Management	Fixed ports: 16 Gigabit Ethernet (8 Gigabit Ethernet combo ports* 100/1000 Mbit/s, SFP dual speed socket or 10/100/1000 Mbit/s + 8 Gigabit 10/100/1000 Mbit/s RJ45) Media modules: Four sockets (8 ports max each) for total 32 ports 10/100/1000 Mbit/s (Media modules sold separately – see Media modules below. For software functionality – see page 43)
MACH4002-48G-L3E	943 911-201	Layer 3, Enhanced Management	
MACH4002-48G-L3P	943 911-301	Layer 3, Professional Management	
MACH4002-48G+3X-L2P	943 878-101	Layer 2, Professional Management	Fixed ports: Three 10Gigabit Ethernet XFP sockets and 16 Gigabit Ethernet ports (10/100/1000 Mbit/s RJ45) Media modules: Four sockets (8 ports max each) for total 32 ports 10/100/1000 Mbit/s (Media modules sold separately – see Media modules below. For software functionality – see page 43)
MACH4002-48G+3X-L3E	943 878-201	Layer 3, Enhanced Management	
MACH4002-48G+3X-L3P	943 878-301	Layer 3, Professional Management	

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

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

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

MACH4000 Power Supplies and Accessories

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

MACH4000 External Power Supplies			
Product	**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 V AC power module for use with external M4-POWER chassis
	M4-P DC 24V 300W	943 876-001	24 V DC power module for use with external M4-POWER chassis (redundant power input)
	M4-P DC 48V 300W	943 877-001	48 V DC 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 m

MACH4000 Accessories			
Product	**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 MACH4002 chassis, four redundant fans with reduced speed, lower noise level, only for 0°C to +40°C
	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

HiOS - Hirschmann Operating System

HiOS is the latest operating system for the new generation of Industrial Ethernet devices, combining high performance with robust security. It provides the user with precise time synchronization, extensive redundancy mechanisms and diagnostic tools. With zero switchover time, the PRP (Parallel Redundancy Protocol) and HSR (High-Availability Seamless Redundancy) redundancy methods ensure smooth production processes. Comprehensive security mechanisms protect networks against attacks and operating errors.

- Layer 2 Embedded (L2E): Suitable for EES
- Layer 2 Standard (L2S): Suitable for RSP, RSPS, RSPL and RSPE
- Layer 2 Advanced (L2A): Suitable for MSP, RSP and RSPE
- Layer 3 Standard (L3S): Suitable for RSP and RSPE
- Layer 3 Advanced (L3A): Suitable for MSP

Classic Switch Software

The Classic Switch Software provides a range of functions normally found in backbone systems used in office networks. This includes comprehensive management, diagnostics and filter functions, various redundancy features, security mechanisms and real-time applications.

- Layer 2 Basic (L2B): Suitable for RSB20, OCTOPUS
- Layer 2 Enhanced (L2E): Suitable for RS20/RS30/RS40, MS20/MS30
- Layer 2 Professional (L2P): Suitable for RS20/RS30/RS40, MS20/MS30, OCTOPUS, PowerMICE, RSR20/RSR30, MACH100, MACH1000, MACH4000
- Layer 3 Enhanced (L3E): Suitable for PowerMICE, MACH4000
- Layer 3 Professional (L3P): Suitable for PowerMICE, MACH104, MACH1040, MACH4000

NOTE: For the latest software functionality overview please visit our website at:

http://www.hirschmann.com/en/Software

Software Functionality

Switching	Classic Switch Software v8.0					HiOS Hirschmann Operating System v4.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
Disable Learning (HUB functionality)		●	●	●	●					
Fast aging	●	●	●	●	●	●	●	●	●	●
Static unicast/multicast address entries	●	●	●	●	●	●	●	●	●	●
VLAN (802.1Q)	●	●	●	●	●	●	●	●	●	●
Independent VLAN learning		●	●	●	●	●	●	●	●	●
Dynamic VLAN configuration protocol GVRP			●	●	●					
MVRP (Multiple VLAN Registration Protocol)						●	●	●	●	●
Protocol based VLANs					●			●	●	●
Voice VLAN			●	●	●		●	●	●	●
MAC based VLANs								●	●	●
IP subnet based VLANs								●	●	●
VLAN unaware mode						●	●	●	●	●
QoS / Port priority (802.1D/p)	●	●	●	●	●	●	●	●	●	●
TOS/DSCP prioritization	●	●	●	●	●	●	●	●	●	●
Interface trust mode						●	●	●	●	●
CoS queue management				●	●	●	●	●	●	●
GMRP			●	●	●					
IGMP snooping/querier (v1/v2/v3)	●	●	●	●	●					
IGMP snooping/querier per VLAN (v1/v2/v3)						●	●	●	●	●
Unknown multicast filtering						●	●	●	●	●
MMRP (Multiple MAC Registration Protocol)						●	●	●	●	●
MRP (Multiple Registration Protocol)						●	●	●	●	●
Broadcast, unicast, multicast limiter		●	●	●	●	●	●	●	●	●
Flow control (802.3X)		●	●	●	●	●	●	●	●	●
Ingress storm protection						●	●	●	●	●

Redundancy	Classic Switch Software v8.0					HiOS Hirschmann Operating System v4.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
HIPER-Ring (Manager)	●	●	●	●	●					
HIPER-Ring (Ring Switch)	●	●	●	●	●					
Fast HIPER-Ring for MACH1000/RSR			●*	●*	●*					
Link Aggregation (LAG)			●	●	●	●	●	●	●	●
HIPER-Ring over LAG for PowerMICE/MACH4000			●*	●*	●*					
Link Backup						●	●	●	●	●
Media Redundancy Protocol (MRP)	●	●	●	●	●	●	●	●	●	●
MRP with 30/10ms						●*	●*	●*	●*	
MRP over LAG								●	●	●
HSR (High Availability Seamless Redundancy Protocol)						●*	●*	●*	●*	
PRP (Parallel Redundancy Protocol)						●*	●*	●*	●*	
Redundant Netowrk Coupling		●	●	●	●					
Subring Manager			●	●	●			●*	●	●
RSTP 802.1D-2004 (IEC62439-1)	●	●	●	●	●	●	●	●	●	●
Multiple Spanning Tree (MSTP)			●	●	●					
RSTP over MRP		●	●	●	●					

Profile	Classic Switch Software v8.0					HiOS Hirschmann Operating System v4.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
PROFINET IO Profile		●	●	●	●					
EtherNet/IP Profile		●	●	●	●					
IEC61850 protocol (MMS server, Switch model)			●	●	●	●	●	●	●	●

*** Hardware dependent**

Software Functionality (Continued)

Configuration	Classic Switch Software v8.0					HiOS Hirschmann Operating System v4.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
Automatic configuration undo (roll-back)	●	●	●	●	●	●	●	●	●	●
Text based configuration file (XML)						●	●	●	●	●
BOOTP/DHCP client with auto configuration	●	●	●	●	●	●	●	●	●	●
DHCP server by port			●	●	●		●	●	●	●
DHCP server: Pools per VLAN			●	●	●		●	●	●	●
DHCP server: Option 43			●	●	●					
Auto-configuration adapter ACA31 (SD card)						●*	●*	●	●	●
Auto-configuration adapter ACA21 (USB)		●	●	●	●		●*	●*	●*	●
HiDiscovery	●	●	●	●	●	●	●	●	●	●
DHCP relay with option 82	●	●	●	●	●	●*	●*	●	●	●
Command Line Interface (CLI)	●	●	●	●	●	●	●	●	●	●
CLI scripting			●	●	●	●	●	●	●	●
Full featured MIB support	●	●	●	●	●	●	●	●	●	●
WEB based management	●	●	●	●	●	●	●	●	●	●

Management	Classic Switch Software v8.0					HiOS Hirschmann Operating System v4.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
LLDP (802.1AB)	●	●	●	●	●	●	●	●	●	●
SSHv1			●	●	●					
SSHv2			●	●	●	●	●	●	●	●
CLI over V.24	●	●	●	●	●	●	●	●	●	●
HTTP server	●	●	●	●	●	●	●	●	●	●
HTTPS server			●	●	●	●	●	●	●	●
SNMP v1/v2/v3	●	●	●	●	●	●	●	●	●	●
SNMP Traps	●	●	●	●	●	●	●	●	●	●
Telnet		●	●	●	●	●	●	●	●	●

Routing	Classic Switch Software v8.0					HiOS Hirschmann Operating System v4.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
Full wire speed IPv4 routing				●	●				●	●
Loopback interface									●	●
Static unicast routing				●	●				●	●
Static route tracking				●	●				●	●
RIP v1/v2				●	●					●
OSPFv2					●					●
ECMP (Equal Cost Multiple Path)				●	●					●
Proxy ARP				●	●				●	●
VRRP, HiVRRP (<500 ms) router redundancy				●	●				●	●
VRRP Tracking				●	●				●	●
IGMP v1,v2,v3					●				●	●
IGMP Proxy (Multicast Routing)									●	●
DVMRP/PIM-DM/PIM-SM multicast routing					●					●*

Time Synchronization	Classic Switch Software v8.0					HiOS Hirschmann Operating System v4.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
SNTP client, server	●	●	●	●	●	●	●	●	●	●
PTPv2 TC two-step*			●	●	●	●	●	●	●	●
PTPv2 BC*		●	●	●	●	●	●	●	●	●

*** Hardware dependent**

Software Functionality (Continued)

Security	Classic Switch Software v8.0					HiOS Hirschmann Operating System v4.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
IP based port security		●	●	●	●					
MAC based port security		●	●	●	●	●	●	●	●	●
Network access control with 802.1X			●	●	●	●	●	●	●	●
VLAN assignment			●	●	●	●	●	●	●	●
Guest/unauthenticated VLAN			●	●	●	●	●	●	●	●
Policy assignment								●	●	●
MAC authentication bypass			●	●	●			●	●	●
Integrated Authentication Server (IAS)			●	●	●	●	●	●	●	●
Central user authentication via RADIUS		●	●	●	●	●	●	●	●	●
Ingress MAC/IPv4 based ACL				●	●			●	●	●
Egress MAC/IPv4 based ACL								●*	●	●
Time based ACL activation								●	●	●
VLAN based ACL							●*	●	●	●
ACL flow based rate limiting								●	●	●
DHCP snooping								●	●	●
IP source guard								●*	●	●
Dynamic ARP inspection								●	●	●
Denial-of-Service Prevention						●	●	●	●	●
Device security indication						●	●	●	●	●
Audit trail (not erasable)						●	●	●	●	●
CLI logging						●	●	●	●	●
HTTPS certificate management	●	●	●	●	●	●	●	●	●	●
IP access restrictions for managent prtocols			●	●	●	●	●	●	●	●
SNMP logging	●	●	●	●	●	●	●	●	●	●
Different privilege levels	●	●	●	●	●	●	●	●	●	●
Role based acceess control						●	●	●	●	●
Local user accounts	●	●	●	●	●	●	●	●	●	●
Configurable password policy						●	●	●	●	●
Configurable login attempts						●	●	●	●	●
Account locking						●	●	●	●	●

Diagnostics	Classic Switch Software v8.0					HiOS Hirschmann Operating System v4.0				
	L2B	L2E	L2P	L3E	L3P	L2E	L2S	L2A	L3S	L3A
Management Address Conflict Detection			●	●	●	●	●	●	●	●
TFTP client	●	●	●	●	●	●	●	●	●	●
SFTP client						●	●	●	●	●
SCP client						●	●	●	●	●
MAC notification			●	●	●		●	●	●	●
Signal contacts	●	●	●	●	●	●*	●	●	●	●
Device status indication	●	●	●	●	●	●	●	●	●	●
TCPDump			●	●	●	●	●	●	●	●
Syslog		●	●	●	●	●	●	●	●	●
Persistent logging on ACA21/31						●*	●	●	●	●
Port Monitor			●	●	●	●	●	●	●	●
Duplex Mismatch Detection	●	●	●	●	●	●	●	●	●	●
RMON (1,2,3,9)	●	●	●	●	●	●	●	●	●	●
Port mirroring 1:1	●	●	●	●	●	●	●	●	●	●
Port mirroring n:1	●	●	●	●	●	●	●	●	●	●
sFlow								●	●	●
Copper cable test			●	●	●	●*	●*	●	●	●
LLDP	●	●	●	●	●	●	●	●	●	●
Configuration check dialog			●	●	●	●	●	●	●	●
Snapshot						●	●	●	●	●

*** Hardware dependent**

Wireless LAN Solutions

BAT WLAN Solutions

Design flexibility is expanded for your network with the introduction of a full portfolio of wireless solutions. The BAT WLAN Solution Set includes a broad portfolio of products to allow you to design, deploy, manage, and protect a wireless network in your facility. This portfolio includes :

- Planning and Design Software
- Access Points, and Clients
- Controllers
- Antennae and
- Management Software

These products work together seamlessly, providing one of the industry's most robust solutions for maximum mobility, flexibility and network availability in today's industrial environments.

In addition new, innovative, and patented technology recently enhanced the BAT Family to now provide you reliable connections with speeds of up to 450 Mbps, automatic noise filtering technology, and extensive security — allowing you the implementation of communication solutions via WLAN that were previously the domain of cable based networks.

Modeling & Planning Software
BAT-Planner

BAT-Planner

This free software solution allows you to plan WLAN projects quickly and easily. Using the BAT-Planner you can draw up a rough plan of your network quickly and reliability without extensive WLAN modeling knowledge. It provides you point to point strength and data rates as well as a material list of all the components you will need for your solution—access points, antennas, cables, and lightening protection.

The calculations and the resultant material list are produced into a report which can then be used as the basis for planning your WLAN project. This gives you an easy and reliable start to a project. **http://bit.ly/BatPlanner**

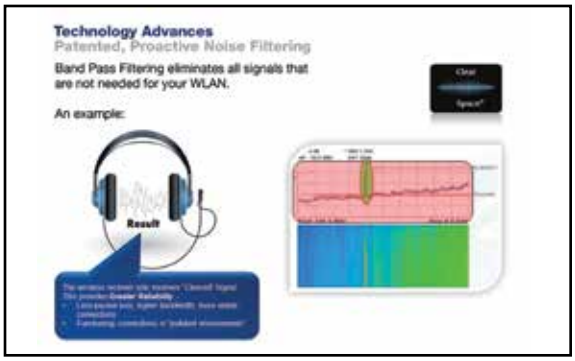
Wireless Ethernet Access Point/Clients

OpenBAT-R and OpenBAT-F

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

The new BAT generation delivers a new level in reliability as it incorporates technology advances such as:

- 3x3 MIMO with Data Rates up to 450 Mbps
- Proactive, patented Noise Filtering
- Integrated Spectral Scan and Bandwidth Steering
- Integrated Parallel Redundancy Protocol (PRP)
- Integrated Electrostatic Discharge (ESD) protection
- A broad, sophisticated network and data security suite



Technical Information

Product Description	
Type	**OpenBAT**
Description	Rugged wireless LAN access point and/or client for use in industrial environments. Robust metal housing for mounting on DIN rails.
Available Ports	One or two WLAN interfaces, IEEE 802.11a/b/g/n, one or two Gigabit LAN ports, Power over Ethernet, GigabitCombo Port with optional SFP
Construction	
Mounting	DIN Rail (BAT-R), Wall and Mast (BAT-F)
Protection Class	IP30 (BAT-R) and IP65/67 (BAT-F)
Dimensions (W x H x D)	120/150 x 136 x 120 mm (BAT-R), ~ 311 x 322 x 75 mm (BAT-F)
Ambient Conditions	
Operating Temperature	0°C to +60°C, -40°C to +70°C (with and without conformal coating) selectable
Storage/Transport Temperature	-40°C to +85°C
Relative Humidity (non-condensing)	mind. 10% to 95%
Radio Technology	
Antenna Connector	3 x MiMo antenna connectors, Reverse SMA socket (BAT-R), N-socket (BAT-F)
Frequency Band	Supports 2.4 GHz and 5 GHz: 2400 to 2483.5 MHz (ISM) and 5170 to 5850 MHz
Power Requirements	
Operating Voltage	Different types of power supplies selectable, 24 V DC PoE, 48 V DC, 90 to 230 V AC, 48 to 320 V DC
Current Consumption at 24 V DC	9 W
Regulatory Approvals	
Safety of Industrial Control Equipment	EN 60950-1, UL 60950-1, EN 60950-22
Radio	EN 300 328 (2.4 GHz), EN 301 893 (5 GHz), EN 301 489-1, EN 301 489-17
Environmental	EN 50155, EN 61850, Atex Zone II, Class 1 Div 2, EN 50121-4 and IEEE 1613
For Use in Vehicles and Cars	E1
Reliability	
Warranty	5 years standard

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

OpenBAT Configurations (BAT-F Wall and Pole Mount IP/65/67 Housing)

B	A	T	-	F	-	E	U	W	W	9	A	C	C	9	H	9	O	5	T	6	T	9	9	9	H	H	X	X	.	X	X	.	X	X	X	X

Design/Models
BAT-F = IP65/67 wall and pole mount

Country-Approval
EU = Europe (CE) US = USA/Canada (FCC/IC)
CN = China JP = Japan
SG = Singapore AU = Australia

Slot 1
W = WLAN module

Slot 2
W = WLAN module
9 = not mounted

Slot 3
9 = not mounted

Client/AP
A = Access Point C = Client

Voltage Range 1
C = 18 to 60 V DC K = 48 to 320 V DC, 90 to 265V AC
P = PoE only (802.3af)[1] W = 24 V DC / PoE

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

Approvals 1[3]
K = Train (EN 50155) [4, 5]
I = Substation (EN 61850)
9 = no additional approval

Approvals 2
H = High Gain Antenna use >9dBi

Protection
9 = Standard
P = Additional Impact Protection

Gigabit-Ethernet 1
O5 = Combo Gigabit M12/SFP

Gigabit-Ethernet 2
T6 = Twisted Pair/M12 x-coded
99 = not assembled

Temperature-Range
S = 0°C up to +60°C E = -40°C up to +70°C, inclusive Conformal Coating
K = 0°C up to +50°C [5] **T** = -40°C up to +70°C

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

SW-options 2
9 = none

SW-options 3
P = PRP Redundancy D = Public Spot **9** = none

Configuration
H = Standard Z = Starter Kit [6]

OEM Type
H = Standard

Software Release
XX.XX.XXXX = SW Release XX.XX.XXXX 08.90.XXXX = SW Release 8.9

Footnotes:

1 – Voltage W or P only available for single radio models
2 – If voltage W or C is selected for voltage 1, it must also be selected for voltage 2
3 – Approvals current at time of printing. Please see www.hirschmann.com for additional updates.
4 – For Rail Approval (EN50155) a single radio unit must be selected with voltages WW or P9
5 – For rail approval (EN50155) temperature range selected must be K
6 – Starter kit Z includes 3 or 6 (single or double radio dependant) unit mounted antennas, model # 942.110-001 (BAT-ANT-N-3AGN-IP67) and a terminal cable.

OpenBAT Configurations (BAT-R DIN Rail and Wall Mountable IP/30 Housing)

B	A	T	-	R	-	E	U	W	W	9	A	C	C	9	H	9	O	7	T	1	T	9	9	9	H	H	X	X	.	X	X	.	X	X	X	X

Design/Models
BAT-R= IP30 DIN rail and wall mountable

Country-Approval
EU = Europe (CE) US = USA/Canada (FCC/IC)
CN = China JP = Japan
SG = Singapore AU = Australia

Slot 1
W = WLAN module

Slot 2
W = WLAN module
9 = not mounted

Slot 3
9 = not mounted

Client/AP
A = Access Point C = Client

Voltage Range 1
C = 18 to 60 V DC K = 48 to 320 V DC, 90 to 265V AC
P = PoE only (802.3af) [1] W = 24 V DC / PoE [1]

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

Approvals 1
F = ANSI/ISA 61010-1 + Class 1 Div2 K = Train (EN 50155) [3, 5]
M = Vehicles [4] I = Substation (EN 61850)
9 = no additional approval

Approvals 2
H = High Gain Antenna use >9dBi

Protection
9 = Standard
P = Additional Impact Protection

Gigabit-Ethernet 1
O7 = Combo Gigabit M12/SFP

Gigabit-Ethernet 2
T1 = Twisted Pair/RJ45
99 = not assembled

Temperature-Range
S = 0°C up to +60°C K = 0°C up to +50°C [5]
E = -40°C up to +70°C **T** = -40°C up to +70°C with conformal coating

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

SW-options 2
9 = none

SW-options 3
D = Public Spot P = PRP Redundancy **9** = none

Configuration
H = Standard Z = Starter Kit [6]

OEM Type
H = Standard

Software Release
XX.XX.XXXX = SW Release XX.XX.XXXX 08.90.XXXX = SW Release 8.9

Footnotes:
1. Voltage W or P only available for single radio models
2. If voltage W or C is selected for voltage 1, it must also be selected for voltage 2
3. For Rail Approval (EN50155) voltage selection WW must be chosen for dual radio, WW or P9 for single radio.
4. If E1 Vehicle Approval is selected, C must be chosen for voltage 1 and voltage 2
5. For rail approval (EN50155) temperature range selected must be K
6. Starter kit Z includes 3 or 6 (single or double radio dependant) unit mounted antennas, model # 942.046-001 (BAT-ANT-RSMA-2AGN-R) and a terminal cable.

Wireless Ethernet Clients

BAT-C (942 072-001)

The BAT-C WLAN Client delivers a cost-effective practical wired to wireless solution for industrial applications. The client was designed for challenging environments and is able to operate within an extended temperature range. Its IP67 housing and 24V power supply make it suitable for the most challenging industrial environments.

Product Features

- Simple, secure, highly compact 802.11n client
- One integrated antenna
- Dual Band – 2.4 or 5 GHz
- One Button Smart Mode Configuration
- Integrated web interface for additional configurations
- 802.11i WPA2/PSK Security
- Data Rates up to 54 Mbps

Technical Information

Product Description	
Type	**BAT-C**
Description	Industrial Wireless LAN Client for 2.4 GHz and 5 GHz operation
Available Ports	1 x 802.11n/a/b/g/h/i; 1 x 24 V DC; 1 x 100 Mbit/s Ethernet (M12)
Order No.	942 072-001
Construction	
Mounting	Wall or table mounting
Protection Class	IP67
Dimensions (W x H x D)	approx. 11 x 6 x 5 cm
Ambient Conditions	
Operating Temperature	-40°C to +70°C
Storage/Transport Temperature	-40°C to +85°C
Relative Humidity (non-condensing)	5% to 90%
Radio Technology	
Antenna Connector	N-Type female
Frequency Band	2.4 GHz and 5 GHz
Power Requirements	
Operating Voltage	9 to 30 V
Current Consumption at 24 V DC	max. 81 mA
Regulatory Approvals	
Safety of Industrial Control Equipment	EN 60950-1:2006 and/or IEC 60950-1:2005 (2nd Edition)
Radio	R&TTE (Europe), FCC/CFR 47 part 15; IC (Industrie Canada)
Environmental	R&TTE Directive 1999/5/EC • EN 300 328 V1.7.1 (2006-10), EN 301 893 V1.5.1 • EMC: EN 301 489-1 V1.8.1 (2008-04), EN 301 489-17 V2.1.1 (2009-05), EN 61000-6-2 (2005)
For Use in Vehicles and Cars	E1/e1
Reliability	
Warranty	5 years standard

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

Wireless Network Management

WLC Wireless LAN Controllers

The 19" WLC Controller provides simplified operations, centralized management, and flexible deployment options for your Wireless LAN. The Controller will save the administrator a great deal of time by:

- Automatically finding all the available access points
- Confirming appropriate firmware
- Configuring access points appropriately for the installed application

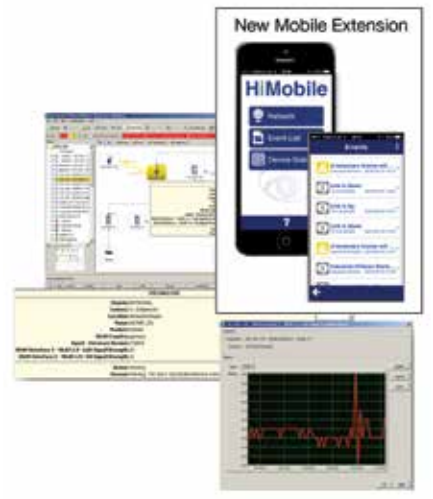
In addition, during normal operation the Controller provides the administrator with all the necessary network information. In the event that an access point fails, the Controller immediately recognizes which device should replace it and then integrates that unit into the network.

The Hirschmann BAT WLC Controllers also feature:

- Extensive management and security functions
- Support for fast roaming
- Automatic frequency management in the 2.4 and 5 GHz waveband
- Redundancy and backup mechanisms designed to ensure fast data communications and high availability
- Operation as a centralized firewall and security device between the LAN and WLAN
- Operation as a VPN gateway to link a number of WLAN networks together, even over great distances

Description	Part Number
BAT WLC Controller - up to 25 APs	942 034-001
BAT WLC Controller - up to 50 APs	942 034-002
BAT WLC Controller - up to 100 APs	942 034-003

Industrial HiVision and HiMobile



Network visibility equals high availability. Industrial HiVision is state-of-the-art management software for industrial communication systems. It is ideal for configuring and supervising all Hirschmann manageable devices, including switches, routers, firewalls and wireless devices, as well as any third-party SNMP-enabled products.

This powerful Industrial Network Management Software features:

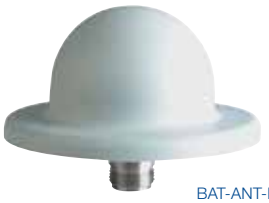
- Online monitoring of WLAN links and Roaming Status
- Visual Network Topology and link status, alerts and communications
- Multi vendor and multi-technology support: Shows both LAN and WLAN
- SCADA Support, built-in SNMP to OPC server, and the graphical user interface as an ActiveX control

The new HiMobile app, together with Industrial HiVision, is the perfect client/server solution for mobile monitoring of network nodes using smartphones or tablets.

This powerful Industrial Network Management Software features:

- Direct and convenient access to status information on network devices from almost anywhere
- Downloadable app runs on all mobile browser-capable devices supporting Apple, Android and Windows operating systems

Wireless Ethernet Antennas



BAT-ANT-N-6ABG-IP65

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

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

BAT-ANT Protector

BAT Series

BAT Series, Dual-Frequency Antennas/802.11a/b/g//n (2.4 GHz and 5 GHz)			
Part No.	**Order No.**	**Type**	**Standards**
BAT-ANT-N-6ABG-IP65	943 981-004	Dual Band Omni-Directional	802.11a/b/g
BAT-ANT-N-MiMoDB-5N-IP65	943 981-012	Dual Band Omni-Directional, 2.4 GHz 3.5 dBi, 5 GHz 5.5 dBi, MiMo *	802.11a/b/g/n

BAT Series, Antennas/802.11a/n (5 GHz)			
Part No.	**Order No.**	**Type**	**Standards**
BAT-ANT-N-5A-IP65	943 981-003	5 GHz Omni-Directional, 5 dBi gain	802.11a
BAT-ANT-N-9A-DS-IP65	943 981-010	5 GHz, Directional antenna, 8 dBi gain w/polarization diversity	802.11a/n
BAT-ANT-N-MiMo5-9N-IP65	943 981-013	5 GHz, Directional antenna, 9 dBi gain, MiMo	802.11a/n
BAT-ANT-N-MiMo5-18N-IP65	943 981-014	5Ghz, Directional Antenna, Narrow Beam, 18dBi gain, Mimo*	802.11 a/h/n
BAT-ANT-N-18A-IP65	943 981-006	5 GHz, Directional antenna, 18 dBi gain	802.11a
BAT-ANT-N-23A-V-IP65	943 981-007	5 GHz, Directional antenna, 23 dBi gain	802.11a
BAT-ANT-N-23A-VH-IP65	943 981-008	5 GHz, Directional antenna, 23 dBi gain w/polarization diversity	802.11a/n

BAT Series, Antennas/802.11b/g/n (2.4 GHz)			
Part No.	**Order No.**	**Type**	**Standards**
BAT-ANT-N-6G-IP65	943 981-002	2.4 GHz Omni-Directional, 6 dBi gain	802.11b/g
BAT-ANT-N-8G-DS-IP65	943 981-009	2.4 GHz Directional, 8 dBi gain w/polarization diversity *	802.11b/g/n
BAT-ANT-N-14G-IP23	943 981-005	2.4 GHz Directional, 14 dBi gain	802.11b/g
BAT-ANT-N-LC-G-50m-IP65	943 981-001	2.4 GHz Leaky Coax, 50 meter (1 x N connector)	802.11b/g
BAT-ANT-N-LC-G-100m-IP65	943 981-101	2.4 GHz Leaky Coax, 100 meter (2 x N connectors)	802.11b/g

BAT Series, Accessories			
Part No.	**Order No.**	**Type**	**Standards**
OpenBAT-F Pole Mount	942 116-001	Mast Mounting Kit for BAT (IP67) products	–
BAT-CLB-2 N m-m	943 903-513	Antenna cable 2 m, N male to N male	802.11a/b/g/n
BAT-CLB-2 N m-f	943 903-514	Antenna cable 2 m, N male to N female	802.11a/b/g/n
BAT-CLB-5 N m-f	943 903-516	Antenna cable 5 m, N male to N female	802.11a/b/g/n
BAT-CLB-15 N m-f	943 903-515	Antenna cable 15 m, N male to 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 to 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
Ethernet Cable	942 112-001	M12 to RJ45 Fast Ethernet Cable, 2m	–
Ethernet Cable	942 113-001	M12 to RJ45 Gigabit Ethernet Cable, 2m	–
SFP Tool	942 079-001	SFP Mounting Tool for IP67 Socket	–
SFP Transceivers	–	See Gigabit Transcievers	802.11a/b/g/n

** Tested for FCC Compliance. See www.hirschmann.com's Antenna Guide for Approval Details*

Industrial Firewall/VPN Router System

EAGLE One

In Layer 2 mode, the industrial firewall EAGLE One – which supports static IPv4 routing and Fast Ethernet (10/100 Mbit/s) – is transparent to redundancy protocols such as RSTP or MRP, including link error messages for a redundant ring coupling. In Layer 3 mode, it provides not only router redundancy but also stateful firewall and various NAT functionalities. The available transmission and encryption standards include PPPoE, PPP for dial-up modem and IPsec with IKEv1/v2. The security mechanisms include stateful packet inspection firewall and VPN. VPN connections can be controlled via digital input, which means that they can easily be integrated into remote service concepts. Other features of this security router include extensive management facilities and diagnostic tools, a robust metal housing for DIN rail mounting, and a redundant power supply for both DC and AC.

There are two available EAGLE One designs, with operating temperature ranges from 0°C to +60°C or from -40°C to +70°C. In addition, there are variants for twisted-pair cables or multimode fibers, as well as with a variety of approvals (e.g. ATEX, IEC 61850-3 and EN 50121-4).

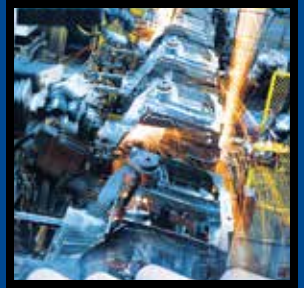
Benefits at a Glance

- All-round protection of automation networks with an optimal price-performance ratio
- Redundant backbone connections for production cells
- Firewall Learning Mode for easy and smooth commissioning
- Router redundancy plus stateful firewall and 1:1 NAT in Layer 3 mode
- Text-based configuration file for automated pre-configuration
- User-friendly configuration and diagnostics via Industrial HiVision, HiView, HiDiscovery, and web interface
- Transparent Layer 2 mode (e.g. for RSTP and MRP)
- Wide range of transmission and encryption standards (PPPoE, PPP, IKEv1/v2, IPsec, NAT)
- A variety of security mechanisms (stateful packet inspection firewall, VPN)
- Digital input for controlling VPN connections
- Numerous management functions (SNMPv3, SSH2/SFTP, HTTPS, V.24 CLI, SSH1, SNMPv1/2)
- Optional extended operating temperature range from -40°C to +70°C (standard is 0°C to +60°C)
- Variants for twisted-pair cables (RJ45) and multimode fibers (SC)
- Robust metal housing for DIN rail mounting
- Meets principal standards and approvals:
  – Energy sector: IEC 61850-3, IEEE 1613
  – Hazardous areas: ATEX, ISA-12.12.01 Class 1 Div. 2
  – Transport sector: EN 50121-4
  – Shipping: Germanischer Lloyd
- Identical software to the EAGLE20, with identical housing dimensions
- Perfectly tailored for use with all Ethernet products from Hirschmann™, GarrettCom™ and Belden®

EAGLE One Industrial Firewall

Technical Information

Product Description			
Type	**EagleOne-0200T1T1**	**EagleOne-0200T1M2 I EagleOne-0200M2T1**	**EagleOne-0200M2M2**
Description	Industrial Stateful Packet Inspection Firewall		
Port Type and Quantity	2 x FE		
Additional Interfaces			
V.24 Interface	1 x RJ11 socket serial interface for device configuration or modem attachment		
USB Interface	1 x USB socket to connect auto-configuration adapter ACA21-USB		
Digital Input	1 x plug-in terminal block, 2-pin		
Signaling Contact	1 x max. 60 V DC or max. 30 V AC, SELV, max. 1A		
Network Size			
Multimode Fiber (MM) 50/125 µm	–	0 to 5000 m, 8 dB Link Budget at 1300 nm, A = 1 dB/km, 3 dB Reserve, B = 800 MHz x km	
Multimode Fiber (MM) 62,5/125 µm	–	0 to 4000 m, 11 dB Link Budget at 1300 nm, A = 1 dB/km, 3 dB Reserve, B = 500 MHz x km	
Twisted Pair (TP)	0 to 100 m		n.v.
Power Requirements			
Operating Voltage	12 to 48 V DC, 24 V AC redundant power supply		
Power Consumption	5 W	6 W	7 W
Power Supply/Signaling Contact	1 x plug-in terminal block, 6-pin		
Software			
Management	SNMPv3, SSH2/SFTP, HTTPS, V.24 CLI, SSH1 and SNMPv1/2, HiDiscovery, Industrial HiVision, HiView		
Diagnostics	LLDP, LEDs (status, VPN, redundancy, link status, data, ACA), signal contact, logfile, syslog, configuration check		
Firewall	Firewall rules (incoming/outgoing, modem access, management), DoS prevention, MAC filter, user firewall for external activation of FW rules		
Routing and NAT	Static routing, multinetting, IP masquerading, 1-to-1 NAT, port forwarding		
VPN	Point to point, point to multipoint, remote enable/disable or via digital input, IPSec, IKEv1/v2, 3DES, AES (-128, -192, -256), Pre-Shared Key, X.509v3 certificates, MD5, SHA-1, NAT-T		
Redundancy Functions	Use in redundant networks/ring coupling, firewall redundancy (layer 4)		
Other Services	NTP, SNTP, DHCP Server/Client, DHCP Relay/Option 82, DynDNS, PPP, PPPoE, VLAN-Support		
Ambient Conditions			
Operating Temperature	0°C to +60°C, or -40°C to +70°C (IEC 60068-2-2 Dry Heat Test +85°C 16 hours), dependent on device variant		
Storage/Transport Temperature	-40°C to +85°C		
Relative Humidity (non-condensing)	10% to 95%		
Conformal Coating	yes (dependent on device variant)		
Mechanical Construction			
Dimensions (W x H x D)	60 x 145 x 125 mm		
Weight	660 g		
Protection Class	IP20		
Mounting	DIN Rail 35 mm		
Approvals			
Declaration of Conformity	CE, FCC, EN 61131, C-TICK, EN 60950		
Safety of Industrial Control Equipment	cUL508 (pending, dependent on device variant)		
Hazardous Locations	ISA-12.12.-01 Class 1 Div. 2 – Haz. Loc, ATEX-95 Category 3G (Zone 2), (pending, dependent on device variant)		
Germanischer Lloyd	Pending, dependent on device variant		
Railway (norm)	EN 50121-4 (dependent on device variant)		
Substation	IEC 61850-3, IEEE 1613 (dependent on device variant)		
Reliability			
MTBF	74.5 years	69 years	64.2 years
Warranty	5 years (standard)		



EAGLE One Industrial Firewall Configurations

EagleOne-	02	00	T1	T1	T	DD	Z9	0000	HH	E	XX.X.XX

Design/Model
EagleOne = Security Router

Fast Ethernet Ports
02 = 2 x 10/100 Mbit/s

Gigabit Ethernet Ports
00 = Not available

Type Port 1
T1 = 1 x Twisted Pair RJ45
M2 = 1 x Multimode SC

Type Port 2
T1 = 1 x Twisted Pair RJ45
M2 = 1 x Multimode SC

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

Voltage Range
DD = 9.6 to 60 V DC/18 to 30 V AC; 9.6 to 60 V DC/18 to 30 V AC

Approvals
Z9 = CE, FCC, EN 61131, EN 60950
Y9 = Z9 + cUL508
X9 = Z9 + cUL508, ISA12.12
W9 = Z9 + ATEX
WX = X9 + ATEX
U9 = Z9 + GL
UY = U9 + cUL508
UX = U9 + cUL508, ISA12.12
UT = U9 + cUL508 + EN 50121-4
T9 = Z9 + EN 50121-4
TY = T9 + cUL508
V9 = Z9 + IEC 61850, IEEE 1613
VY = V9 + cUL508
VU = V9 + cUL508, GL
VT = V9 + cUL508, EN 50121

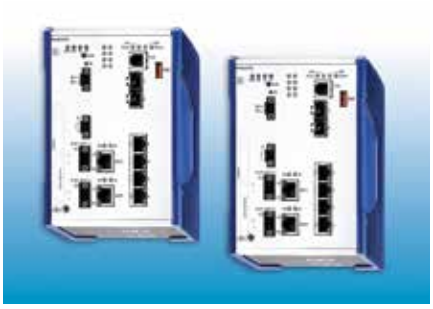
Software Packages
0000 = Reserved

OEM Type
HH = Standard

Configuration
E = Hirschmann™ Standard Configuration

Software Release
XX.X.XX = Current Software Release

Multi-port Industrial Firewall System



EAGLE20-0400 and EAGLE30-0402

The Hirschmann EAGLE20-0400 and EAGLE30-0402 are multi-port firewalls in convection cooled, metal DIN rail housings, which support eight total ports. The EAGLE WAN firewalls are designed to fulfill the requirements of the IEEE 1686 standard, including functions such as security audit trails and user management with password policies. To exceed these requirements and be prepared for future standards, several secure configuration interfaces are part of the router's functionality, as is a unique configuration encryption.

Benefits at a Glance

- Availability of multiple ports offers cost savings and flexibility
- Ethernet in the First Mile (EFM) through newly added SHDSL-Interfaces
- Includes router redundancy for reduced downtime
- Increased router throughput performance
- Wirespeed packet filtering using Access Control List (ACL) rate limiters and Ingress Protection
- State-of-the-Art Statefull Inspection Firewall
- Network Address Translation for every use case: 1:1 NAT, Double-NAT, Masquerading NAT, Destination NAT and Hairpin NAT
- Simple intrusion detection
- Small form-factor pluggable (SFP) support for twisted-pair gigabit cables
- Ideal industrial firewall for networks with high-speed routing requirements
- Meets various standards and approvals

HiSecOS
Hirschmann™ Security Operating System

Hirschmann™ Security Operating System (HiSecOS) 1.2

The multiple-port gigabit EAGLE firewalls with newly-added SHDSL WAN interface come with the Hirschmann Security Operating System (HiSecOS).

The newest version of this software heightens network performance and adds more robust security features for the EAGLE firewalls. The additional features secure LAN and WAN against both unplanned attacks and operating errors.

HiSecOS 1.2 Specifically Features:

- Additional router redundancy protocols, including virtual router redundancy protocol (VRRP)
- Support for the new SHDSL interface on the EAGLE20/30
- Enhanced security, including Ingress Protection and ACL-based counters and filters
- SFP support for gigabit twisted-pair cables

Multi-port Industrial Firewall System

Product Description		
Type	**EAGLE20-0400**	**EAGLE30-0402**
Stateful Inspection Firewall	Firewall rules (incoming/outgoing, management), IP masquerading, 1:1 NAT, Double-NAT, Masquerading NAT, Destination NAT, Hairpin NAT, DoS Protection, Access Control Lists (ACLs)	
Description	Industrial Firewall, Router, Transparent (Bridging)	
Port Type and Quantity	4 x 10/100BASE-TX, TP-cable, RJ45-socket, Autocrossing, Autonegotiation, Autopolarity	4 x 10/100BASE-TX, TP-cable, RJ45-socket, Autocrossing, Auto-negotiation, Autopolarity; 2 x FE/GE SFP slot, optional 2 x SHDSL
Order-No.	see online configurator	see online configurator
Interfaces		
V.24 Interface	1 x RJ11 socket (serial interface for device configuration)	
USB Interface	1 x USB socket (to connect auto-configuration adapter ACA22-USB)	
SD Interface	1 x SD socket (to connect auto-configuration adapter ACA31)	
Power Requirements		
Power Supply/Signaling Contact	For CC Power Supply: 2 x plug-in terminal block 2-pin, for K9 Power Supply: 1 x plug-in terminal block 3-pin	
Power Consumption	max. 19 W	
Operating Voltage	2 x 24/36/48 V DC (18 – 60 V DC), or 1 x 60/110/125/220/250 V DC (48 V – 320 V DC) and 110/120/220/230 V AC (88 – 265 V AC)	
Software		
Management	SNMPv3, SSH2/SFTP, HTTPS, V.24 CLI, SNMPv1/2, local and central User Management (RADIUS), HiDiscovery, Industrial HiVision, HiView	
Diagnostics	LEDs (Power, Link Status, Data, Status, ACA, RM), Signal Contact (24 V DC/1 A), Log File, Syslog, Configuration check RMON (Statistic), SFP diagnostics (temperature, optical transmit and receive power), trap for changes and configuration saves, Counter for ACL Rules	
Configuration	Command Line Interface (CLI), web interface, Auto Configuration Adapter (ACA22, ACA31), HiDiscovery, Industrial HiVision, HiView	
Software	HiSecOS 01.2.00	
Other Services	NTP, VLAN support (IEEE 802.1Q), rate limiter	
Redundancy Functions	VRRP (Virtual Router Redundancy Protocol)	
Protocols	Serial, HTTPS, SSH, SNMP V1/V2/V3, LLDP	
Mechanical Stability		
IEC 60068-2-27 Shock	15 g, 11 ms duration, 18 shocks	
IEC 60068-2-6 Vibration	1 mm, 2 Hz – 13.2 Hz; 0.7g, 13.2 Hz – 100 Hz	
Construction		
Weight	1.2 to 1.9 kg	
Mounting	DIN Rail 35 mm	
Protection Class	IP20	
Dimensions (W x H x D)	Temperature Standard (S): 90 x 164 x 120 mm (for WAN: 99); 108 x 164 x 120 mm (for WAN: H2) Temperature Extended (T, E): 98 x 164 x 120 mm (for WAN: 99); 116 x 164 x 120 mm (for WAN: H2)	
Ambient Conditions		
Operating Temperature	-40 °C to +70 °C	
Relative Humidity (non-condensing)	10% to 95%	
Storage/Transport Temperature	-40 °C to +85 °C	
Approvals		
Germanischer Lloyd	Germanischer Lloyd	
Manufacturer Declaration of Conformity	CE, C-Tick, FCC	
Safety of Industrial Control Equipment	cUL 508	
Hazardous Locations	cUL Approval according to ISA-12.12.-01 Class 1 Div. 2 Group A, B, C, D	
Substation	EN 61850-3, IEEE 1613	
Traffic Controller	NEMA TS 2	
Scope of Delivery and Accessories		
Scope of Delivery	Device, terminal block, operating instructions, CD-manual	
Accessories to Order Separately	Rail power supply RPS 30, RPS 80 EEC, RPS 120 EEC, terminal cable, network management Industrial HiVision, Auto-configuration adpater (ACA22-USB EEC or ACA31), 19" installation frame	
Reliability		
MTBF Range	46.3 to 67.1 years	
Warranty	5 years standard	

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

Multi-port Industrial Firewall Configurations

EAGLE20-0400 and EAGLE30-0402

Configurator

E	A	G	L	E	3	0	-	0	4	0	2	2	0	6	T	T	9	9	9	T	C	C	Z	9	H	S	E	3	F	X	X	.	X	.	X	X

Design/Model
EAGLE20 = Security Router
EAGLE30 = Security Router

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

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

Type Uplink Ports
206 = all SFP slots
999 = not available

Remaining Ports
TT = all twisted pair

Cellular Ports
9 = not available

WAN Ports
99 = not available
H2 = 2X SHDSL

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

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

Approvals
Z9 = CE, FCC, EN 61131, (EN 60950)
Y9 = Z9 + cUL508
X9 = Z9 + cUL508 + ISA 12.12
U9 = Z9 + GL (ABS, BV, DNV, LR)
UY = U9 + cUL508
UX = U9 + cUL508 + ISA 12.12
UT = U9 + cUL508 + EN50121-4
T9 = Z9 + EN50121-4
TY = T9 + cUL508
V9 = Z9 + IEC61850-3, IEEE1613
VY = V9 + cUL508
VU = V9 + GL (ABS, BV, DNV, LR)
VT = V9 + cUL508 + EN50121-4

OEM Type
HS = Hirschmann™ Standard

Configuration
E = Standard Configuration

Software Level
3F = Layer 3 firewall software

Software Release
XX.X.XX = Current Software Release
01.2.00 = Software Release 1.2

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

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 Information

Product Description				
Type	**IOLAN DS1 T**	**IOLAN SDS3 M**	**IOLAN SDS4 HL**	**IOLAN SDS16C HV**
Available Ports	1	3	4	16
Order No.	942 036-001	942 036-201	942 036-101	942 036-301
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)	RS232 on RJ45 with DB9 Adapter (provided)	RS232 on RJ45 with DB9 Adapter (provided)
Network	1 x 10/100-base TX Ethernet RJ45			2 x 10/100/1000-base TX Ethernet RJ45
Power Supply				
Input Voltage Range	9 to 30 V DC			88 to 300 V DC or 85 to 265 V AC (47 to 63 Hz)
Approvals				
FCC	FCC			
Safety Standard for IT Equipment	IEC 60950-1			
Substation	n/a			IEC 61850-3, IEEE 1613
Hazardous Locations	n/a		ATEX Class 1 Zone 2, ANSI/ISA - 12.12.01 - 2007 Class 1 Division 2	n/a

IOLAN DS/SDS Ethernet Converters with Serial Interfaces

Adapter for IOLAN DS, SDS			
Type	**Order No.**	**Description**	**Application**
DBA0010	942 048-001	DB25F	–
DBA0011	942 048-002	DB25M	Cisco/HP/IBM/Sun
DBA0013	942 048-003	DB25M PC-Pinout	Modem
DBA0020	942 048-004	DB9F	APC/Checkpoint/Dell/Extreme Networks/F5/Juniper/Nortel/Sun/HP/IBM
DBA0021	942 048-005	DB9M	Sun/Zyxel
DBA0023	942 048-006	DB9M PC-Pinout	All manufacturers with provided cable for PC/notebook
DB9 to PRL/config connector	942 048-007	DB9F	Perle IOLAN and IOLAN C Console*
DBA0031	942 048-008	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			
Type	**Order No.**	**Description**	**Application**
DBA0010C	942 048-009	DB25F	–
DBA0011C	942 048-010	DB25M	Cisco/HP/IBM/Sun
DBA0013C	942 048-011	DB25M PC-Pinout	Modem
DBA0020C	942 048-012	DB9F	APC/Checkpoint/Dell/Extreme Networks/F5/Juniper/Nortel/Sun/HP/IBM
DBA0021C	942 048-013	DB9M	Sun/Zyxel
DBA0023C	942 048-014	DB9M PC-Pinout	All manufacturers with provided cable for PC/notebook
DBA0031C	942 048-015	RJ45M-RJ45F Cisco/Sun	Cisco/Sun/Juniper

DIN Rail Adapter		
Type	**Order No.**	**Application**
DIN Rail Mount Kit 1	942 048-016	DIN Rail Mounting Kit for 1 port IOLAN DS
DIN Rail Mount Kit 2	942 048-017	DIN Rail Mounting Kit for 4 port IOLAN SDS wall mount models and Stand-Alone Media Converter

Hardened Rail Transceivers and Fieldbus Repeaters

SPIDER Ethernet Transceivers		
Part No.	**Order No.**	**Description**
SPIDER 1TX/1FX MM	943 890-001	1 x 10/100Base-TX RJ45, 1 x 100Base-FX Multimode, SC sockets
SPIDER 1TX/1FX SM	943 891-001	1 x 10/100Base-TX RJ45, 1 x 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 to 60 m
OZDV 2451G	943 299-021	1 electrical and 1 optical port, bus-powered, Multimode 0 to 2000 m
OZDV 2471P	943 340-021	1 electrical and 1 optical port, POF 0-100M, HCS 0 to 2100 m
OZDV 2471G	943 341-021	1 electrical and 1 optical port, Multimode 0 to 6700 m
OZDV 2471G-1300	933 990-021	1 electrical and 1 optical port, Singlemode 0 to 32 km

Hardened Fiber 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	1 electrical, 1 optical port, multimode
OZD PROFI 12M G12	943 727-321	1 electrical, 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 Repeaters

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 EEC 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, multi-mode, redundant ring capable, stainless steel IP67 housing

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

Fast Ethernet Transceivers		
Part No.	**Order No.**	**Description**
M-Fast SFP-TX/RJ45	942 098-001	Fast Ehternet RJ45 SFP
M-Fast SFP-TX/RJ45 EEC	942 098-002	Fast Ethernet RJ45 -40° - +85°C
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 to 65 km 9/125 µm SM
M-FAST SFP-SM+/LC EEC	943 947-001	100BASE-FX, 25 to 65 km 9/125 µm SM
M-FAST SFP-LH/LC	943 868-001	100BASE-FX, 55 to 140 km 9/125 µm SM
M-FAST SFP-LH/LC EEC	943 948-001	100BASE-FX, 55 to 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 EEC	942 108-001	1000Base-MX, 2 km with good quality 50/125u (62.5u) MM
M-SFP-LX+/LC	942 023-001	1000Base-LX, 40 km with 9/125u SM
M-SFP-LX+/LC EEC	942 024-001	1000Base-LX, 40 km with 9/125u SM, -40°C to +85°C
M-SFP-LH/LC	943 042-001	1000Base-LX, 16 to 80 km 9/125 µm SM-LH
M-SFP-LH/LC-EEC	943 898-001	1000Base-LX, 70 km with 9/125u SM, -40°C to +85°C
M-SFP-LH+/LC	943 049-001	1000Base-LX, 44 to 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 to 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 to 80 km 9/125 µm SM
M-XFP-ER/LC	943 920-001	10GBASE-SX, 10 to 40 km 9/125 µm SM
M-XFP-LR/LC	943 919-001	10GBASE-SX, 2 to 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 to 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 (CC)	943 662-121	24 V DC rail power supply unit 4.5 A, -25°C up to +70°C 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, IP67 rated 24 V/48 V input
PC150/72V/48V-IP67	943 968-001	DC/DC converter with 72 V/48 V power output, IP67 rated 72 V/110 V input
Power Cord	942 000-001	Power Cord for pluggable connection for the power supply of the MACH1000 family, RSR20/RSR30 family and the RSP/RSPL/RSPS/RSPE families. Cable length 2 meters.

ACA – Programming and Configuration Backup

Programming and Configuration Backup		
Part No.	**Order No.**	**Description**
ACA21-USB EEC	943 271-003	USB configuration adapter for storage/backup and device replacement of (managed) RS, MS and MACH switches as well as EAGLE firewalls
ACA21-M12 EEC	943 913-003	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
ACA31	942 074-001	Adapter for storage/backup and device replacement of switches and firewalls (RSP, MSP, EAGLE30)
ACA22-M12 EEC	942 125-001	Auto-configuration adapter 512 MB, with M12 (USB 2.0) connection and extended temperature range, saves two different versions of configuration data and operating software from the connected switch. It enables managed switched to be easily commissioned and quickly replaced.
ACA22-USB EEC	942 124-001	Auto-configuration adapter 512 MB, with USB 2.0 connection and extended temperature range, saves two different versions of configuration data and operating software from the connected switch. It enables managed switched to be easily commissioned and quickly replaced.
Serial/Terminal Cable	943 301-001	Terminal cable for managing and configuring managed switches via the RJ11 RS232 interface

ACA31 (EEC)

ACA11-miniDIN (EEC)

Serial/Terminal Cable

ACA21-USB EEC

ACA11 EEC

ACA11-M12 (EEC)

Embedded Ethernet Switches

The Hirschmann Embedded Ethernet Switches (EES) 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 Switches 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 Switches		
Type	**Order No.**	**Description**
EES20-0600UHIHSH2E	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. PTPv2 (IEEE 1588-2008) transparent clock and boundary clock.
EES25-0600UHIHMH2E	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, Fast Media Redundancy Protocol (Fast-MRP, IEC 62439-2), 10 ms recovery. PTPv2 (IEEE 1588-2008) transparent clock and boundary clock, IRIG-B output.
EES25-0600UHIHPH2E	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. PTPv2 (IEEE 1588-2008) transparent clock and boundary clock, IRIG-B output.
EES Development Kit	942 049-001	Development Kit for Embedded Ethernet Switches (EES)

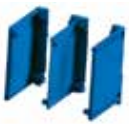
Modular Industrial Patch Panel (MIPP)

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 Features

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

Technical Information

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 (W x H x D)	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. (H x D)	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 Housing	360 g	530 g	697 g	865 g	1034 g	1200 g
Dimension Wallmount Plate (W x H)	38 x 157 mm	68 x 157 mm	98 x 157 mm	128 x 157 mm	158 x 157 mm	188 x 157 mm
Appr. Weight Wallmount Plate	67 g	119 g	172 g	223 g	277 g	329 g

Be Certain with Belden

Module Type and Description						
Type	**Single Module**	**Single Module**	**Single Module**	**Single Module**	**Single Module**	**Single Module**
Description	6 x SC Duplex	6 x LC Duplex	6 x ST Duplex	6 x E-2000™ Duplex	4 x RJ45 Keystone Jack, Unshielded	4 x RJ45 Coupler, Unshielded
						
Mechanical Construction						
Material	Steel					
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 ST adapter OS2 UPC zirconia ceramic • Beige ST adapter OM1/OM2 PC phosphor bronze • Aqua ST adapter OM3/OM4 PC zirconia ceramic	• Blue E-2000™ adapter OS2 UPC zirconia ceramic • Beige E-2000™ adapter OM1/OM2 PC zirconia ceramic • Aqua E-2000™ 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 6A/10GX Modular Jack, Keyconnect Couple AX104024, black
Appr. Weight Module	218 g	218 g	218 g	218 g	516 g	516 g
Protection Class	IP40	IP40	IP40	IP40	IP20	IP20
Cable Entry	3, M16 Gland	3, M16 Gland	3, M16 Gland	3, M16 Gland	–	–
Maximum Diameter Cable	10 mm	10 mm	10 mm	10 mm	4 x 7.5 mm	4 x 7.5 mm
Cable Types	Fiber cables up to 12 fibers: loose tube, mini-breakout, breakout cables				Cat 5e unshielded, Cat 6 unshielded, Cat 6A unshielded	

Module Type and Description						
Type	**Double Modules**	**Double Modules**	**Double Modules**	**Double Modules**	**Single Module**	**Single Module**
Description	12 x SC Duplex	12 x LC Duplex	12 x ST Duplex	12 x E-2000™ Duplex	4 x RJ45 Keystone Jack, Shielded	4 x RJ45 Coupler, Shielded
						
Mechanical Construction						
Material	Steel					
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 ST adapter OS2 UPC zirconia ceramic • Beige ST adapter OM1/OM2 PC phosphor bronze • Aqua ST adapter OM3/OM4 PC zirconia ceramic	• Blue E-2000™ adapter OS2 UPC zirconia ceramic • Beige E-2000™ adapter OM1/OM2 PC phosphor bronze • Aqua E-2000™ adapter OM3/OM4 PC zirconia ceramic	• 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	• Cat 6A/10GX Shielded Modular Jack, Keyconnect Coupler AX104501, metal body
Appr. Weight Module	450 g	450 g	450 g	450 g	636 g	636 g
Protection Class	IP40	IP40	IP40	IP40	IP20	IP20
Cable Entry	1, M20 Gland	1, M20 Gland	1, M20 Gland	1, M20 Gland	–	–
Maximum Diameter Cable	13 mm	13 mm	13 mm	13 mm	4 x 7.5 mm	4 x 7.5 mm
Cable Types	Fiber cables up to 24 fibers: loose tube, mini-breakout Hybrid Fiber cable: 6 x SM + 6 x OM1, 6 x SM + 6 x OM2, 6 x SM + 6 x OM3, 6 x SM + 6 x OM4				Cat 5e shielded, Cat 6 shielded, Cat 6A shielded, Cat 7 shielded	
Accessories						
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	• 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	• ST/UPC SM 9/125, OS2 • ST/PC MM 62.5/125, OM1 • ST/PC MM 50/125, OM2 • ST/PC MM 50/125, OM3 • ST/PC MM 50/125, OM4	• E-2000™/UPC SM 9/125, OS2 • E-2000™/PC MM 62.5/125, OM1 • E-2000™/PC MM 50/125, OM2 • E-2000™/PC MM 50/125, OM3 • E-2000™/PC MM 50/125, OM4		
Brilliance Field Installable Connector (900 micron)	12 brilliance connectors SC: • SM 9/125, OS2, blue, AX104247 • MM 62.5/125, OM1, beige, AX104244 • MM 50/125, OM2, black, AX104245 • MM 50/125, OM3/OM4, aqua, AX104246	12 brilliance connectors LC: • SM 9/125, OS2, blue, AX104243 • MM 62.5 micron, OM1, beige, AX104240 • MM 50 micron, OM2, black, AX104241 • MM 50 micron, OM3/OM4, aqua, AX104242	24 brilliance connectors ST: • SM 9/125, OS2, blue, AX104251 • MM 62.5/125, OM1, beige, AX104248 • MM 50/125, OM2, black, AX104249 • MM 50/125, OM3/OM4, aqua, AX104250			

MIPP Product Configurations

	MODULE 1	MODULE 2	MODULE 3	MODULE 4	MODULE 5	MODULE 6	
M I P P /	J D /	1 L 1 P /	2 T 9 N /	X X X X /	X X X X /	X X X X /	X X X X /	X X

Design/Model

MIPP = Modular Industrial Patch Panel

Housing Type (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

Mounting Type

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

Module Type

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

Adapter and Keystone Type

T	= ST/ST Duplex adapters	c	= Unshielded couplers
L	= LC/LC Duplex adapters	d	= Shielded couplers
S	= SC/SC Duplex adapters	u	= Unshielded keystones
E	= E-2000™/E-2000™ Duplex adapters	s	= Shielded keystones
		N	= Blind module

Fiber Type/Category Type for Copper

1	= MM/OM1	8	= 6 x SM/OS2, 6 x OM4
2	= MM/OM2	9	= SM/OS2
3	= MM/OM3	e	= Cat 5e
4	= MM/OM4	d	= Cat 6
5	= 6 x SM/OS2, 6 x OM1	a	= Cat 6A
6	= 6 x SM/OS2, 6 x OM2	N	= Blind module
7	= 6 x SM/OS2, 6 x OM3		

Accessories and Number of Keystones/Couplers

P = Pigtails
B = Brilliance Field Installable connectors
2 = 2 keystones/couplers
4 = 4 keystones/couplers
N = No accessories

Description of Parts Configured

Panel with one single module and one double module fiber:

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

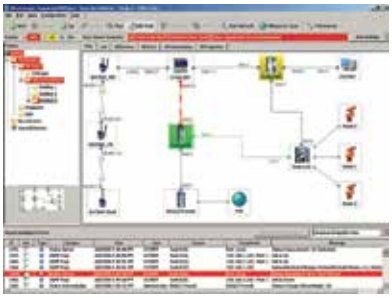
Switch and Network Management

EtherNet/IP™ conformance tested

Industrial Profiles

Switch management within EtherNet/IP and PROFINET

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



Industrial HiVision

Network Visualization and Configuration Software

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

Integration of Third-party Devices

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

Enhanced Auto-topology Discovery

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

MultiConfig™

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

Free 30 Day Trial

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

Product, Feature and Approval Matrix

	WIRED (TP and/or Fibre)	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/-4°F	0°C/32°F	50°C/122°F	60°C/140°F	70°C/158°F	85°C/185°F	cUL508	cUL1604/ISA 12.12.01/FM3611 (CLASS 1 DIV 2)	GL (Germanischer Lloyd)	IEC 61850-3 (SUBSTATION)	IEEE 1613 (SUBSTATION)	EN 50155, DIN 5510-2, NF F 16-101/102 (RAIL, ONBOARD)	EN 50121-4 (RAIL, TRACK-SIDE)	ATEX 100a, ZONE 2 (HAZARDOUS LOCATION)	cUL60950
SPIDER SPIDER II	●		●	○	○	G	18	●			●	●								●					●	●	●	●	●		●								●
SPIDER (PD)	●		●	○	○	100	5	●						●								●			●	●	●	●	●		●								
SPIDER (INJ.)	●		●	○	○	G	2	●				●		●						●	●				●	●	●	●	●		●								
RS2	●		●	○	○	100	8	●			●	●	●							●					●	●	●	●	●	●		●	●	●				●	●
GECKO	●		●		○	100	4		●		●	●													●	●	●	●	●			●							
RS20	●		●		○	100	25	●	●		●	●	●	●			●		●	●					●	●	●	●	●	●		●	●	●	●		●	●	
RS30	●		●		○	G	26	●	●		●	●	●	●			●		●	●					●	●	●	●	●	●		●	●	●	●		●	●	
RS40	●		●		○	G	9		●		●	●	●	●			●		●						●	●	●	●	●	●		●	●	●	●			●	
RSB	●		●		○	100	9		●		●	●	●	●					●						●	●	●	●	●	●		●	●						
RSP	●		●		○	G	11		●	●		●	●	●		●		●	●						●	●	●	●	●	●		●			●	●			
RSPS	●		●		○	G	11		●			●	●	●		●		●	●						●	●	●	●	●	●		●			●	●			
RSPL	●		●		○	G	11		●			●	●	●		●		●	●						●	●	●	●	●	●		●			●	●			
RSPE	●		●		○	G	11		●	●		●	●	●		●		●	●						●	●	●	●	●	●		●			●	●			
RSR	●		●	○	○	G	10		●		●	●	●	●	●	●		●	●						●	●	●	●	●	●	●	●	●	●	●	●			●
MS20	●		●		○	100	24		●			●	●	●		●			●	●					●	●	●	●	●	●		●	●	●	●	●		●	
MS30	●		●		○	G	26		●			●	●	●		●			●	●					●	●	●	●	●	●		●	●	●	●	●		●	
MSP	●		●		○	G	28		●	●		●	●	●		●			●	●	●				●	●	●	●	●	●		●	●	●	●		●	●	●
OCTOPUS	●			●		G	24	●	●		●	●	●	●		●			●	●	●				●	●	●	●	●	●		●		●		●	●		
MACH100	●			○	○	10G	26		●					●				●		●	●					●	●	●	●	●		●							●
MACH1000	●			○	○	G	28		●	●	●	●	●	●	●	●		●	●	●					●	●	●	●	●	●	●	●	●	●	●	●	●		
MACH4000	●			○	○	10G	51		●	●		●		●				●	●	●						●	●	●	●	●		●		●		●			●
BAT		●	●	●	○	450	2		●	●	●	●	●	●	●	●		●	●			●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Tofino Xenon	●		●		○	100	2		●	●	●	●	●	●			●		●						●	●	●	●	●	●		●							
EAGLE20/30	●		●		○	G	2		●	●	●	●	●	●			●		●						●	●	●	●	●	●		●							
EAGLE One	●		●		○	100	2		●	●	●	●	●	●			●		●						●	●	●	●	●	●		●							
Fieldbus	●		●				3	●				●								●						●	●												●

○ ○ **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 mounting options on 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).

Note 1: To advance to the appropriate product configurator, click on the product family name (first column) in the table above.

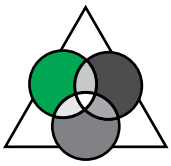
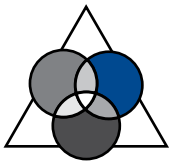
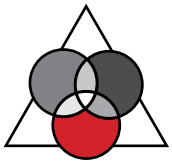
Hirschmann Competence Center

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**.

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 • Network design and migration concepts • Compatibility testing • Wireless site survey	• Training plans • Documentation • Maintenance concepts • Security concepts (network security)	• Integration of redundancy • Emergency concepts	• Service planning • Complete costing
Training 	• Technology and product training courses for network designers	• 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		
		Unshielded	Shielded▲	Solid	Stranded▲▲	Installation Stress Resistance††	Pull Tension	Oil Resistance	UV Sunlight Resistance	Weld - Splatter Resistance	CMX/ Outdoor	Underground (burial)	Gasoline Resistance	LSZH	MSHA	Hi/Lo Temp	600V UL AWM Rated	Heavy	Upjacket	Armored
Category 5e Cable																				
7932A EtherNet/IP	2	●		●		●	20	●	●									●		
7933A EtherNet/IP	2		●	●		●	20	●	●									●		
7923A EtherNet/IP	4	●		●		●	40	●	●		●				●			●		
7918A	4	●		●			35	●	●		●				●			●		
7924A	4	●			●	●	40	●	●		●							●		
7930A	4	●			●		25	●	●		●							●		
7922A PLTC	4	●		●	●	●	40	●	●		●							●		
7934A EtherNet/IP	4	●		●		●	40	●	●			●						●		
7937A	4		●	●		●	40	●	●			●							●	
7939A	4		●		●	●	40	●	●		●							●		
7928A EtherNet/IP	4	●		●		●	40	●	●				●			●		●		
11700A EtherNet/IP	4	●		●		●	40	●	●		●				●				●	
11700A2 Oil Res I&II	4	●		●		●	40	●	●										●	
121700A	4	●		●		●	40	●	●											●
121700R	4	●		●		●	40	●	●											●
7929A	4		●	●		●	40	●	●		●				●			●		
7919A	4		●	●			25	●	●		●				●			●		
7921A EtherNet/IP	4		●	●		●	75	●	●		●							●		
7957A EtherNet/IP	4		●	●		●	75	●	●		●						●	●		
7935A EtherNet/IP	4	●		●		●	40		●					●				●		
7936A	4		●	●		●	40		●					●				●		
7958A EtherNet/IP	4		●	●		●	35	●	●		●				●		●	●		
7938A High Flex	4		●		●	●	40	●	●	●									●	
Category 6 Cable																				
7927A	4	●		●		●	45	●	●									●		
7931A	4	●		●		●	40	●	●				●			●		●		
7940A EtherNet/IP	4	●		●		●	40	●	●		●							●		
11872A	4	●		●		●	45												●	
7953A EtherNet/IP	4		●	●		●	40	●	●		●						●		●	
121872A	4	●		●		●	200		●											●

▲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**

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