



HIRSCHMANN

A **BELDEN** BRAND

Leading Networking Solutions for Industrial & Mission Critical Applications



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

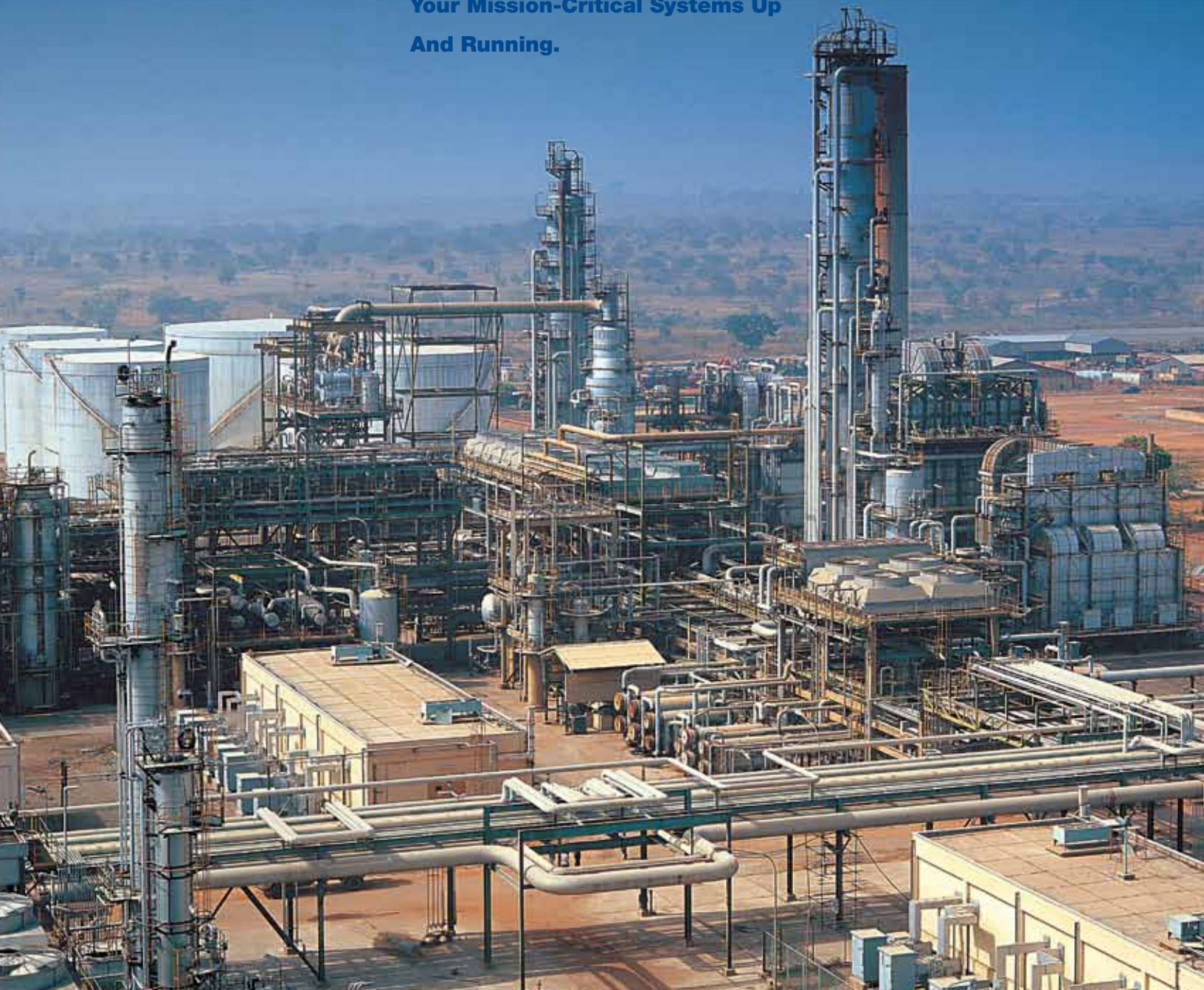


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A **BELDEN** BRAND

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

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





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

Belden Industrial Solutions

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

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

Our Synergy Ensures Continuous Performance

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

- We have the expertise to integrate your industrial and commercial networks.
- Our products are engineered to perform in tough and difficult 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 and distribution network make our products 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 industrial 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 industrial networks.

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

Technical Support

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

System Performance

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

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

Belden Products Serve Many Diverse Industries

By using Belden's industrial-grade products and systems, many industries have been able to implement network, communications, and control systems to keep their operations running reliably – with uptime assurance and total peace of mind. Below are just a few examples.

Whatever the environment, Belden keeps many different and mission-critical operations up and running all around the world.

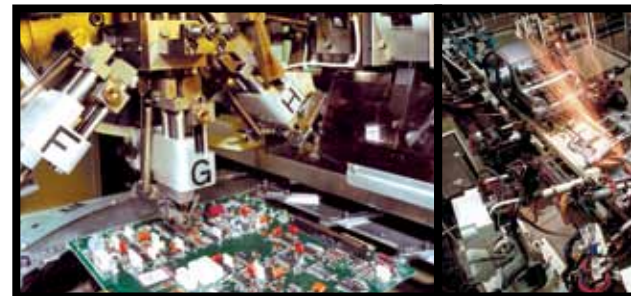
Processing Industries

Safety is critical in all processing operations. Therefore the best defense is an effective and reliable offense – specifying signal transmission products that have been engineered and manufactured specifically for the process environment. Using Belden products, including Hirschmann- and Lumberg Automation branded products, you can rely on our products to ensure proper and consistent system performance – even in the most demanding and hazardous applications.



Discrete Manufacturing

Uptime and dependability of operations are hallmarks of Belden, Hirschmann and Lumberg Automation products. These products are designed to prevent transmission problems in the factory network which can lead to catastrophic failures and untold costs. With all our products and solutions having been designed to meet and exceed the high demands of our discrete manufacturing customers, comprehensive service and support are part of the offering.



Infrastructure

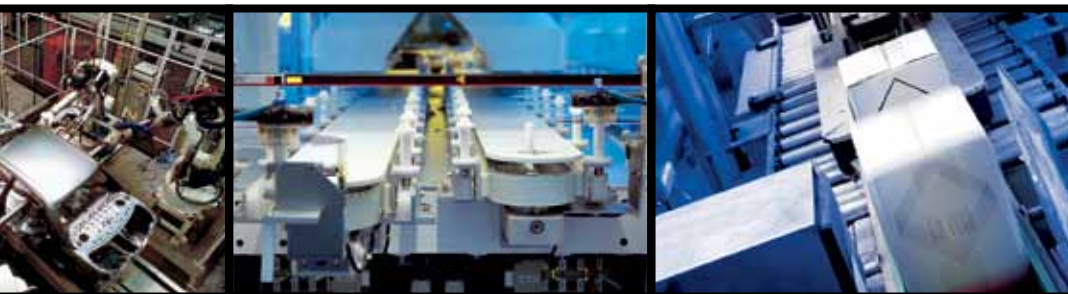
Control, centralized monitoring and network management perform seamlessly in very demanding applications for our most discriminating infrastructure customers. Whether networking a long underground rail tunnel, a large wastewater complex, an airport in the desert, or power generation facilities in the arctic, Belden, Hirschmann and Lumberg Automation products will deliver continuous network availability and bring efficiency to operations.





Applications

- Oil, Gas and Petrochemical Processing
- Oil, Drilling and Exploration
- Food and Beverage
- Pharmaceutical Processing
- Pulp and paper Processing
- Chemical Processing
- Cement and Concrete Production
- Coking
- Mining



Applications

- Industrial Equipment
- Machine Tools
- Semiconductors
- Plastics
- Rubber Products
- Electronic Components
- Medical Devices and Equipment
- Automotive
- Consumer Products
- Fabricated Metals
- Construction and Off-road Equipment



Applications

- Water Supply
- Waste Treatment and Management
- Roadway and Railway Tunnels
- Shipyards and Shipping Vessels
- Pipelines
- Airports
- Bridges
- Rail Yards
- Wind Power
- Power Generation, Transmission and Distribution

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

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



Hirschmann™, A BELDEN BRAND provides the industry with leading switch 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 temperatures as high as +85°C.

Easy to Configure - Our managed switches are easy to configure with built-in password protected web interface - configuration via SNMP and CLI (command line interface), while remote configuration is available through the network. Configuration data and operating software can be saved and stored on an external ACA, enabling easy commissioning and fast replacement.

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

Media Redundancy Options - By using HIPER-Ring protocol, redundant network topologies are simplified without any configuration - resulting in recovery from media failure within 50 ms (Gigabit ring) or 300 ms (100 Mbps ring). RSTP (Rapid Spanning Tree Protocol) and trunk/link aggregation redundancy is also available.

Ethernet/IP and PROFINet Profiles - Configured and monitored from within the PLC/HMI. Examples include: displaying over temperature, lost redundancy, link status, and security violations.

Fault Contact(s) - Hirschmann switches (97%) include a minimum of one configurable fault contact, which enables clear indication when power is lost, a link is down, or temperature is out of range, etc.

Broad Product Line - The breadth of our product line is un-matched and includes serial to fiber optic converters, fieldbus repeaters for all major protocols, managed and unmanaged switches (4-52 ports) and limitless copper/fiber mixes, Layer 3 routers, media converters, wireless, firewalls with VPN tunneling and network management software (SNMP and OPC).

Network "Visualization" - Monitoring your network is made easy with the use of our Industrial HiVision software even with little or no IT knowledge. Typical features include monitoring of alarms, redundant ring status, bandwidth utilization, availability of switches and other Ethernet devices such as servers, programmable logic controllers (PLC), human machine interfaces (HMI), input/output (I/O) devices, and drives on the network.

Design Innovation - Continuous product innovations to meet expanding customer needs. This includes gigabit, industrial profiles, software tools, form factors, e.g. IP 67 Industrial Watertight Switches, and the integration of a USB port to facilitate quick recovery of the network.



Table of Contents	
About Belden® Industrial Solutions	3
Industries	4-5
About The Hirschmann Brand	6
Table of Contents	7
OpenRail Managed DIN Rail Mount Switches	8
OpenRail Concept	8
OpenRail Configuration Guide	9
Compact RS Switches (RS20, RS30, RS40)	10
Compact RSR Über-Rugged™ Switches	11
Modular MICE Switches	12
PowerMICE	13
MICE Medai Modules	13-14
Software Functionality	15
Unmanaged DIN Rail Switches	16
Entry Level SPIDER Switches	16
Feature-rich Unmanaged RS2 Switches	16-17
OpenRail RS20/30 Unmanaged Switches	17
Rack Mounted Switches	18
Industrial Workgroup Switches - MACH100 Series	18
Über-Rugged™ Rack-mount Switches - MACH 1000 Series	18-19
High Density Layer 2/3 Gigabit Backbone Switch MACH 4000 Series	20
MACH 4000 Series Media Modules & Power Supplies	21
IP 67 Switches	22
IP 67 Switches - OCTOPUS Series	22
OCTOPUS IP 67 Connectivity Solutions	23
Media Cordsets with Bonded-Pair Cable by Belden	23
Connector Types: RJ45/RJ45, M12 (Male)/RJ45, M12 (Male)/M12 (Male), RJ45 to M12 (Female) Panel-Mount Receptacle	23-24
Media Cordsets - Part Number Configurator	24
About Bonded-Pair Cable	25
Wireless Ethernet	26-27
BAT54-Rail / BAT54-Rail Client	26
BAT300-Rail	26
BAT54-F & BAT54-F X2	26
BAT Series, Antennas & Accessories	27

Security	28
Firewall/VPN Routers - EAGLE Series	28
Rail Transceivers and Hubs	29
Spider Transceivers	29
RT2	29
Fieldbus Transceivers/Fiber Modems	29-30
RS232 Media Converters	29
RS485 Repeaters	29
Profibus, Genius, Modbus+, WorldFIP	29-30
Accessories	31
SFP's, Power Supplies, 19" Rack Adapters, Serial Cables	31
Switch and Network Management	32
Industrial Profiles: Ethernet/IP and PROFINet	32
Software Industrial HiVision and HiVision	32
Network Services	33
Training, Network Design, Troubleshooting, and Commissioning	33
Bulk Industrial Ethernet Cable Options from Belden	34
DataTuff® Industrial Ethernet and TrayOptic® Heavy-Duty, All-Dielectric Fiber Optic Cables	34



The MACH1000 Rack-Mounted and RSR Compact Managed Switches provide total connectivity with an uncompromising rugged design with extended temperature ranges from -40° C to +85° C.



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OpenRail Managed DIN Rail Mount Switches



OpenRail Compact and Modular Switches

With the continued growth and demand for application-specific switches, Hirschmann has developed the OpenRail line of managed and unmanaged switches. The OpenRail series allows users to choose either a Compact or Modular switch, as well as specify port density, backbone type (RJ45/fiber) and speed, temperature ratings, conformal coating and a myriad of industry approvals. Both compact

and modular platforms offer redundant power inputs and fault relay (triggerable by loss of power and/or port link), while only the managed versions offers media/ring redundancy, multicast filtering/IGMP Snooping, VLAN, port mirroring, network diagnostics, port control, etc.

Compact Switches

A compact platform that allows for up to 24-ports in a mere 4.25" of DIN rail! Available in managed and unmanaged versions.

RS20 Series Managed/Unmanaged

8x, 9x, 16x, 24x and 25x 10/100 Mbps ports

RS20 Series Managed (Only)

4x 10/100 Mbps ports

RS30 Series

2x Gigabit Uplinks and 8x, 16x, and 24x 10/100 Mbps ports

Available as a managed or unmanaged switch

RS40 Series

9x Gigabit ports

Available as a managed switch only

EtherNet/IP™
conformance tested



Modular Switches (MICE)

A modular and flexible platform that facilitates an almost limitless variety of port variations while allowing users to change the switch's port density and configuration on the fly using hot-plug Media Modules. Only available as a managed switch.

MS20 Series

MS20-08: 8x 10/100 Mbps ports (max)

MS20-16: 16x 10/100 Mbps ports, with backplane extension (MB-2T) a port density of 24x 10/100 Mbps can be obtained

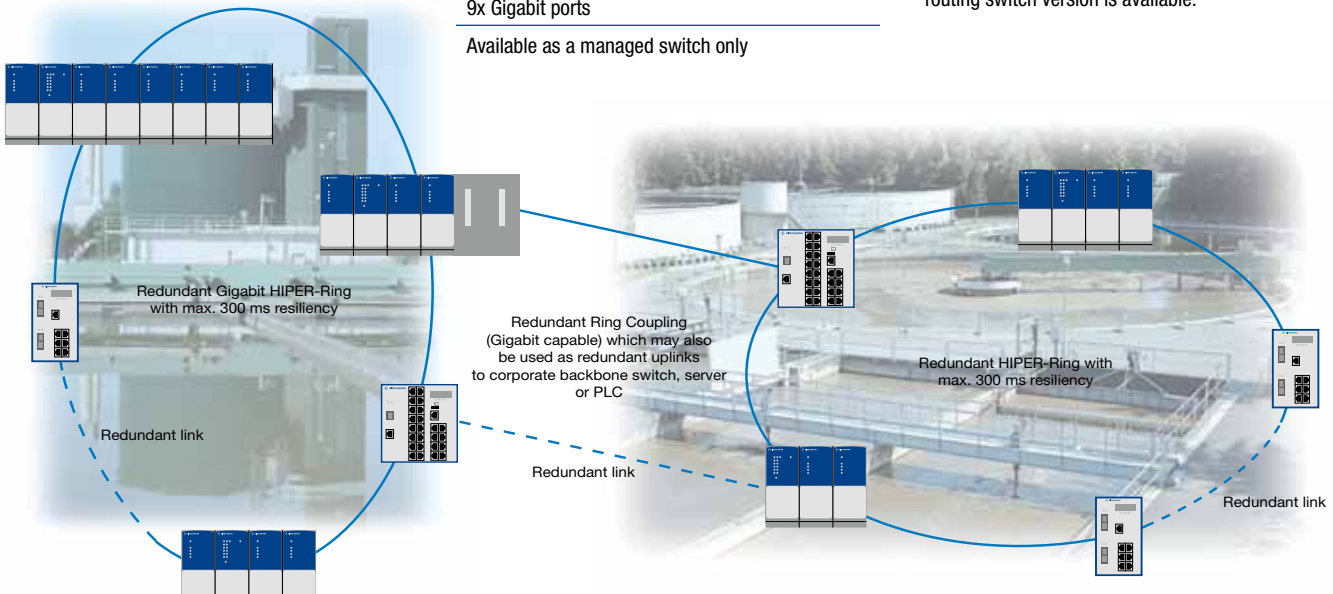
MS30 Series

MS30-08: 2x Gigabit and 8x 10/100 Mbps ports

MS30-16: 2x Gigabit and 16x 10/100 Mbps ports, with backplane extension (MB-2T) a port density of 28x 10/100 Mbps (max) can be obtained

MS40 Series (PowerMICE)

4x Gigabit and 16x 10/100 Mbps ports, with backplane extension (MB-2T) a port density of 28x 10/100 Mbps can be obtained. NOTE: Layer 3 routing switch version is available.



Example of compact and modular managed and unmanaged switches employed in a Water Wastewater treatment plant.



OpenRail Configuration

RS20-0800S2TDHEH04.0.	OpenRail Managed DIN Rail Mount Switches - Part Configurator	
RS20-	Design/Model	
	Compact Rail Switch RS20 10/100 Mbps Ethernet uplinks RS22 10/100 Mbps Ethernet uplinks (4 xPoE) RS30 10/100/1000 Mbps Ethernet uplinks RS32 10/100/1000 Mbps Ethernet uplinks (4 x PoE) RS40 Full Gigabit	Modular MICE Switch MS20 10/100 Mbps Ethernet uplinks MS30 10/100/1000 Mbps Ethernet uplinks
08	Ports Fast Ethernet	
	04 (only RS20) 00, 04, 08, 16, 24: number of 10/100 Mbps ports (00 for RS40) 08 09 (only RS20, RS22) 09, 17, 25: number of 100 Mbps ports (RS20 > 2 fiber ports) 16 17 (RS20, RS22, RS30, RS32) 24 (RS20, RS22, RS30, RS32) 24 (MS20, MS30) 25 (RS20, RS22, RS30, RS32)	
00	Ports Gigabit Ethernet	
	00 00, 02: number of 1000 Mbps ports (00-RS22 and 02-RS30) 02 09 09: number of 1000 Mbps ports (RS40)	
S2	Ports, Type 1. Uplink	
	T1 1 x Twisted Pair RJ45 (10/100 Mbps) M2 1 x Multimode SC (100 Mbps) M4 1 x Multimode ST (100 Mbps) S2 1 x Singlemode SC (100 Mbps) S4 1 x Singlemode ST (100 Mbps) L2 1 x Long Haul SC (100 Mbps) G2 1 x Long Haul+ SC (100 Mbps)	O6 1 x SFP Slot Gigabit MM 2 x Multimode SC (100 Mbps) NN 2 x Multimode ST (100 Mbps) VV 2 x Singlemode SC (100 Mbps) UU 2 x Singlemode ST (100 Mbps) 00 2 x SFP Slot Gigabit CC 2 x SFP Combo Gigabit
S2	Ports, Type 2. Uplink	
	T1 1 x Twisted Pair RJ45 (10/100 Mbps) M2 1 x Multimode SC (100 Mbps) M4 1 x Multimode ST (100 Mbps) S2 1 x Singlemode SC (100 Mbps)	L2 1 x Long Haul SC (100 Mbps) G2 1 x Long Haul+ SC (100 Mbps) O6 1 x SFP Slot Gigabit ZZ 2 x SFP Slot FE (100 Mbps)
T	Temperature Range	
	S 0°C up to + 60° C T -40° C up to + 70° C E -40° C up to + 70° C includes Conformal Coating	
D	Power Supply	
	A MICE 24 VDC (18 – 32 V) C MICE 24 V/48VDC (18 – 60 V) D Rail 12/24 V/48 VDC (9.6 – 60 V) and 24 VAC (18 – 30 V) E MICE 24/18 VDC (18 – 60 V) 6 pin connector P Rail 47 – 52 VDC (PoE)	
H	Approvals	
	A cUL508 · cUL1604 · Class1 Div.2 H cUL508 · cUL1604 · Class1 Div.2 GL: German Lloyd · IEC 61850-3: Substation IEEE 1613: Substation · EN 50121-4: Railway (along track) B cUL508 · cUL1604 · Class1 Div.2 GL: German Lloyd · IEC 61850-3: Substation IEEE 1613: Substation · EN 50121-4: Railway (along track) ATEX100a, Zone 2: Hazardous Location	
E	Software Version	
	U Unmanaged E Enhanced, additional filters and redundancy P Professional, additional security and advanced redundancy	
H	Configuration	
	H Standard X Customer specific	P PROFINET pre-setting E EtherNet/IP pre-setting
H	OEM-Type	
	H Standard X Customer specific	
04.0.	Software Release	
	04.0. Software release 4.0. XX.X. Newest software release	

NOTE: Due to the vast number of switch variations (port density, port type, approvals, power input, etc.), Hirschmann has developed a part number matrix that permits users to custom-tailor their own switch. Simply decide on Compact or Modular, number of ports, the type of uplink ports (these can be used as standard ports), and select the temperature, power and approvals.

It is highly recommended that configurations are verified using the online Configurator.

www.configurator.hirschmann.com

Required Field	Optional
----------------	----------

Compact Managed DIN Rail Mount Switches



RS20 Series Compact Switches



All copper ports are 10/100 Mbps.
Uplink ports are 100 Mbps.

- Available in 4/8/9/16/17/24 and 25x100 Mbps ports
- Fully managed (web, SNMP and CLI) – VLAN, IGMP snooping (multicast filtering), port mirroring, port control, port security, link alarms, broadcast limiter, traffic diagnostics, ring redundancy and much more
- Fiber ports are available in multimode and/or singlemode
- Dual power inputs and fault relay
- USB port for configuration backup/restore and fast device replacement
- Std. 0° C to +60° C (-40° C to +70° C, conformal coating available)
- Differentiator from similar switches listed is the firmware level/features. See bottom of page 5 (E is Enhanced, P is Professional)

All Copper

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

Multimode

Part No.	Order No.	Ports
RS20-0400M2T1SDAE	943 434-009	3 x RJ45, 1 x SC
RS20-0400M2T1SDAP	943 434-010	3 x RJ45, 1 x SC
RS20-0400M2M2SDAE	943 434-001	2 x RJ45, 2 x SC
RS20-0400M2M2SDAP	943 434-002	2 x RJ45, 2 x SC
RS20-0800M2M2SDAE	943 434-003	6 x RJ45, 2 x SC

RS20-0800M2M2SDAP	943 434-004	6 x RJ45, 2 x SC
RS20-0800M4M4SDAE	943 434-017	6 x RJ45, 2 x ST
RS20-0800M4M4SDAP	943 434-018	6 x RJ45, 2 x ST
RS20-1600M2T1SDAE	943 434-025	15 x RJ45, 1 x SC
RS20-1600M2T1SDAP	943 434-026	15 x RJ45, 1 x SC
RS20-1600M2M2SDAE	943 434-005	14 x RJ45, 2 x SC
RS20-1600M2M2SDAP	943 434-006	14 x RJ45, 2 x SC
RS20-2400M2M2SDAE	943 434-043	22 x RJ45, 2 x SC
RS20-2400M2M2SDAP	943 434-044	22 x RJ45, 2 x SC

Single-Mode

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

NOTE: Add an "E" to all-copper 4, 8, 16 and 24 port switches for pre-configured IGMP Snooping, auto-negotiation on the uplinks and more (a factory-set configuration for EtherNet/IP). Please contact us for more details.

RS30 Series Compact Switches



All copper ports are 10/100 Mbps.
Uplink ports are Gigabit.

- Available in 8x, 16x and 24x10/100 Mbps ports. All with 2 additional Gigabit ports
- Identical management and features as RS20
- Fiber uplink ports are available in multi mode and/or singlemode by using Gigabit SFP

All Copper

Part No.	Order No.	Ports
RS30-0802T1T1SDAE	943 434-029	8x10/100 RJ45, 2x10/100/1000 RJ45
RS30-0802T1T1SDAP	943 434-030	8x10/100 RJ45, 2x10/100/1000 RJ45
RS30-1602T1T1SDAE	943 434-033	16x10/100 RJ45, 2x10/100/1000 RJ45

EtherNet/IP™
conformance tested



RS30-1602T1T1SDAP	943 434-034	16x10/100 RJ45, 2x10/100/1000 RJ45
RS30-2402T1T1SDAE	943 434-037	24x10/100 RJ45, 2x10/100/1000 RJ45
RS30-2402T1T1SDAP	943 434-038	24x10/100 RJ45, 2x10/100/1000 RJ45

Fiber

Part No.	Order No.	Ports
RS30-08020606SDAE	943 434-031	8x10/100 RJ45, 2x Gigabit SFP
RS30-08020606SDAP	943 434-032	8x10/100 RJ45, 2x Gigabit SFP
RS30-16020606SDAE	943 434-035	16x10/100 RJ45, 2x Gigabit SFP
RS30-16020606SDAP	943 434-036	16x10/100 RJ45, 2x Gigabit SFP
RS30-24020606SDAE	943 434-039	24x10/100 RJ45, 2x Gigabit SFP
RS30-24020606SDAP	943 434-040	24x10/100 RJ45, 2x Gigabit SFP

RS40 Series Compact Switches



All ports are Gigabit

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

Compact Switches - RS40

Part No.	Ports
RS40-0009CCCCSDAE	9x10/100/1000 RJ45 4x100/1000 SFP
RS40-0009CCCCSDAP	9x10/100/1000 RJ45 4x100/1000 SFP

NOTE: A combo port is a dual 10/100/1000 Mbps RJ45 and 1000 Mbps SFP port. Only one is active at a time. The use of one SFP port disables one RJ45 port. The use of two SFP ports disables two RJ45 ports, etc.



Über-Rugged™ Managed DIN Rail Mount Switches

RSR Series Compact Über-Rugged™ Switches



RSR-XX Ruggedized Gigabit Ethernet Switches for DIN Rail-Mount

- Extended temperature range: -40°C to +85°C
- Up to two AC/DC inputs with choice of voltage
- DIN rail or panel mounting
- Extremely high RFI/EMI immunity
- Robust metal housing
- Resistant to shock and vibration
- From 8TX to 10 ports fiber
- Panel mount kit available
- Ultra-fast ring recovery time <10ms



RSR30-0802CCZZT1UCCHPHH04.0.		Über-Rugged Managed DIN Rail Mount Switches - Part Configurator	
RSR30-		Design/Model	
		RSR20 Rail Switch Rugged Fast Ethernet	
		RSR30 Rail Switch Rugged Gigabit Ethernet Uplink Ports	
09		Ports Fast Ethernet	
		06 6x 100 Mbps Ethernet	08 8x 100 Mbps Ethernet
		07 7x 100 Mbps Ethernet	09 9x 100 Mbps Ethernet
02		Ports Gigabit Ethernet	
		00 0x 1000 Mbps Ethernet	03 3x 1000 Mbps Ethernet
		02 2x 1000 Mbps Ethernet	
S2		Ports Typ1, Uplink	
		CC 2 x Combo Port Gigabit Ethernet	07 Combo Port Gigabit Ethernet
		00 2 x SFP Slot Gigabit Ethernet	06 SFP Slot Gigabit Ethernet
		TT 2 x Twisted Pair (Tx) / RJ45	T1 Twisted Pair (Tx) / RJ45
		MM 2 x Multimode FX SC	M2 Multimode FX SC
		JJ 2 x Multimode FX MTRJ	M3 Multimode FX MTRJ
		NN 2 x Multimode FX ST	M4 Multimode FX ST
		VV 2 x Singlemode FX SC	S2 Singlemode FX SC
		UU 2 x Singlemode FX ST	S4 Singlemode FX ST
		LL 2 x Singlemode Long Haul FX SC	L2 Singlemode Long Haul FX SC
		GG 2 x Singlemode Long Haul+ FX SC (200 km)	G2 Singlemode Long Haul+ FX SC (200 km)
		ZZ 2 x SFP Slot (100 Mbps)	Z6 SFP Slot (100 Mbps)
M2		Ports Type 2, Uplink	
		ZZ 2 x SFP Slot (100 Mbps)	M4 Multimode FX ST
		07 Compo Port Gigabit Ethernet	S2 Singlemode FX SC
		06 SFP Slot Gigabit Ethernet	S4 Singlemode FX ST
		T1 Twisted Pair (Tx) / RJ45	L2 Singlemode Long Haul FX SC
		M2 Multimode FX SC	G2 Singlemode Long Haul+ FX SC (200 km)
		M3 Multimode FX MTRJ	Z6 SFP Slot (100 Mbps)
T1		Remaining Ports	
		T1 Twisted Pair (Tx) / RJ45	Z6 SFP Slot (100 Mbps)
U		Temperature Range	
		S Standard 0° C up to + 60° C	
		U Extended - 40° C up to + 85° C	
		F Extended - 40° C up to + 85° C inclusive Conformal Coating	
C		Voltage Range 1	
		C 24/36/48 VDC	K 60/120/250 VDC and 110/230 VAC
C		Voltage Range 2	
		9 Not available	K 60/120/250 VDC and 110/230 VAC
		C 24/36/48 VDC	
H		Approvals	
		H UL508, GL, IEC 61850; IEEE 1613; EN 50121	
P		Software Version	
		P Professional	
H		Configuration	
		H Professional X Customer specific P PROFINET pre-setting E Ethernet/IP pre-setting	
H		OEM-Type	
		H Standard X Customer specific	
04.0.		Software Release	
		04.0 Software Release 4.0 XX.X. Newest Software Release	
Required Field	Optional		

Managed Modular DIN Rail Mount Switches

EtherNet/IP™
conformance tested



MS20 Modular Switches



All ports are 10/100 Mbps. Fully managed (web, SNMP and CLI) – IGMP snooping (multicast filtering), VLAN, port mirroring, port control, port security, link alarms, broadcast limiter, traffic diagnostics, HIPER-Ring redundancy, RSTP, etc.

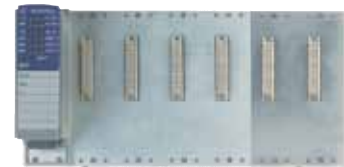
- Available in a 2- and 4-slot version (4-slot can be expanded to a 6 slot using MB-2T)
- Requires the use of media modules
- Dual power inputs and dual fault relay outputs
- USB configuration backup/restore and fast device replacement
- Std. 0° C to +60° C (-40° C to +70° C and conformal coating available)
- Differentiator between similar switches listed is the firmware level/features. (E = Enhanced, P = Professional).



MS20-08



MS20-16



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

MS20 Modular Switches / All Ports are 10/100 Mbps

Part No.	Order No.	Ports
MS20-0800SAAE	943 435-001	2 x any MM2/MM3 (4 slots, max. 8 x 10/100 Mbps ports)
MS20-0800SAAP	943 435-002	2 x any MM2/MM3 (4 slots, max. 8 x 10/100 Mbps ports)
MS20-1600SAAE	943 435-003	4 x any MM2/MM3 (6 slots max. 16 x 10/100 Mbps ports/24 ports w/ MB-2T)
MS20-1600SAAP	943 435-004	4 x any MM2/MM3 (6 slots max. 16 x 10/100 Mbps ports/24 ports w/ MB-2T)

MS30 Modular Switches



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

- MS30-08 can have a max of 8 x 10/100 Mbps ports and 2 x 10/100/1000 Mbps ports
- MS30-16 can have 16 x 10/100 Mbps ports (24 ports max w/ MB-2T) and 2 x 10/100/1000 Mbps ports
- Uplinks may be copper and/or fiber. Fiber is available in multimode and singlemode by using Gigabit or 100 Mbps SFPs.



MS30-08



MS30-16



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

MS30 Modular Switches / Uplink Ports are 10/100/1000 Mbps - All Other Ports are 10/100 Mbps

Part No.	Order No.	Ports
MS30-08002SAAE	943 435-005	2 x any MM2/MM3 and 1 x MM4-2TX/SFP (max 10 ports)
MS30-08002SAAP	943 435-006	2 x any MM2/MM3 and 1 x MM4-2TX/SFP (max 10 ports)
MS30-16002SAAE	943 435-007	4 x any MM2/MM3 (6 x w/MB-2T) and 1 x MM4-2TX/SFP (max 26 ports)
MS30-16002SAAP	943 435-008	4 x any MM2/MM3 (6 x w/MB-2T) and 1 x MM4-2TX/SFP (max 26 ports)



MS Backplane Extensions

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

MS Backplane Extensions		
Part No.	Order No.	Extensions for Use With
MB-2T	943 733-102	MS20-16, MS30-16, and MS4128
MB20-2TAHH	943 435-002	Same as above but with -40°C to +75°C



PowerMICE Gigabit Layer 2/3 Switches



For applications that require a more powerful and feature-rich switch, Hirschmann offers its PowerMICE modular switches. Similar in functionality and features to the MS30-16 on the previous page, the PowerMICE adds two additional Gigabit ports (for a total of four) and an option to have Layer 3 routing capabilities.

MICE Modular Managed Industrial Ethernet Layer 2/3 Switches with Professional or Enhanced Management

Part No.	Order No.	Layer/Management	Ports	Configurations
MS4128-L2P	943 009-001	Layer 2/Professional	28	24x 10/100 Mbps + 4 Gigabit (any copper/fiber mix)
MS4128-L3E	943 009-201	Layer 3/Enhanced	28	24x 10/100 Mbps + 4 Gigabit (any copper/fiber mix)
MS4128-L3P	943 009-201	Layer 3/Professional	28	24x 10/100 Mbps + 4 Gigabit (any copper/fiber mix)



MICE Media Modules

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

MICE Modules: Maximum Module Density

Modular Switch	Density
MS20-08	2 x any MM2/MM3
MS20-16	4 x any MM2/MM3 (6 x MB-2T)
MS30-08	2 x any MM2/MM3 plus 1 x MM4-2TX/SFP
MS30-16	4 x any MM2/MM3 (6 x MB-2T), plus 1 x MM4-2TX/SFP
MS4128	4 x any MM2/MM3 (6 x MB-2T), plus 1 x any MM4

NOTE: SFPs are needed for MM4 fiber functionality.

MICE Modules: ALL COPPER			
Type	Part No.	Order No.	Ports/Speed
ALL COPPER	MM2-4TX1	943 722-101	4 x 10/100 Mbps RJ45
ALL COPPER	MM2-4TX1-EEC	943 722-151	4 x 10/100 Mbps RJ45, ext. temperature range*
MICE Modules: MULTIMODE			
MULTIMODE	MM2-4FXM3	943 721-101	4 x 100 Mbps MM MTRJ
MULTIMODE	MM2-2FXM2	943 718-101	2 x 100 Mbps MM SC
MULTIMODE	MM3-4FXM2	943 764-101	4 x 100 Mbps MM SC
MULTIMODE	MM3-4FXM4	943 835-101	4 x 100 Mbps MM ST
MULTIMODE	MM3-1FXM2/3TX1	943 839-101	1 x 100 Mbps MM SC, 3 x RJ45
MULTIMODE	MM3-2FXM4/2TX1	943 837-101	2 x 100 Mbps M ST, 2 x RJ45
MULTIMODE	MM2-2FXM3/2TX1	943 720-101	2 x 100 Mbps MM MTRJ, 2 x RJ45
MULTIMODE	MM3-4FLM4	943 760-101	4 x 10 Mbps MM ST
MULTIMODE	MM3-2FXM2/2TX1	943 761-101	2 x 100 Mbps MM SC, 2 x RJ45
MULTIMODE	MM3-2FXM2/2TX1-EEC	943 761-151	2 x 100 Mbps MM SC, 2 x RJ45, ext. temperature range*
MULTIMODE	MM3-1FXM2/1FXS2/2TX1	943 929-101	2 x 100 Mbps SC (1 x MM and 1 x SM), 2 x RJ45

NOTE: EEC media modules have an extended temperature range of -40°C to +70°C. Additional EEC modules are available. Please consult your Hirschmann representative or www.hirschmann-usa.com



Managed Modular DIN Rail Mount Switches

MICE Modules: SINGLEMODE

Type	Part No.	Order No.	Ports/Speed
SINGLEMODE	MM 2-2FXS2	943 719-101	2x 100 Mbps SM SC
SINGLEMODE	MM 3-2FXS2/2TX1	943 762-101	2x 100 Mbps SM SC, 2x RJ45
SINGLEMODE	MM 3-2FXS2/2TX1-EEC	943 762-151	2x 100 Mbps SM SC, 2x RJ45, ext. temp.*
SINGLEMODE	MM 3-1FXS2/3TX1	943 838-101	1x 100 Mbps SM SC, 3x RJ45
SINGLEMODE	MM 3-4FXS2	943 836-101	4x 100 Mbps SM SC
SINGLEMODE	MM 3-1FXL2/3TX1	943 763-101	1x 100 Mbps SM, SC Long Haul, 3x RJ45
SINGLEMODE	MM3-1FXLH+/3TX1	943 930-101	1x 100 Mbps SM SC Long Haul+, 3x RJ45
SINGLEMODE	MM 3-1FXS2/3TX1-EEC	943 838-151	1x 100 Mbps SM SC, 3x RJ45, ext. temp.*

MICE Modules: GIGABIT

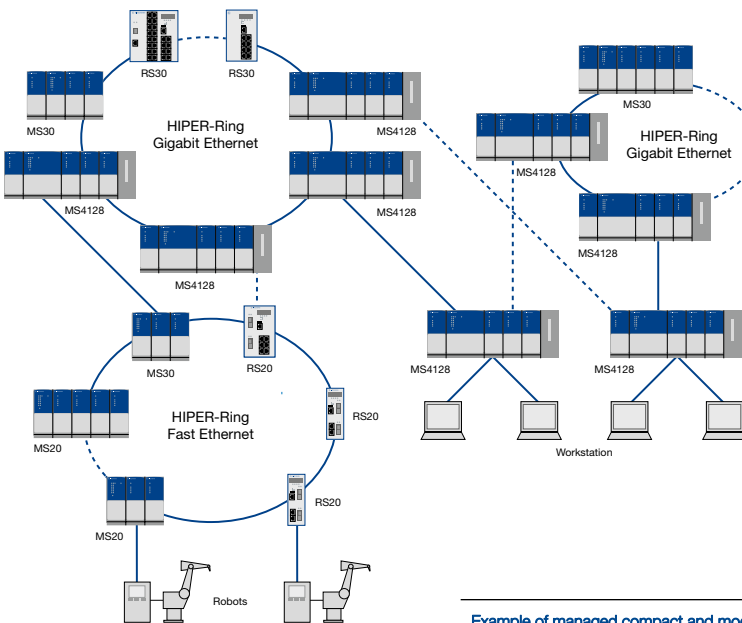
Type	Part No.	Order No.	Ports/Speed
GIGABIT	MM 4-2TX/SFP	943 622-001	2x Gigabit RJ45 2 SFP Slots** for MS30 and MS4128
GIGABIT	MM 4-4TX/SFP	943 010-001	4x Gigabit RJ45 4 SFP Slots** for MS4128 only

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

MICE Modules: SPECIAL PURPOSE 1588 Compliant

Type	Part No.	Order No.	Ports/Speed
REALTIME	MM3-4TX1-RT	943 117-001	4x RJ45, IEEE 1588 realtime modules
REALTIME	MM3-2FXM2/2TX1-RT	943 117-002	2x 100 Mbps MM SC, 2x RJ45,
REALTIME	MM3-2FXS2/2TX1-RT	943 117-003	2x 100 Mbps SM SC, 2x RJ45,
REALTIME	MM3-2FLM4/2TX1-RT	943 117-004	2x 10 Mbps MM ST, 2x RJ45,
REALTIME	MM3-4TX1-RT-EEC	943 955-001	4x RJ45, railway certifications EN 50155, EN 50121-4
REALTIME	MM3-2FXM2/2TX1-RT-EEC	943 955-002	2x 100 Mbps MM SC, 2x RJ45, IEEE 1588, railway certifications EN 50155, EN 50121-4
REALTIME	MM3-2FXS2/2TX1-RT-EEC	943 955-003	2x 100 Mbps SM SC, 2x RJ45, IEEE 1588, railway certifications EN 50155, EN 50121-4
AUI	MM3-2AUI	943 840-101	2x AUI SUB-D 15-pin male D-sub
IP67	MM3-4TX5	943 841-101	4x M12 socket (D-code), for connectors see OCTOPUS family
POE	MM22-1T1T1T1SAHH	943 938-002	4x RJ45 PoE (external PoE power supply)
SFP	MM20-Z6Z6Z6SAHH	943 938-001	4x 100 Mbps SFP, for MS20, MS30 and MS4128

NOTE: *All media modules are available (special order) with extended temperature range of -40°C to +70°C.



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

All OpenRail switches also have the capability to support redundant ring coupling. Compact and modular switch capabilities are fully compatible in a network.



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



Management Software Functionality

Technical Tips and Tools

An excellent documentation resource for everything pertaining to Hirschmann's hardware and software can be found on our ftp server - [ftp.hirschmann-usa.com](ftp://ftp.hirschmann-usa.com)

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

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



EtherNet/IP (Allen-Bradley) and PROFINET (Siemens) users please note that Hirschmann's managed switches are easily integrated into the respective PLCs/HMIs, enabling switch management from/by the PLC/HMI. The seamless integration also provides network/switch status to the PLC/HMI for alarming and network statistics. Please refer to page 32 for more information on the industrial profiles. Enjoy the benefits of direct, hassle-free configuration with our online tool at www.configurator.hirschmann.com

Management Software Functionality				
L2: Enhanced	L2: Professional	L3: Enhanced	L3: Professional	Plug & Play
	●	●	●	DHCP server per port
	●	●	●	IP address conflict detection
	●	●	●	Multiple stored firmware versions
●	●	●	●	Automatic configuration undo
●	●	●	●	DHCP relay agent, option 82
●	●	●	●	External flash memory
Security				
	●	●	●	Radius - IEEE 802.1x
	●	●	●	SSH
	●	●	●	SNMP v2c, v3 encryption
	●	●	●	Port security IP, multiple addresses
●	●	●	●	Port security MAC
●	●	●	●	Port security IP
●	●	●	●	SNMP v2c, v3 (password encryption)
Switching				
	●	●	●	GVRP
	●	●	●	Multicast GMRP – 802.1D
	●	●	●	Optimized for video multicasting
●	●	●	●	Static VLAN, Q-MIB – 802.3ac, 802.1Q
●	●	●	●	Broadcast, unicast, multicast limiter
●	●	●	●	Multicast IGMP querier
●	●	●	●	Multicast IGMP snooping
●	●	●	●	Port priority – 802.1D/p
Redundancy				
●	●	●	●	Link aggregation – 802.3ad
●	●	●	●	RSTP – 802.1w
●	●	●	●	Redundant net coupling
●	●	●	●	HIPER-Ring redundancy manager
●	●	●	●	HIPER-Ring
●	●	●	●	MRP-Ring
Industrial Profile				
●	●	●	●	PROFINET Profile
●	●	●	●	EtherNet/IP Profile
Routing				
			●	DVMRP/PIM DM multicast routing
			●	OSPF
		●	●	RIP v1/v2
		●	●	Static routing
		●	●	VRP, HiVRRP (< 500 ms) router redundancy
		●	●	Layer 3 ACL
Diagnostic				
	●	●	●	Text configuration file
	●	●	●	Cable diagnostic TX
	●	●	●	Automatic configuration check
●	●	●	●	HUB functionality (disable learning)
●	●	●	●	Syslog
●	●	●	●	Log file
●	●	●	●	Port mirroring
●	●	●	●	Topology discovery 802.1ad

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



Unmanaged DIN Rail Mount Switches



Entry-level Unmanaged Switches SPIDER Family



All ports are 10/100 Mbps. Now available with POE. The SPIDER family of switches provides users with an economical, yet highly reliable Ethernet switch. All copper/RJ45 ports are 10/100 auto-negotiating and auto-crossing – the SPIDERS will work with either patch or cross-over cables. The fiber ports are all 100 Mbps and available in multimode (MM) and singlemode (SM) with either SC or ST sockets. Unless specified, all switches are rated 0° C to +60° C, have a 24 VDC power input via pluggable terminal block and have an average MTBF exceeding 100 years.

ALL COPPER/RJ45 - SPIDER FAMILY / Entry-level Unmanaged Switches

Part No.	Order No.	Ports
SPIDER 3TX-TAP	943 899-001	3 x RJ45
SPIDER 5TX	943 824-002	5 x RJ45
SPIDER 5TX EEC	943 824-102	5 x RJ45
SPIDER II 8TX	943 957-001	8 x RJ45
SPIDER II 8TX EEC	943 958-001	8 x RJ45
NEW SPIDER II 8TX POE	942 008-001	8 x RJ45 and 4 X POE, with metal housing and 24 VDC input

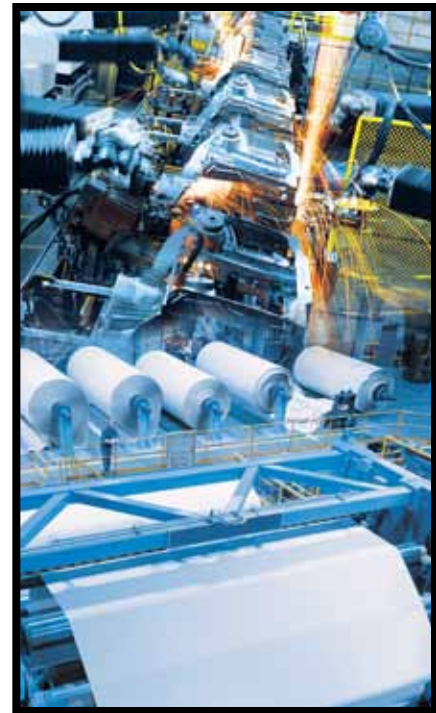
COPPER/RJ45 and FIBER - SPIDER FAMILY / Entry-level Unmanaged Switches

Part No.	Order No.	Ports
SPIDER 4TX/1FX	943 221-001	4 x RJ45 and 1 x MM, SC
SPIDER 4TX/1FX EEC	943 221-101	4 x RJ45 and 1 x MM, SC
SPIDER 4TX/1FX-S EEC	943 914-001	4 x RJ45 and 1 x MM, ST
SPIDER 4TX/1FX SM EEC	943 880-001	4 x RJ45 and 1 x SM, SC
SPIDER 1TX/1FX	943 890-001	1 x RJ45 and 1 x MM, SC
SPIDER 1TX/1FX EEC	943 927-101	1 x RJ45 and 1 x MM, SC
SPIDER 1TX/1FX-SM	943 891-001	1 x RJ45 and 1 x MM, SC
SPIDER 1TX/1FX SM EEC	943 928-001	1 x RJ45 and 1 x SM, SC
SPIDER II 8TX/1FX EEC	943 958-111	8 x RJ45 and 1 x MM, SC
SPIDER II 8TX/1FX-ST EEC	943 958-121	8 x RJ45 and 1 x MM, ST
SPIDER II 8TX/2FX EEC	943 958-211	8 x RJ45 and 2 x MM, SC
SPIDER II 8TX/2FX-ST EEC	943 958-221	8 x RJ45 and 2 x MM, ST
SPIDER II 8TX/1FX-SM EEC	943 958-131	8 x RJ45 and 1 x SM, SC
SPIDER II 8TX/2FX-SM EEC	943 958-231	8 x RJ45 and 2 x SM, SC

FULL GIGABIT - SPIDER FAMILY / Entry-level Unmanaged Switches

Part No.	Order No.	Ports
SPIDER II Giga 5T EEC	943 962-002	5 x RJ45 (10/100/1000)
SPIDER II Giga 5T/2S EEC	943 963-002	5 x RJ45 (10/100/1000), and 2 x SFP Slot (1000)

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



Feature-rich Unmanaged Switches

RS2 Switches

These switches offer advanced features such as redundant power inputs and most offer fault relay (triggerable by loss of power and/or port-link). Standard features include 10/100 auto-negotiating and auto-crossing (either patch or cross-over cables will work in the ports), a 0° C to +60° C operating range, a 24 VDC power input via pluggable terminal block and have an average MTBF exceeding 100 years. All of the multimode (MM) and singlemode (SM) fiber optic ports are 100 Mbps and are available in a variety of connector options.





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

OpenRail Unmanaged DIN Rail Mount Switches



OpenRail Unmanaged Switches RS20 and RS30 Unmanaged Switches

Hirschmann's unmanaged OpenRail switches are ideal for applications that are less dependent upon the features of switch management while maintaining the highest feature-set for an unmanaged switch:

- 8 x, 9 x, 16 x, 17 x, 24 x and 25 x ports in a 4.25" footprint
- Up to 4 x fiber ports
- Redundant power inputs via dual 24 VDC
- Fault relay (triggerable by loss of one power input and/or the loss of the link(s) specified)
- 10/100/1000 auto-negotiating and auto-crossing (either patch or crossover cables will work in the ports)
- Variety of connector options for Multimode (MM) and Singlemode (SM) fiber optic ports
- Choice of operating temperatures and conformal coating (standard is 0° C to +60° C, with –40° C to +70° C also available)
- Variety of approvals including IEC 61850-3, IEEE 1613, EN 50121-4 and ATEX 100a Zone 2

ALL COPPER/RJ45 / RS20 - OpenRail Unmanaged DIN Rail Switches		
Part No.	Order No.	Ports/Features
RS20-1600T1T1SDAU	943 434-047	16 x 10/100 Mbps RJ45
MULTIMODE - OpenRail Unmanaged DIN Rail Switches		
Part No.	Order No.	Ports/Features
RS20-0900NM4TDAU	943 434-058	3 x 100 Mbps MM fiber (ST) and 6 x 10/100 Mbps RJ45
RS20-0900MMM2TDAU	943 434-059	3 x 100 Mbps MM fiber (SC) and 6 x 10/100 Mbps RJ45
RS20-1600M2T1SDAU	943 434-049	1 x 100 Mbps MM fiber (SC) and 15 x 10/100 Mbps RJ45
RS20-1600M2M2SDAU	943 434-048	2 x 100 Mbps MM fiber (SC) and 14 x 10/100 Mbps RJ45
RS20-1600S2M2SDAU	943 434-052	1 x 100 Mbps MM fiber (SC) 1 x 100 Mbps SM fiber (SC) and 14 x 10/100 Mbps RJ45
RS20-1600L2M2SDAU	943 434-055	1 x 100 Mbps MM fiber (SC) 1 x 100 Mbps Long Haul SM fiber (SC) and 14 x 10/100 Mbps RJ45
SINGLEMODE - OpenRail Unmanaged DIN Rail Switches		
Part No.	Order No.	Ports/Features
RS20-0900VVM2TDAU	943 434-060	3 x 100 Mbps SM fiber (SC) and 6 x 10/100 Mbps RJ45
RS20-1600S2T1SDAU	943 434-051	1 x 100 Mbps SM fiber (SC) and 15 x 10/100 Mbps RJ45
RS20-1600S2S2SDAU	943 434-053	2 x 100 Mbps SM fiber (SC) and 14 x 10/100 Mbps RJ45
RS20-1600L2T1SDAU	943 434-054	1 x 100 Mbps Long Haul SM fiber (SC) and 15 x 10/100 Mbps RJ45
RS20-1600L2S2SDAU	943 434-056	1 x 100 Mbps Long Haul SM fiber (SC) 1 x 100 Mbps SM fiber (SC) and 14 x 10/100 Mbps RJ45
RS20-1600L2L2SDAU	943 434-057	2 x 100 Mbps Long Haul SM fiber (SC) and 14 x 10/100 Mbps RJ45
RS20-1600S2M2SDAU	943 434-052	1 x 100 Mbps MM fiber (SC), 1 x 100 Mbps SM fiber (SC) and 14 x 10/100 Mbps RJ45
RS20-1600L2M2SDAU	943 434-055	1 x 100 Mbps MM fiber (SC) 1 x 100 Mbps Long Haul SM fiber (SC) and 14 x 10/100 Mbps RJ45

NOTE: Don't see what you're looking for? Need an unmanaged switch with Gigabit uplinks? Custom configure your unmanaged RS20 or RS30 OpenRail switch using the configuration table on page 7!

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

Please refer to the online OpenRail Configurator for online assistance.

RS20-2400M2T1SDAU



Workgroup Rack-mount Switches



Industrial Workgroup Switches MACH100 Switches



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

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

NOTE: *SFPs need to be purchased separately (see accessories on page 23 for SFPs).

MACH100 MODULAR		
Part No.	Order No.	Ports
MACH102-8TP	943 969-001	8x10/100BASE-TX RJ45 ports, 2x GE combo ports (100 or 1000 MBps SFPs) and 2x 8 port media module slots
MACH102-8TP-R	943 969-101	Same as -001 above, but w/ redundant 110/220 VAC power supply
FIXED PORTS		
Part No.	Order No.	Ports
MACH102-8TP-F	943 969-201	8x10/100BASE-TX RJ45 ports and 2x GE combo ports (100 or 1000 MBps SFPs)
MACH102-8TP-FR	943 969-301	Same as -201, but w/ redundant 110/220 VAC power supply
MACH102-24TP-F	943 969-401	24x10/100BASE-TX RJ45 ports and 2x GE combo ports (100 or 1000 MBps SFPs)
MACH102-24TP-FR	943 969-501	Same as -401, but w/ redundant 110/220 VAC power supply
MEDIA MODULES (2 Max. per Modular MACH 100)		
Part No.	Order No.	Ports
M1-8TP-RJ45	943 970-001	8x10/100BASE-TX, RJ45 media module
M1-8MM-SC	943 970-101	8x100BASE-FX MM, SC media module
M1-8SM-SC	943 970-201	8x100BASE-FX SM, SC media module
M1-8SFP	943 970-301	8x100BASE-X SFP media module

Über-Rugged™ Rack-mount Switches

Über-Rugged™ Switches

MACH1000 - 19" Rack-mount Switches



Why Über-Rugged™?

This is the only way to describe a switch that goes above and beyond the already rugged capabilities of Hirschmann's switches by being extremely immune to noise and able to provide maximum uptime in extreme environmental conditions. The MACH1000 features a 24-port custom configurable/modular design that is also available with two or four additional Gigabit uplink (RJ45 and/or SFP for fiber) and PoE ports.

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





Über-Rugged™ Rack-mount Switches - Configurations

MAR1030-CCMMMMMMVVZZTTTTTTTTTTTT99UGCHPHH04.0. / MACH1000 19" Switch			
MAR1030-	Design/Model		
	MAR1020	Fast Ethernet uplink	
	MAR1030	Gigabit Ethernet uplink	
	MAR1022	Fast Ethernet uplink with 4 ports PoE	
	MAR1032	Gigabit Ethernet uplink with 4 ports PoE	
	MAR1120	Fast Ethernet uplink with ports at the back	
	MAR1130	Gigabit Ethernet uplink with ports at the back	
	MAR1122	Fast Ethernet uplink with ports at the back and 4 ports PoE	
	MAR1132	Gigabit Ethernet uplink with ports at the back and 4 ports PoE	
CC	Gigabit Ethernet Ports		
	99	Not present	
	CC	2 ports combo (2x 10/100/1000TX or 2x GE SFP)	
	40	4 ports GE SFP	
	4T	4 ports 10/100/1000TX	
	OT	2 ports GE SFP and 2 ports 10/100/1000TX	
MM	1 + 2	Fast Ethernet Ports - 1 + 2 · 3 + 4 · 5 + 6 · 7 + 8 · 9 + 10 · 11 + 12 · 13 + 14 · 15 + 16 · 17 + 18 · 19 + 20 · 21 + 22 · 23 + 24	
MM	3 + 4	TT	2x Twisted Pair (TX) 10/100 Mbps RJ45
MM	5 + 6	RR	2x Twisted Pair (TX) 10/100 Mbps M12
VV	7 + 8	FF	2x Multimode 10 Mbps ST
ZZ	9 + 10	MM	2x Multimode 100 Mbps SC
TT	11 + 12	JJ	2x Multimode 100 Mbps MTRJ
TT	13 + 14	NN	2x Multimode 100 Mbps ST
TT	15 + 16	VV	2x Singlemode 100 Mbps SC
TT	17 + 18	UU	2 x Singlemode 100 Mbps ST
TT	19 + 20	LL	2x Singlemode LH 100 Mbps SC
TT	21 + 22	GG	2x Singlemode LH+ 100 Mbps SC
99	23 + 24	ZZ	2 x SFP Slot 100 Mbps SFP
		99	Not present
U	Temperature Range		
	S	Standard	0° C up to + 60° C
	U	Extended	- 40° C up to + 85° C
	F	Extended	- 40° C up to + 85° C inclusive Conformal Coating
C	Power Supply 1		
	C	24/36/48 VDC (spring clip)	G 110/250 VDC/110/230 VAC (spring clip)
	L	24/36/48 VDC (plug-in connector)	M 110/250 VDC/110/230 VAC (plug-in connector)
C	Power Supply 2		
	C	24/36/48 VDC (spring clip)	G 110/250 VDC/110/230 VAC (spring clip)
	L	24/36/48 VDC (plug-in connector)	M 110/250 VDC/110/230 VAC (plug-in connector)
	9	not present	
H	Approvals		
	H	cUL508, cUL1604 Class 1 Div2, German Lloyd, IEC 61850-3, IEEE 1613, EN 50121	
P	Software Version		
	P	Professional: extended diagnostics, redundancy and security features	
H	Configuration		
	H	Standard	P Pre-setting/pre-configure E Ethernet/IP pre-setting
H	OEM-Type		
	H	Standard	X Customer specific
04.0.	Software Release		
	X	Current software release	04.0 example: former software release

Required Field	Optional
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NOTE: Use the Hirschmann OpenRail system to configure your substation switch: www.configurator.hirschmann.com

Gigabit Backbone Layer 2/3 Rack-mount Switches



High Density Layer 2/3 Gigabit Backbone Switch MACH400 Switch



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

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

Standard features include:

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

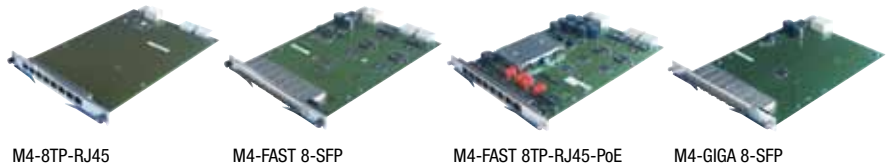
NOTE: *Fan module is included in each chassis. Please purchase media modules and power supply separately. See Accessories for SFPs + XFP. Configuration will dictate final port count and media type.

MACH4000 - High Density Layer 2/3 Gigabit Backbone Switch		
Part No.	Order No.	Ports
MACH4002 48+4G-L2P	943 859-101	Layer 2, Professional Management chassis
MACH4002 48+4G-L3E	943 859-201	Layer 3, Enhanced Management chassis
MACH4002 48+4G-L3P	943 859-301	Layer 3, Professional Management chassis
<ul style="list-style-type: none"> • Fixed ports: 4 x Gigabit Ethernet combo ports* (1000 Mbps SFP socket or 10/100/1000 Mbps RJ45) and 16 x RJ45 10/100 Mbps • Media modules: 4 sockets (8 ports max each) for total 32 ports 10/100 Mbps (Media modules sold separately – see page 21. For software functionality – see page 15) 		
MACH4002-24G-L2P	943 916-101	Layer 2, Professional Management chassis
MACH4002-24G-L3E	943 916-201	Layer 3, Enhanced Management chassis
MACH4002-24G-L3P	943 916-301	Layer 3, Professional Management chassis
<ul style="list-style-type: none"> • Fixed ports: 8 x Gigabit Ethernet combo ports* (SFP dual speed socket or TP 10/100/1000 Mbps) • Media modules: 2 x sockets (8 ports max each) for total 16 ports 10/100/1000 Mbps (Media modules sold separately – see page 21. For software functionality – see page 15) 		
MACH4002-24G+3X-L2P	943 915-101	Layer 2, Professional Management chassis
MACH4002-24G+3X-L3E	943 915-201	Layer 3, Enhanced Management chassis
MACH4002-24G+3X-L3P	943 915-301	Layer 3, Professional Management chassis
<ul style="list-style-type: none"> • Fixed ports: 3 x 10Gigabit Ethernet XFP socket and 8 Gigabit Ethernet ports TP/RJ45 10/100/1000 Mbps • Media modules: 2 x sockets (8 ports max each) for total 16 ports 10/100/1000 Mbps (Media modules sold separately – see page 21. For software functionality – see page 15) 		
MACH4002-48G-L2P	943 911-101	Layer 2, Professional Management chassis
MACH4002-48G-L3E	943 911-201	Layer 3, Enhanced Management chassis
MACH4002-48G-L3P	943 911-301	Layer 3, Professional Management chassis
<ul style="list-style-type: none"> • Fixed ports: 16 Gigabit Ethernet (8 Gigabit Ethernet combo ports* 100/1000 Mbps SFP dual speed socket or 10/100/1000 Mbps + 8 Gigabit 10/100/1000 Mbps RJ45) • Media modules: Four sockets (8 ports max each) for total 32 ports 10/100/1000 Mbps (Media modules sold separately – see page 21. For software functionality – see page 15) 		
MACH4002-48G+3X-L2P	943 878-101	Layer 2, Professional Management chassis
MACH4002-48G+3X-L3E	943 878-201	Layer 3, Enhanced Management chassis
MACH4002-48G+3X-L3P	943 878-301	Layer 3, Professional Management chassis
<ul style="list-style-type: none"> • Fixed ports: Three 10Gigabit Ethernet XFP sockets and 16 Gigabit Ethernet ports (100/1000 Mbps SFP dual speed socket or 10/100/1000 Mbps RJ45) • Media modules: Four sockets (8 ports max each) for total 32 ports 10/100/1000 Mbps (Media modules sold separately – see page 21. For software functionality – see page 15) 		



MACH4000 Media Modules, Power Supplies and Accessories

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



MACH4000 Media Modules

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

NOTE: *SFPs need to be purchased separately (see Accessories on page 31 for SFPs).

MACH4000 Internal Power Supplies

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

MACH4000 External Power Supplies

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

MACH4000 Accessories

Part No.	Order No.	Voltage
M4-AIR	943 869-001	Fan module (included with chassis), has 4 redundant fans with fault notification
M4-RACKMOUNT-50	943 951-001	19" fixing brackets offer 50 mm more space in the front of the switch for cables
M4-RACKMOUNT	943 951-101	19" spare fixing brackets



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

IP67 Switches



Industrial On-Machine Switches OCTOPUS Series - IP 67



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

All products in the OCTOPUS family can be mounted on the wall or directly on the machine. The IP67 variants offer 8/16/24 Twisted Pair ports (each with up to 8 PoE ports), using standardized 4-pin M12 D technology. As the switches are freely cascadable, it is simple to build decentralized structured networks with the shortest possible patch cables to the end devices. The 16- and 24-port versions are also available with two 100BASE-FX uplink ports (microFX).

Standard features include: Totally enclosed IP67 design, ODVA-standardized 4-pin M12 D-code IP67 Ethernet connector, OCTOPUS M is the industry's first managed IP67 switch, Management via SNMP v1, v2, v3, web GUI or TELNET, Redundancy via HIPER-Ring and Rapid Spanning Tree, Redundant power supply for high availability, Operating temperatures as low as - 40° C to + 70° C, and External signaling of alarms via signal contact or network messaging.



OCTOPUS 5TX EEC



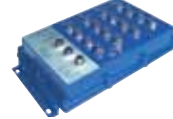
OCTOPUS 8M



OCTOPUS 8M-8PoE



OCTOPUS 16M-2FX



OCTOPUS 16M-8PoE



OCTOPUS 24M

OCTOPUS IP 67 Unmanaged and Managed Switches

Part No.	Order No.	Ports/Functions
OCTOPUS 5TX EEC	943 892-001	5x10/100 Mbps M12-coding, Unmanaged IP 67 Switch
OCTOPUS 8M	943 931-001	8x10/100 Mbps M12, Managed IP 67 Switch
OCTOPUS 8M-Train	943 983-001	8x10/100 Mbps M12, EN 50155, Managed IP 67 Switch
OCTOPUS 16M	943 912-001	16x10/100 Mbps M12, Managed IP 67 Switch
OCTOPUS 16M-Train	943 984-001	16x10/100 Mbps M12, EN 50155, Managed IP 67 Switch
OCTOPUS 16M-2FX	943 912-002	14x10/100 Mbps M12 and 2x100 Mbps Multimode (MicroFX connector), Managed IP 67 Switch
OCTOPUS 24M	943 923-001	24x10/100 Mbps M12, Managed IP 67 Switch
OCTOPUS 24M-Train	943 985-001	24x10/100 Mbps M12, EN 50155, Managed IP 67 Switch
OCTOPUS 24M-2FX	943 923-002	22x10/100 Mbps M12 and 2x100 Mbps Multimode (MicroFX connector), Managed IP 67 Switch
OCTOPUS 8M-6PoE	943 967-101	8x10/100 Mbps M12 with 6 PoE ports, Managed IP 67 Switch
OCTOPUS 8M-8PoE	943 967-001	16x10/100 Mbps M12 with 8 PoE ports, Managed IP 67 Switch
OCTOPUS 16M-8PoE	943 960-001	24x10/100 Mbps M12 with 8 PoE ports, Managed IP 67 Switch
OCTOPUS 16M-8PoE-2FX	943 960-101	14x10/100 Mbit/s M12 with 8 PoE + 2 FX ports, Managed IP 67 Switch



Field-Installable M12



Bulkhead M12 to RJ45



ACA 21 Auto Configurator

OCTOPUS IP 67 Connectivity Solutions

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



Industrial Ethernet Media Cordsets



Industrial Ethernet Media Cordsets Hirschmann by Belden Brand

From the Factory Floor to the Office, Hirschmann has you connected with the industry's largest selection of Industrial Ethernet Media Solutions. 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** (see page 25 for details) technology by Belden, these industrial ethernet media cordsets have the highest level of signal quality making them one-of-a-kind.



RJ45 to RJ45



RJ45 to M12



M12 to M12



RJ45 to M12 (Panel Receptacle)

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

Part No.	Configuration	Standard Cable Lengths	Description
NEW J424TPESTJT...M	RJ45 to RJ45	00.3M, 00.5M, 01.0M, 02.0M, 03.0M, 04.0M, 05.0M,	Industrial Ethernet CAT 5E, TPE unshielded, 2- and 4-pair, 24 AWG cable, bonded-pairs, stranded (7x32) tinned copper conductors, polyolefin insulation, and industrial grade sunlightand-oil-resistant, teal jacket.
NEW M224TPESTJT...M	RJ45 to M12	06.0M, 07.0M, 10.0M, 12.0M, 15.0M, 20.0M, 25.0M,	
NEW M224TPESTMT...M	M12 to M12	30.0M, 40.0M, 50.0M	
NEW J224TPESTPT...M	RJ45 to M12 (Panel Receptacle)	00.3M, 00.5M, 01.0M, 02.0M, 03.0M, 04.0M, 05.0M	

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

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

Part No.	Configuration	Standard Cable Lengths	Description
NEW J424THFSTJT...M	RJ45 to RJ45	00.3M, 00.5M, 01.0M, 02.0M, 03.0M, 04.0M, 05.0M,	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.
NEW M224THFSTJT...M	RJ45 to M12	06.0M, 07.0M, 10.0M, 12.0M, 15.0M, 20.0M, 25.0M,	
NEW M224THFSTMT...M	M12 to M12	30.0M, 40.0M, 50.0M	
NEW J224THFSTPT...M	RJ45 to M12 (Panel Receptacle)	00.3M, 00.5M, 01.0M, 02.0M, 03.0M, 04.0M, 05.0M	

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

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

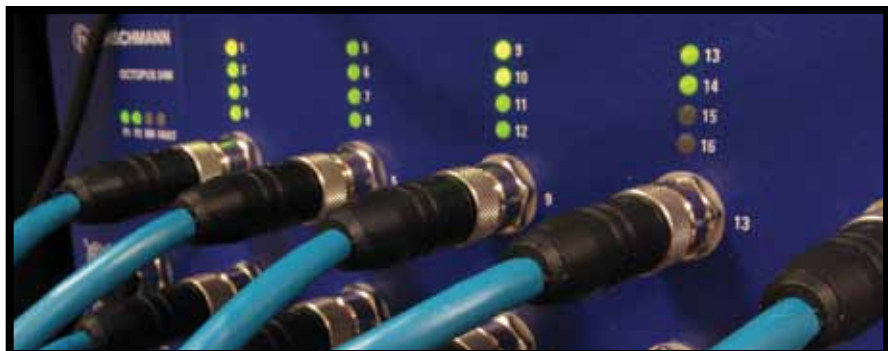
Part No.	Configuration	Standard Cable Lengths	Description
NEW J424PVCSTJT...M	RJ45 to RJ45	00.3M, 00.5M, 01.0M, 02.0M, 03.0M, 04.0M, 05.0M,	Industrial Ethernet CAT 5E, PVC unshielded, 2- and 4-pair, 24 AWG cable, bonded-pairs, stranded (7x32) tinned copper conductors, polyolefin insulation, and industrial grade sunlightand oil-resistant, teal jacket.
NEW M224PVCSTJT...M	RJ45 to M12	06.0M, 07.0M, 10.0M, 12.0M, 15.0M, 20.0M, 25.0M,	
NEW M224PVCSTMT...M	M12 to M12	30.0M, 40.0M, 50.0M	
NEW J224PVCSTPT...M	RJ45 to M12 (Panel Receptacle)	00.3M, 00.5M, 01.0M, 02.0M, 03.0M, 04.0M, 05.0M	

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



Industrial Ethernet Media Cordsets Part Number Configurator

J424APVCSTJT00.3M		Industrial Ethernet Media Cordsets - Part Number Configurations	
J	Connector Type 1	J	RJ45
		M	M12
4	Number of Conductors (Pairs)	2	2-Pair
		4	4-Pair
24	Wire Gauge	24	24 AWG cable
PVC	Cable Type	PVC	PVC cable type - Bonded-Pair
		TPE	TPE cable type - Bonded-Pair
		THF	TPE High-Flex cable type - Bonded-Pair
ST	Stranding	ST	Stranding (7x32) tinned copper
J	Connector Type 2	J	RJ45
		M	M12
		P	M12 Panel-mount receptacle
T	Cable Jacket Color	T	Teal cable jacket
		B	Black cable jacket*
		G	Grey cable jacket*
		R	Red cable jacket*
		U	Blue cable jacket*
		* Denotes special order. Minimum quantities apply.	
00.3M	Cable Lengths	00.3M	0.3 meters
		00.5M	0.5 meters
		01.0M	1 meter
		02.0M	2 meter
		03.0M	3 meter
		04.0M	4 meter
		05.0M	5 meter
		06.0M	6 meter
		07.0M	7 meter
		10.0M	10 meter
		12.0M	12 meter
		15.0M	15 meter
		20.0M	20 meter
		25.0M	25 meter
		30.0M	30 meter
		40.0M	40 meter
		50.0M	50 meter





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.

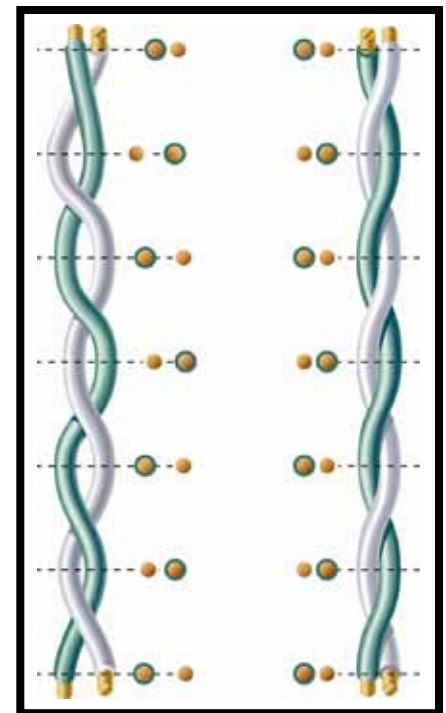


Illustration 3: Side-by-side comparison. Non-Bonded Pair versus Bonded-Pair cable.



Wireless Ethernet



Wireless Ethernet Access Point/Clients BAT Series



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



BAT54



BAT300



NEW BAT300-F

BAT54-Rail and -Rail Client

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

BAT300-Rail

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

BAT54-F and BAT54-F X2

- Same features and functionality as BAT54-Rail above
- Waterproof to IP67 standard
- BAT54-F X2 also approved for ATEX zone 2
- Rugged design for operation in extreme conditions
- Designed to operate between -20° C and +55° C
- Full shock and vibration protection
- Antenna(s) sold separately

BAT300-F and BAT300-F FCC NEW

- IEEE 802.11n (draft 2.0)
- 1 x WLAN interface
- Up-to 8 x SSID's per WLAN interface
- Two LAN ports 10/100BASE-TX
- Autosensing, Power over Ethernet (POE), per IEEE 802.3af

BAT SERIES, Access Point/Client/Bridge, 802.11a/b/g/h/i/n - DIN Rail Mount

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



BAT SERIES, Access Point/Client, 802.11a/b/g/h/i/n - IP 67 / Hard Mount

BAT54-F	943 959-111	IP67 Access Point, Client, Bridge w/out antennas (802.11a/b/g/h/i) 4 x N connector (non-U.S. applications only)
BAT54-F FCC	943 959-011	IP67 Access Point, Client, Bridge w/out antennas (802.11a/b/g/h/i) 4 x N connector (U.S. applications only)
BAT54-F X2	943 959-101	IP67 ATEX Zone II - Access Point, Client, Bridge w/out antennas (802.11a/b/g/h/i) 4 x N connector (non-U.S. applications only)
BAT54-F X2 FCC	943 959-001	IP67 ATEX Zone II - Access Point, Client, Bridge w/out antennas (802.11a/b/g/h/i) 4 x N connector (U.S. applications only)
NEW BAT300-F	943 959-118	Dualband Ruggedized Hard Mount Access Point, Client, w/ single independent radio modules w/ IEEE 802.11n (draft 2.0) for Harsh Environments
NEW BAT300-F FCC	943 959-018	Dualband Industrial Performacne Hard Mount Access Point, Client, w/ IEEE 802.11n (draft 2.0) for Harsh Environments

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

Part No.	Order No.	Type	Standards	Est. Max Outdoor Range
NEW BAT-ANT-N-6ABG-IP65	943 981-004	Dual Band Omni-Directional	802.11a/b/g	2.99km
NEW BAT-ANT-N-MiMoDB-5N-IP65	943 981-012	Dual Band Omni-Directional, 2.4GHz 3.5dBi, 5GHz 5.5 dBi, MiMo	802.11a/b/g/n	.5km
NEW BAT-ANT-6ABG-IP65	943 981-007	Dual Band Omni-Directional, 2.4GHz 6dBi, 5GHz 8dBi	802.11a/b/g	0.89km

BAT SERIES, Antennas / 802.11a/n (5 GHz)

Part No.	Order No.	Type	Standards	Est. Max Outdoor Range
NEW BAT-ANT-N-5A-IP65	943 981-003	5GHz Omni-Directional, 5dBi gain	802.11a	0.45km
NEW BAT-ANT-N-9A-DS-IP65	943 981-010	5GHz, Directional antenna, 8dBi gain w/polarization diversity	802.11a/n	1.12km
NEW BAT-ANT-N-MiMo5-9N-IP65	943 981-013	5GHz, Directional antenna, 9dBi gain, MiMo	802.11a/n	1.2km
NEW BAT-ANT-N-18A-IP65	943 981-006	5GHz, Directional antenna, 18dBi gain	802.11a	8.91km
NEW BAT-ANT-N-23A-V-IP65	943 981-007	5GHz, Directional antenna, 23dBi gain	802.11a	15.84km
NEW BAT-ANT-N-23A-VH-IP65	943 981-008	5GHz, Directional antenna, 23dBi gain w/polarization diversity	802.11a/n	15.84km

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

Part No.	Order No.	Type	Standards	Est. Max Outdoor Range
NEW BAT-ANT-N-6G-IP65	943 981-002	2.4GHz Omni-Directional, 6dBi gain	802.11b/g	2.98km
NEW BAT-ANT-N-8G-DS-IP65	943 981-009	2.4GHz Directional, 8dBi gain w/polarization diversity	802.11b/g/n	3.75km
NEW BAT-ANT-N-14G-IP65	943 981-005	2.4GHz Directional, 14dBi gain	802.11b/g	7.49km
NEW BAT-ANT-N-LC-G-50m-IP65	943 981-001	2.4GHz Leaky Coax, 50 meter (1 x N connector)	802.11b/g	
NEW BAT-ANT-N-LC-G-100m-IP65	943 981-101	2.4GHz Leaky Coax, 100 meter (2 x N connectors)	802.11b/g	

BAT SERIES, Accessories

Part No.	Order No.	Type	Standards
BAT-PIGTAIL	943 903-360	Used to adapt BAT Rail products to N-style connector	802.11a/b/g/n
BAT54-F MAST MOUNT	943 966-001	Mast Mounting Kit for BAT (IP67) products	
NEW BAT-CLB-2 N (male-male)	943 981-513	2 meter, N male - N Male	802.11a/b/g/n
NEW BAT-ANT-2 N (male - female)	943 981-514	2 meter, N male - N Female	802.11a/b/g/n
NEW BAT-CLB-15 N m-f	943 903-515	15 meter, N Male - N Female	802.11a/b/g/n
NEW BAT-ANT Protector m-f	943 903-373	RF Surge Arrestor, N male - N Female	802.11a/b/g/n
BAT-LAN Protector m-f	943 903-374	Ethernet Surge Arrestor, RJ45 - RJ45	802.11a/b/g/n

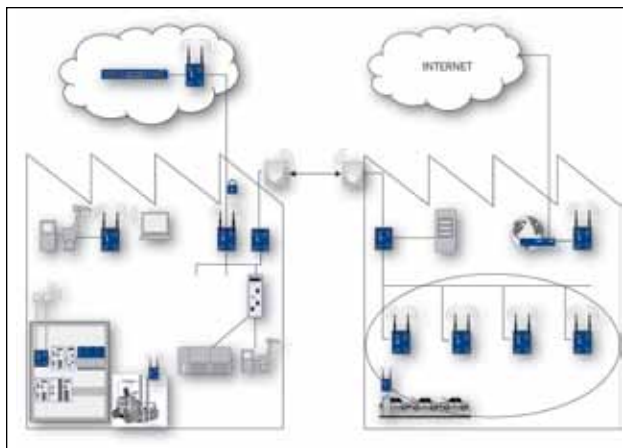


Illustration: Example of employing wireless ethernet BAT54-Rail Client in a factory setting.



Security



Firewall/VPN Router EAGLE20Series

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

Features & Benefits

- Scalable security functionality: pure firewall, and VPN router
- Easy integration: no need to change IP addresses in existing networks
- Simple deployment: visible in HiDiscovery and support for the USB auto configuration adapter
- Extensive diagnostics: web-based management, status LEDs, relay contact, logging to a Syslog server, integrated in HiVision
- Support for redundancy mechanisms: firewall redundancy, redundant ring coupling and dual homing, network segmentation (router mode), fanless design

EAGLE SERIES, Firewall/VPN Router

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

Interfaces

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

Security

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

Service

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

Redundancy

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

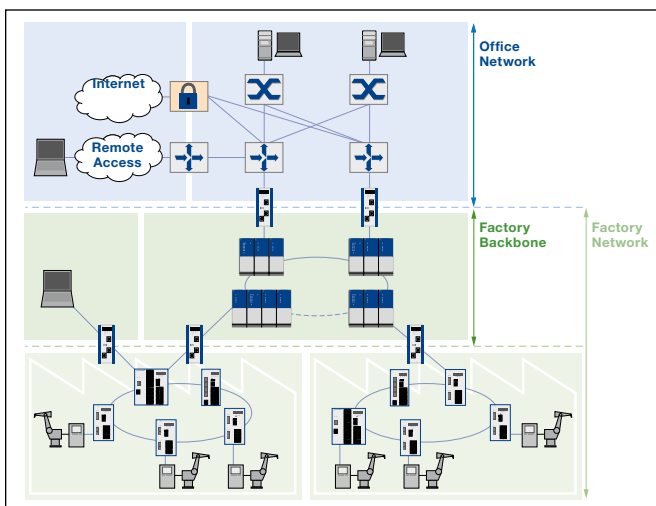


Illustration: Example of firewall/VPN router installation (EAGLE20) in a factory setting.



Hardened Transceivers and Fiber Modems/Repeaters

Rail Transceivers and Hubs

Hirschmann's Rail Transceivers provide RJ45 and fiber media conversion. For applications that require additional RJ45 ports, we recommend using a switch with one fiber and multiple RJ45 ports.



SPIDER Transceiver	
Part No.	Order No.
SPIDER 1TX/1FX MM	943 890-001
SPIDER 1TX/1FX SM	943 891-001
<ul style="list-style-type: none"> • 1 x 10/100Base-TX, RJ45 • 1 x 100Base-FX, MM or SM, SC sockets • 1 pluggable terminal block, 24 VDC 	



RT2	
Part No.	Order No.
RT2-TX/FX	943 658-002
RT2-TX/FX-SM	943 658-032
<ul style="list-style-type: none"> • 1 x 10/100Base-TX, RJ45 • 1 x 100Base-FX, MM or SM, SC sockets • 1 pluggable terminal block, redundant 24 VDC inputs, link loss alarm, power loss alarm, fault relay output 	

Fieldbus Transceivers/Fiber Modems

For the most commonly used fieldbus protocols, Hirschmann has developed a series of copper-fiber converters (also often referred to as fiber repeaters), permitting users to extend the range of their fieldbus signals beyond the limitations of copper. The fiber optic repeaters are used in mission-critical applications where electromagnetic influences may be present. Because of fiber's properties, RFI/EMI has no influence on the reliability of the fiber optic links.

RS232 Media Converters		
Part No.	Order No.	Description
OZDV 2451P	943 316-021	1 electrical and 1 optical port, bus-powered, POF 0-60 m
OZDV 2451G	943 299-021	1 electrical and 1 optical port, bus-powered, Multimode 0-2000 m
OZDV 2471P	943 340-021	1 electrical and 1 optical port, POF 0-100M, HCS 0-2100 m
OZDV 2471G	943 341-021	1 electrical and 1 optical port, Multimode 0-6700 m
OZDV 2471G-1300	933 990-021	1 electrical and 1 optical port, Singlemode 0-32 km



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 PROF1 12M P11	943 728-221	for plastic fiber, 1 electrical, 1 optical port
OZD PROF1 12M P12	943 728-321	for plastic fiber, 1 electrical, 2 optical ports redundant ring capable
OZD PROF1 12M G11	943 727-221	1 electrical, 1 optical port, multimode
OZD PROF1 12M G12	943 727-321	1 electrical, 2 optical ports, multimode – redundant ring capable
OZD PROF1 12M G12 EEC	943 730-321	1 electrical, 2 optical ports, multimode – redundant ring capable, EEC*
OZD PROF1 12M G11 1300	943 729-221	1 electrical, 1 optical port, singlemode
OZD PROF1 12M G12 1300	943 729-321	1 electrical, 2 optical ports, singlemode – redundant ring capable
OZD PROF1 12M G12 1300 EEC	943 256-321	1 electrical, 2 optical ports, singlemode – redundant ring capable, EEC*
OZD PROF1 12M P11 PRO	943 904-221	1 electrical, 1 optical port, predictive maintenance, POF
OZD PROF1 12M P12 PRO	943 904-321	1 electrical, 2 optical ports, predictive maintenance, POF, redundant ring capable
OZD PROF1 12M G11 PRO	943 905-221	1 electrical, 1 optical port, predictive maintenance, multimode



NOTE: Part numbers in BOLD pictured at right.



Hardened Fiber Modems/Repeaters (Continued)

PROFIBUS Repeaters (Continued)

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

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

Profibus ATEX Zone 1 Repeaters

Part No.	Order No.	Description
OZD PROFIBUS G12DU ATEX 1	943 881-321	1 electrical, 2 optical ports, predictive maintenance, multimode, redundant ring capable, cabinet assembly
OZD PROFIBUS 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 PROFIBUS G12DE ATEX 1	943 883-321	1 electrical, 2 optical ports, predictive maintenance, multimode, redundant ring capable, stainless steel IP67 housing

Profibus Plug-on Repeaters

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

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

NOTE: Part numbers in "BOLD" indicate image description.





Accessories

SFP + XFD Transceiver Modules

SFP + XFD Transceiver Modules		
Part No.	Order No.	Description
M-FAST SFP-MM/LC	943 865-001	100BASE-FX, 5 km 50/125 µm MM, 4 km 62.5/12.5 µm MM
M-FAST SFP-MM/LC EEC	943 945-001	100BASE-FX, 5 km 50/125 µm MM, 4 km 62.5/12.5 µm MM
M-FAST SFP-SM/LC	943 866-001	100BASE-FX, 25 km 9/125 µm SM
M-FAST SFP-SM/LC EEC	943 946-001	100BASE-FX, 25 km 9/125 µm SM
M-FAST SFP-SM+/LC	943 867-001	100BASE-FX, 25–65 km 9/125 µm SM
M-FAST SFP-SM+/LC EEC	943 947-001	100BASE-FX, 25–65 km 9/125 µm SM
M-FAST SFP-LH/LC	943 868-001	100BASE-FX, 55–140 km 9/125 µm SM
M-FAST SFP-LH/LC EEC	943 948-001	100BASE-FX, 55–140 km 9/125 µm SM
Gigabit Ethernet		
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-SX, 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-SX, 550 m 50/125 µm MM, 550 m 62.5/125 µm MM, 20 km 9/125 µm SM
M-SFP-LH/LC	943 042-001	1000Base-LX, 16–80 km 9/125 µm SM-LH
M-SFP-LH+/LC	943 049-001	1000Base-LX, 44–120 km 9/125 µm SM-LH
Gigabit Ethernet Bi-Directional (Single Fiber Strand)		
Part No.	Order No.	Description
M-SFP-BIDI-Bundle LX/LC EEC	943 974-101	1000Base-SX, 20 km 9/125 µm SM
M-SFP-BIDI-Bundle LH/LC EEC	943 975-101	1000Base-LX, 23–80 km 9/125 µm SM-LH
10Gigabit Ethernet		
Part No.	Order No.	Description
M-XFP-ZR/LC	943 921-001	10GBASE-SX, 40–80 km 9/125 µm SM
M-XFP-ER/LC	943 920-001	10GBASE-SX, 10–40 km 9/125 µm SM
M-XFP-LR/LC	943 919-001	10GBASE-SX, 2–10 km 9/125 µm SM
M-XFP-SR/LC	943 917-001	10GBASE-SX, 33 m 50/125 µm MM or 300 m w/modal bandwidth 2000 [MHz x km] fiber



Power Supplies and Programming/Configuration Tools

Power Supplies		
Part No.	Order No.	Description
RPS30	943 662-003	24 VDC power supply unit 1.3A
RPS80 EEC	943 662-080	24 VDC power supply unit 3.0A, –25°C up to +70°C
RPS120 EEC	943 662-120	24 VDC power supply unit 4.5A, –25°C up to +70°C
RPS60/48V EEC	943 952-001	48 VDC PoE power supply unit 1.25A, –10°C up to +70°C
PSW 5-24	943 008-001	5 VDC Plug-in power supply 0°C up to +40°C



Programming and Configuration Backup		
Part No.	Order No.	Description
ACA 21-USB EEC	943 271-002	USB configuration adapter for storage/backup and device replacement of (managed) OpenRail, MICE, MACH switches and EAGLE firewalls
ACA21-M12 EEC	943 913-002	USB configuration adapter for storage/backup and device replacement of (managed) Octopus switches devices
ACA11 EEC	943 751-002	Similar to above ACA adapters, but communication via the RS232 interface
Serial/Terminal Cable	943 301-001	Terminal cable for managing and configuring managed switches via the RS232 interface



Switch and Network Management

Industrial Profiles

Switch management within EtherNet/IP and PROFINET

Available for OpenRail, MACH and OCTOPUS, Hirschmann's Industrial Profiles are a valuable addition to the managed switches' firmware.

The functionality provides an almost seamless integration between Hirschmann's managed switches and either EtherNet/IP (Allen-Bradley) or PROFINET (Siemens) platforms. Using this functionality, all switch data will be readily accessible to the PLC/HMI for easier network management, security and safety. The industrial profiles also permit PLC/HMI access to switch status, port link status, IGMP settings, network statistics – even the automatic enabling and disabling of individual ports.

OpenRail users with firmware prior to 3.0 can upgrade simply by downloading and flashing the updated firmware onto the switch. For more information or for access to the firmware, please contact your local Hirschmann representative.



Industrial HiVision Network Visualization Software

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



Industrial HiVision	
Part No.	Order No.
943 156-025	Industrial HiVision, to view up to 25 nodes
943 156-050	Industrial HiVision, to view up to 50 nodes
943 156-100	Industrial HiVision, to view up to 100 nodes
943 156-250	Industrial HiVision, to view up to 250 nodes
943 156-500	Industrial HiVision, to view up to 500 nodes
943 160-025	Upgrade* Industrial HiVision, to view up to 25 nodes
943 160-050	Upgrade* Industrial HiVision, to view up to 50 nodes
943 160-100	Upgrade* Industrial HiVision, to view up to 100 nodes
943 160-250	Upgrade* Industrial HiVision, to view up to 250 nodes
943 160-500	Upgrade* Industrial HiVision, to view up to 500 nodes

*Full version required

NOTE: Any of the above may be combined to view a greater number of nodes.

HiVision Network Management Software

Ideally suited for the commissioning and maintenance of larger networks, HiVision permits users to have real-time control and feedback with/from multiple switches. Faults and network status information are readily viewed on the application's GUI, permitting users to make knowledgeable decisions and troubleshoot issues. Provides network statistics, including bandwidth utilization. Compatible with managed OpenRail, PowerMICE, MACH, BAT and OCTOPUS switches. HPUX versions available upon request.



HiVision	
Part No.	Order No.
943 471-300	HiVision PC-Based Enterprise (for office-grade switches), full version
943 471-350	HiVision PC-Based Industrial (for industrial switches), full version
943 471-305	HiVision PC-Based Enterprise Update (for office-grade switches), upgrade version
943 471-355	HiVision PC-Based Industrial (for industrial switches), upgrade version



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.

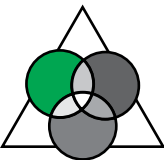
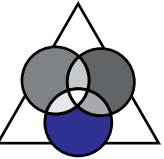
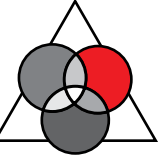
Unlike some lesser Industrial Ethernet switch vendors, Hirschmann understands industrial networks and has the global network support structure to be there when it really counts.

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 ethernet@hirschmann-usa.com with your application support, troubleshooting or design needs. Or, for the current schedule of the popular training classes below, please e-mail Hirschmann at networktraining@hirschmann-usa.com (application/user-specific customized training is available).

- Industrial Ethernet Fundamentals (Part 1 and 2) 2-days each
- Security for Industrial Ethernet Networks - 3 Days
- Wireless for Industrial Ethernet Networks - 2 Days
- Layer 3/Routing - 2 Days



Hirschmann Competence Center	Your optimal network solution	Know-how for reliable operation of your network	Protection against downtimes	Lasting cost control
Consulting 	<ul style="list-style-type: none"> • Individual consultation, design, project management • Network design and migration concepts • Compatibility testing • Wireless site survey 	<ul style="list-style-type: none"> • Training plans • Documentation • Maintenance concepts • Security concepts (network security) 	<ul style="list-style-type: none"> • Integration of redundancy • Spare parts store concept • Emergency concepts 	<ul style="list-style-type: none"> • Service planning • Complete costing
Training 	<ul style="list-style-type: none"> • Technology and product training courses for network designers • Introduction courses for decision makers 	<ul style="list-style-type: none"> • Individual user training courses • Security training • Workshops 	<ul style="list-style-type: none"> • Qualification/certification of your employees and external service providers 	<ul style="list-style-type: none"> • Update training for technologies and products
Support 	<ul style="list-style-type: none"> • Pre-configuration and pre-assembly of systems • On-site commissioning • Application tests 	<ul style="list-style-type: none"> • Network monitoring and support by in-house experts or partners • Network security audit • Network baselining 	<ul style="list-style-type: none"> • 24 x 7 support hotline • On-site support • Remote service • Replacement hardware service 	<ul style="list-style-type: none"> • Warranty extension • Individual, product-related service packages



Bulk Industrial Ethernet Cable Options from Belden

DataTuff® Industrial Ethernet Category 5e and 6 Cable, and TrayOptic® Heavy-Duty, All-Dielectric Fiber Optic Cables

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

Table 1: Ethernet Cable Guide

* Shielded products are recommended for high-noise environments. ** Stranded products are recommended where more flexibility is needed.
 † Products with Bonded-Pair technology provide Installable Performance® advantages - refer to Belden's Bonded-Pair Cable Bulletin #CB 006
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No. of Pairs	Fibers Per Tube	Outside Diameter		PVC Jacket			CPE Jacket		
		Inches	mm	Belden Part No.	Weight Lbs./1000'	Weight kg/km	Belden Part No.	Weight Lbs./1000'	Weight kg/km
TrayOptic Heavy-Duty, All-Dielectric Fiber Optic Cables									
2	2	0.440	11.18	I100255	88	131	I100266	83	124
4	4	0.440	11.18	I100455	88	131	I100466	83	124
6	6	0.440	11.18	I100655	88	131	I100666	83	124
8	4	0.440	11.18	I400855	88	131	I400866	83	124
12	6	0.440	11.18	I601255	88	131	I601266	83	124
18	6	0.440	11.18	I601855	88	131	I601866	83	124
24	6	0.440	11.18	I602455	88	131	I602466	83	124
36	6	0.440	11.18	I603655	88	131	I603666	83	124
48	12	0.540	13.72	I604855	136	202	I604866	129	192
60	12	0.540	13.72	I606055	136	202	I606066	129	192
72	12	0.540	13.72	I607255	136	202	I607266	129	192

Table 2: Fiber Optic Cable Guide

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



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