HIRSCHMANN
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Leading Networking Solutions For Mission Critical Applications

Edition 2.1

OpenRail Compact and Modular Switches

With the continued growth in demand for application-specific switches, Hirschmann has developed the OpenRail line of managed and unmanaged switches.
The series allows users to choose either a Compact or Modular switch, as well as specify port density, back bone 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 version offers media/ring redundancy, multicast filtering/IGMP Snooping, VLAN, port mirroring, network diagnostics, port control, etc.)

Compact Switches

A compact platform that permits for up to 24-ports in a mere 4.5 inches of DIN rail! Available in managed and unmanaged versions (only the RS20-04 switch is not available in an unmanaged version).

RS20

- Available as a managed and unmanaged switch
- 4x, 8x, 9x, 16x, 17x, 24x and 25x 10/100 Mbps ports

RS30

- Available as a managed and unmanaged switch
- 2x Gigabit uplinks and 8x, 16x and 24x 10/100 Mbps ports

RS40

- Only available as a managed switch
- 9x Gigabit uplinks/ports

Modular Switches (MICE series)

A modular and flexible platform that permits for an almost limitless variety of copper/fiber port variations while allowing users to change the switch's port density and configuration on the fly using hot-plug/swappable Media Modules (see pages 7 and 8). Only available as a managed switch.

MS20

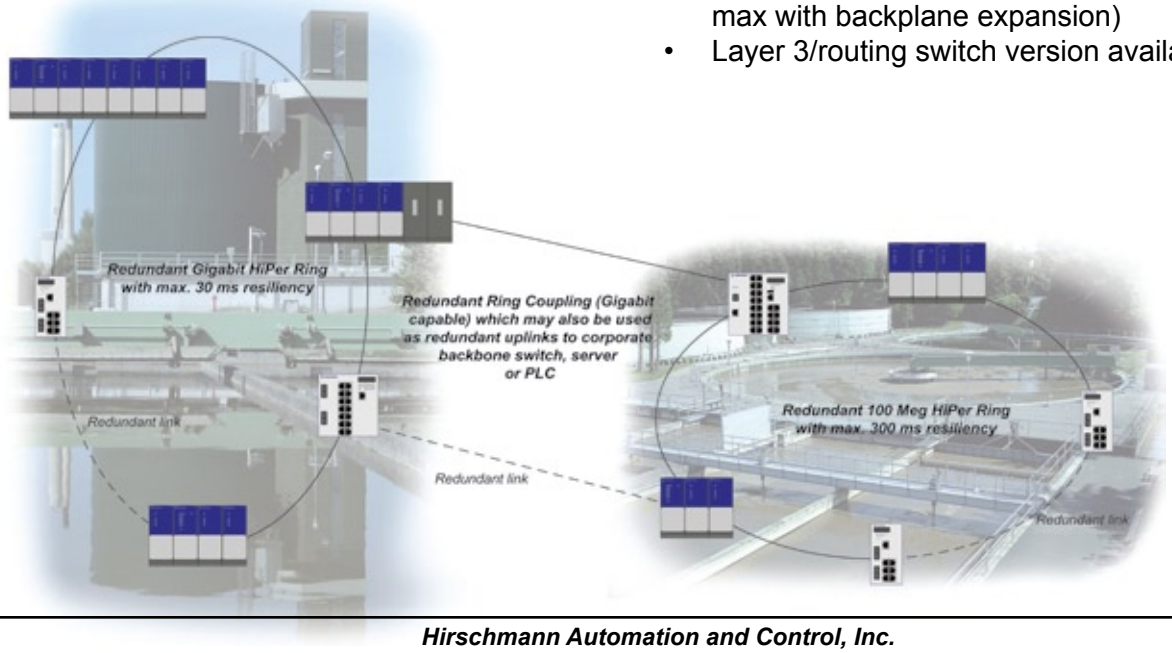
- MS20-08: 8x 10/100 ports max
- MS20-16: 24x 10/100 ports max

MS30

- MS30-08: 2x Gigabit and 8x 10/100 ports max
- MS30-16: 2x Gigabit and 16x 10/100 ports (24x 10/100 max with backplane expansion)

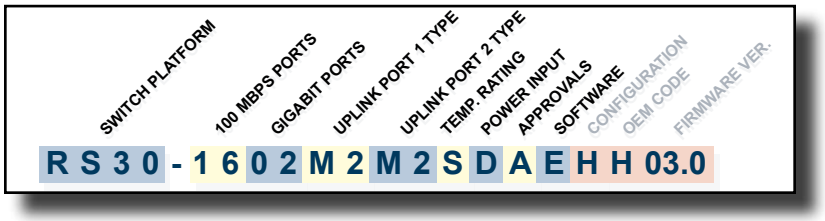
MS4128 (PowerMICE)

- 4x Gigabit and 16x 10/100 ports (24x 10/100 max with backplane expansion)
- Layer 3/routing switch version available



OpenRail Configuration Guide

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. The most common configurations can be found on pages 5-7.



Switch Platform (details on opposite page)

Compact

RS20 All ports are 100 Mbps max, available managed and unmanaged, fiber ports available

RS30 All "local" ports are 100 Mbps max, uplinks are Gigabit, available managed and unmanaged, fiber ports available

RS40 All ports are Gigabit (RJ45 are 10/100/1000), only available managed, fiber ports are combo SFP.
See RS40 pre-configurations on bottom of page 5 (these are the only two configurations available for the RS40).

Modular

MS20 Switch backplane with 2 or 4 slots for Media Modules. The 4-slot can be expanded to 6 slots maximum using backplane expansion on page 6.
All ports are 100 Mbps max. Only available managed.

MS30 Switch backplane with one slot for a Gigabit Media Module and 2 or 4 slots for 100 mbps max Media Modules. The 4-slot can be expanded to 6 slots maximum using backplane expansion on page 6. Only available managed.

Number of 100 Mbps ports

Number of ports includes RS uplink ports if they are 100 Mbps

RS20: 04, 08, 09*, 16, 17*, 24, 25*
RS30: 08, 16, 24
RS40: 00
MS20: 08, 16, 24
MS30: 08, 16, 24

***Note - the 9, 17 and 25-port switches have selectable 3 uplink ports**

Number of Gigabit uplink ports

RS20 and MS20: 00
RS30: 02
RS40: 09
MS30: 02

Uplink Port 1

T1	1x 10/100 RJ45 (10/100/1000 for RS30)
M2	1x 100 Mbps MM SC
M4	1x 100 Mbps MM ST
S2	1x 100 Mbps SM SC
S4	1x 100 Mbps SM ST
L2	1x 100 Mbps SM long-haul SC
G2	1x 100 Mbps SM long-haul+ SC
06	1x 1000 Mbps SFP (RS30 only)
OO	2x 1000 Mbps SFP (RS30 only and Uplink Port 2 will need to be ZZ)

When configuring a RS20-09, RS20-17 or RS20-25, Uplink Port 1 must use one of the following...

MM	2x 100 Mbps MM fiber SC
NN	2x 100 Mbps MM fiber ST
VV	2x 100 Mbps SM fiber SC
UU	2x 100 Mbps SM fiber ST

Uplink Port 2

T1	1x 10/100 RJ45 (not with 09/17/25)
M2	1x 100 Mbps MM fiber SC
M4	1x 100 Mbps MM fiber ST
S2	1x 100 Mbps SM fiber SC
S4	1x 100 Mbps SM fiber ST
L2	1x 100 Mbps SM long-haul fiber SC
G2	1x 100 Mbps SM long-haul+ fiber SC
ZZ	2x 100 Mbps SFP (RS30 only and Uplink Port 1 will need to be OO)
06	1x 1000 Mbps SFP (RS30 only)

When configuring a RS20-09, RS20-17 or RS20-25, use the following (no copper/fiber mix on the uplinks and total uplinks must equal three)...

M2	1x 100 Mbps MM SC
M4	1x 100 Mbps MM ST
S2	1x 100 Mbps SM SC
S4	1x 100 Mbps SM ST
L2	1x 100 Mbps SM long-haul SC
G2	1x 100 Mbps SM long-haul+ SC

Temperature Rating

S	Standard, 0° to +60° C
T	Extended, -40° to +70° C
E	Extended+, -40° to +70° C (with conformal coating)

Power Input

A	18-32VDC (MS only)
C	18-60VDC (MS only)
D	9.6-60VDC (RS only)
E	18-60VDC (MS only - 6-pole terminal block for legacy style)

Approvals

A	cUL508 and cUL1604 Class 1 Div 2
H	Same as A and GL, IEC 61850-3, IEEE 1613, EN 50121-4
B	Same as H (all of the above) and ATEX 100a Zone 2

Management

See bottom of page 8 for features

E	Enhanced
P	Professional
U	Unmanaged (only RS20/30)

Configuration (typ. not needed)

Due to the modular manufacturing process, custom configuration can be pre-set prior to shipment to customer - ideal for high volume requirements of same customer-specific configuration.

OEM Code (typ. not needed)

Code used for those customers wishing to have certain levels of customization (switch color, labeling, packaging, etc.).

Firmware Version (typ. not needed)

For "identical" device replacement in applications requiring that even the firmware has to be identical (firmware revisions are typically always backwards compatible)

It is highly recommended that configurations are checked/verified using the online Configurator which can be found at www.hirschmann-usa.com

RS20 Compact Switches

All copper ports are 10/100 Mbps, uplink ports are 100 Mbps

- Available in 4x, 8x, 9x, 16x and 24x 100 Mbps ports
- Fully managed (web, SNMP and serial) - 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
- Std. 0° to +60° C (-40° to +70° C and conformal coating are available)
- *Differentiator between similar switches listed is the firmware level/features. See bottom of page 8 (E is Enhanced, P is Professional)*

ALL COPPER

RS20-0400T1T1SDAE	943 434-007	4x RJ45
RS20-0400T1T1SDAP	943 434-008	4x RJ45
RS20-0800T1T1SDAE	943 434-021	8x RJ45
RS20-0800T1T1SDAP	943 434-022	8x RJ45
RS20-1600T1T1SDAE	943 434-023	16x RJ45
RS20-1600T1T1SDAP	943 434-024	16x RJ45
RS20-2400T1T1SDAE	943 434-041	24x RJ45
RS20-2400T1T1SDAP	943 434-042	24x RJ45

MULTIMODE

RS20-0400M2T1SDAE	943 434-009	3x RJ45, 1x SC
RS20-0400M2T1SDAP	943 434-010	3x RJ45, 1x SC
RS20-0400M2M2SDAE	943 434-001	2x RJ45, 2x SC
RS20-0400M2M2SDAP	943 434-002	2x RJ45, 2x SC
RS20-0800M2M2SDAE	943 434-003	6x RJ45, 2x SC
RS20-0800M2M2SDAP	943 434-004	6x RJ45, 2x SC
RS20-0800M4M4SDAE	943 434-017	6x RJ45, 2x ST
RS20-0800M4M4SDAP	943 434-018	6x RJ45, 2x ST
RS20-1600M2T1SDAE	943 434-025	15x RJ45, 1x SC
RS20-1600M2T1SDAP	943 434-026	15x RJ45, 1x SC
RS20-1600M2M2SDAE	943 434-005	14x RJ45, 2x SC
RS20-1600M2M2SDAP	943 434-006	14x RJ45, 2x SC
RS20-2400M2M2SDAE	943 434-043	22x RJ45, 2x SC
RS20-2400M2M2SDAP	943 434-044	22x RJ45, 2x SC

SINGLEMODE

RS20-0400S2T1SDAE	943 434-011	3x RJ45, 1x SC
RS20-0400S2T1SDAP	943 434-012	3x RJ45, 1x SC
RS20-0400S2S2SDAE	943 434-013	2x RJ45, 2x SC
RS20-0400S2S2SDAP	943 434-014	2x RJ45, 2x SC
RS20-0800S2S2SDAE	943 434-019	6x RJ45, 2x SC
RS20-0800S2S2SDAP	943 434-020	6x RJ45, 2x SC
RS20-1600S2S2SDAE	943 434-027	14x RJ45, 2x SC
RS20-1600S2S2SDAP	943 434-028	14x RJ45, 2x SC
RS20-2400S2S2SDAE	943 434-045	22x RJ45, 2x SC
RS20-2400S2S2SDAP	943 434-046	22x RJ45, 2x SC

NOTE: Add a "-E" to the above 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). Contact us for more details.

RS30 Compact Switches

All copper ports are 10/100 Mbps, uplink ports are Gigabit

- Available in 8x, 16x and 24x 100 Mbps ports - all with 2 additional Gigabit ports
- Identical management and features as RS20
- All copper ports are 10/100 Mbps, uplink copper ports are 10,100, 1000
- Fiber uplink ports are available in multimode and/or singlemode by using Gigabit SFP

ALL COPPER

RS30-0802T1T1SDAE	943 434-029	8x 10/100 RJ45, 2x 10/100/1000 RJ45
RS30-0802T1T1SDAP	943 434-030	8 x 10/100 RJ45, 2x 10/100/1000 RJ45
RS30-1602T1T1SDAE	943 434-033	16x 10/100 RJ45, 2x 10/100/1000 RJ45
RS30-1602T1T1SDAP	943 434-034	16x 10/100 RJ45, 2x 10/100/1000 RJ45
RS30-2402T1T1SDAE	943 434-037	24x 10/100 RJ45, 2x 10/100/1000 RJ45
RS30-2402T1T1SDAP	943 434-038	24x 10/100 RJ45, 2x 10/100/1000 RJ45

FIBER

RS30-0802O6O6SDAE	943 434-031	8x 10/100 RJ45, 2x SFP
RS30-0802O6O6SDAP	943 434-032	8x 10/100 RJ45, 2x SFP
RS30-1602O6O6SDAE	943 434-035	16x 10/100 RJ45, 2x SFP
RS30-1602O6O6SDAP	943 434-036	16x 10/100 RJ45, 2x SFP
RS30-2402O6O6SDAE	943 434-039	24x 10/100 RJ45, 2x SFP
RS30-2402O6O6SDAP	943 434-040	24x 10/100 RJ45, 2x SFP

RS40 Compact Switches

All ports are Gigabit

- Available with 9 ports (4 of which are combo ports)
- Identical management and features as RS20 and RS30
- 9x 10/100/1000 RJ45 and 4x SFP 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 100Mbps SFP

RS40-0009CCCCSDAE - 9x 10/100/1000 RJ45, 4x 100/1000 SFP
RS40-0009CCCCSDAP - 9x 10/100/1000 RJ45, 4x 100/1000 SFP

A combo ports is a 10/100/1000 Mbps RJ45 and 100/1000 Mbps SFP. The use of one SFP port disables one RJ45 port. The use of two SFP ports disables two RJ45 ports, etc. for a maximum of 4 ports.

MS20 Modular Switches

EtherNet/IP conformance tested

All copper ports are 10/100 Mbps, uplink ports are 100 Mbps

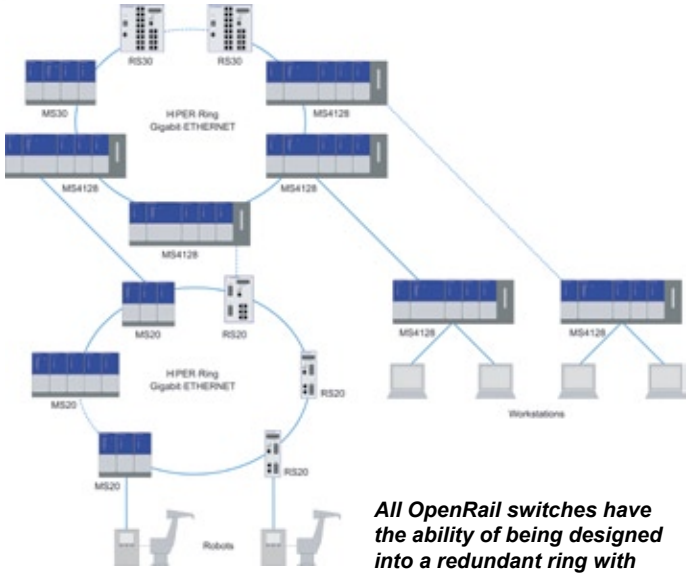
- Available in a 2 and 4-slot version (this can be expanded to a 6-slot using MB-2T)
- Requires the use of media modules (see page 7)
- Fully managed (web, SNMP and serial) - IGMP Snooping (multicast filtering), VLAN, port mirroring, port control, port security, link alarms, broadcast limiter, traffic diagnostics, HiPer-Ring redundancy, RSTP, etc.
- Dual power inputs and dual fault relay outputs
- USB port for configuration backup/restore
- Std. 0° to +60° C (-40° to +70° C and conformal coating available)
- *Differentiator between similar switches listed is the firmware level/features. See bottom of page 8 (E is Enhanced, P is Professional)*

MS20-0800SAAE	943 435-001	2x any MM2/MM3
MS20-0800SAAP	943 435-002	2x any MM2/MM3
MS20-1600SAAE	943 435-003	4x any MM2/MM3 (6x w/ MB-2T)
MS20-1600SAAP	943 435-004	4x any MM2/MM3 (6x w/ MB-2T)

MS30 Modular Switches

EtherNet/IP conformance tested

Same functionality and features as MS20, with the exception for an added slot for a Gigabit Media Module (for 2x 10/100/1000Mbps uplinks).
Uplinks may be copper and/or fiber. Fiber is available in multimode and singlemode by using Gigabit or 100Mbps SFPs (function of one RJ45 is lost for each SFP utilized).

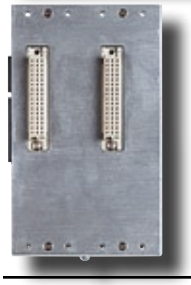


MS30-08002SAAE	943 435-005	2x any MM2/MM3 and 1x MM4-2TX/SFP
MS30-08002SAAP	943 435-006	2x any MM2/MM3 and 1x MM4-2TX/SFP
MS30-16002SAAE	943 435-007	4x any MM2/MM3 (6x w/ MB-2T) and 1x MM4-2TX/SFP
MS30-16002SAAP	943 435-008	4x any MM2/MM3 (6x w/ MB-2T) and 1x MM4-2TX/SFP

All OpenRail switches have the ability of being designed into a redundant ring with 300ms resiliency at 100Mbps and 30 Mbps at 1000Mbps (each with a 50 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.

MS Backplane Extension

EtherNet/IP conformance tested



MICE Backplane Expansion

MB-2T (943 733-102) - 2-slot backplane expansion for MS20-16, MS30-16 and MS4128. Only one per switch for a maximum of six slots to the right of the backplane head module.

MB20-2TAHH - Same as above, but with -40° to +70° 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 on the previous page, the PowerMICE adds an extra two Gigabit ports (for a total of four) and an option to have Layer 3/routing capabilities.
Please note that Gigabit ports are 10/100/1000 RJ45 with SFP slots. SFP(s) are needed for fiber functionality - one RJ45 port is lost for every SFP used. See page 6 for the MB-2T backplane expansion.

MS4128-L2P	943 009-001	MICE, modular, managed Industrial Ethernet Switch, Layer 2 Switch with Professional management. Maximum 24x 10/100 ports + 4x Gigabit ports (any copper/fiber mix), for a total of 28 ports.
MS4128-L3E	943 009-201	MICE, modular, managed Industrial Ethernet Switch, Layer 3 Switch with Enhanced management. Maximum 24x 10/100 ports + 4x Gigabit ports (any copper/fiber mix), for a total of 28 ports.
MS4128-L3P	943 009-301	MICE, modular, managed Industrial Ethernet Switch, Layer 3 Switch with Professional management. Maximum 24x 10/100 ports + 4x Gigabit ports (any copper/fiber mix), for a total of 28 ports.

See bottom of page 8 for differences in Enhanced and Professional management features

MICE Media Modules

EtherNet/IP conformance tested

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).

The maximum module density is as follows:

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

Note: SFPs are needed for MM4 fiber functionality (see opposite page)

ALL COPPER		
MM2-4TX1	943 722-101	4x RJ45
MM2-4TX1-EEC	943 722-151	4x RJ45, ext. temp.*
MULTIMODE FIBER		
MM2-4FXM3	943 721-101	4x 100 Mbps MM MTRJ
MM2-2FXM2	943 718-101	2x 100 Mbps MM SC
MM2-2FXP4	943 842-101	2x 100 Mbps MM plastic fiber, SC
MM3-4FXM2	943 764-101	4x 100 Mbps MM SC
MM3-4FXM4	943 835-101	4x 100 Mbps MM ST
MM3-1FXM2/3TX1	943 839-101	1x 100 Mbps MM SC, 3x RJ45
MM3-2FXM4/2TX1	943 837-101	2x 100 Mbps MM ST, 2x RJ45
MM2-2FXM3/2TX1	943 720-101	2x 100 Mbps MM MTRJ, 2x RJ45
MM3-4FLM4	943 760-101	4x 10 Mbps MM ST
MM4-4FXMP4	943 843-101	4x 100 Mbps MM plastic fiber, SC
MM3-2FXM2/2TX1	943 761-101	2x 100 Mbps MM SC, 2x RJ45
MM3-2FXM2/2TX1-EEC	943 761-151	2x 100 Mbps MM SC, 2x RJ45, ext. temp.*
MM3-1FXM2/1FXS2/2TX1	943 929-101	2x 100 Mbps SC (1x MM and 1x SM), 2x RJ45

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

MEDIA MODULES (continued from previous page)

SINGLEMODE FIBER

MM2-2FXS2	943 719-101	2x 100 Mbps SM SC
MM3-2FXS2/2TX1	943 762-101	2x 100 Mbps SM SC, 2x RJ45
MM3-2FXS2/2TX1-EEC	943 762-151	2x 100 Mbps SM SC, 2x RJ45, ext. temp.*
MM3-1FXS2/3TX1	943 838-101	1x 100 Mbps SM SC, 3x RJ45
MM3-4FXS2	943 836-101	4x 100 Mbps SM SC
MM3-1FXL2/3TX1	943 763-101	1x 100 Mbps SM SC long-haul, 3x RJ45
MM3-1FXS2/3TX1-EEC	943 838-151	1x 100 Mbps SM SC, 3x RJ45, ext. temp.*
MM3-1FXM2/1FXS2/2TX1	943 929-101	2x 100 Mbps SM SC (1x MM and 1x SM), 2x RJ45

***Note: EEC media modules have an extended temperature range of -40° to +70° C**

GIGABIT

MM4-2TX/SFP	943 622-001	2x Gigabit RJ45 w/ 2 SFP slots**, for MS30 and MS4128
MM4-4TX/SFP	943 010-001	4x Gigabit RJ45 w/ 4 SFP slots**, for MS4128 only

***Note: For every SFP used, one copper port is lost. SFPs need to be purchased separately.**
See Accessories on page 19.

Need help finding a media module configuration or approval/rating not shown? There are hundreds more available!

Go online to use the Media Module Configurator to design yours or call us for assistance.

SPECIAL

MM3-4TX1-RT	943 117-001	4x RJ45, IEEE 1588 realtime module
MM3-2FXM2/2TX1-RT	943 117-002	2x 100 Mbps MM SC, 2x RJ45, IEEE1588 realtime module
MM3-2FXS2/2TX1-RT	943 117-003	2x 100 Mbps SM SC, 2x RJ45, IEEE1588 realtime module
MM3-2FLM4/2TX1-RT	943 117-004	2x 10 Mbps MM ST, 2x RJ45, IEEE1588 realtime module
MM3-2AUI	943 840-101	2x AUI ports (15-pole male D-sub)
MM3-4TX5	943 841-101	4x M12 sockets (D-code) instead of RJ45 (for connectors see Octopus family on page 14)
MM22-T1T1T1T1SAHH	943 938-002	4x RJ45 PoE (via external supply - see Accessories on page 19)

TECH-NOTES TECH-NOTES TECH-NOTES

If you are looking for a managed switch and are not very familiar with the versions and extensive capabilities of Hirschmann's switch management, please refer to the functionalities listed in the tables below.

Additionally, 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 21 for more information on the industrial profiles.

Enhanced vs. Professional Management

(per firmware rev. 3.1)

Feature	Software functionality (as of rev. 3.1)	L2 Enhanced	L2 Professional
Configuration	Telnet	X	X
	RS232	X	X
	Command line interface	X	X
Diagnostic	Cable Diagnostic TX		X
	HUB Functionality (Disable Learning)	X	X
	Syslog	X	X
	Log-File	X	X
	Port Mirroring	X	X
	Relay Contact / Masking	X	X
	Port Statistics	X	X
	RMON (1,2,3,9)	X	X
	Topologie Discovery 802.1ad	X	X
Filter	Broadcast Limiter	X	X
	Multicast Limiter	X	X
	Unicast Limiter	X	X
	Fast Aging	X	X
	Fast Aging on Link Down	X	X
	Multicast Detection / Unknown MC	X	X
	Multicast GMRP - 802.1D		X
	Multicast IGMP Querier	X	X
	Multicast IGMP Snooping	X	X
	Port Priority - 802.1D/p 4 queues OpenRail, MACH1000, OCTOPUS 8 queues PowerMICE/MACH4000	X	X
	Static VLAN, Q-MIB - 802.3ac,802.1Q	X	X
Flow Control	Flow Control - 802.3x	X	X
Industrial Profile	EtherNet/IP Profile	X	X
	Profinet Profile	X	X

NOTE: Hirschmann's firmware upgrades are free (simple firmware flash over serial or network).

Feature	Software functionality (as of rev. 3.1)	L2 Enhanced	L2 Professional
Management	File transfer SW HTTP	X	X
	File transfer SW/Config TFTP	X	X
	Management access from all VLANs	X	X
	Private MIB	X	X
	SNMP Traps	X	X
	SNMP V1	X	X
	Web Interface - Java	X	X
Plug & Work	BootP/DHCP Client	X	X
	Commissioning / HiDiscovery	X	X
	DHCP Autoconfig	X	X
	DHCP Relay Agent, Option 82	X	X
	External Flash ACA11	X	X
	External Flash ACA21-USB	X	X
Real-Time	1588 Support with MICE module	X	X
	1588 SW Client	X	X
	Real time clock with energy buffer		X
	SNTP Client	X	X
	SNTP Client / Server	X	X
Redundancy	HIPER Ring redundancy manager	X	X
	RSTP - 802.1w	X	X
	HIPER Ring	X	X
	Link Aggregation - 802.3ad		X
	Link Aggregation incl. HiperRing (available only in PowerMICE/MACH4000)		X
	MRP-Ring	X	X
	Redundant Net Coupling	X	X
	Trunking		X
	Trunking (incl. HiperRing) (available only in PowerMICE/MACH4000)		X
Security	IEEE 802.1x		X
	Port Security IP	X	X
	Port Security IP, multiple addresses		X
	Port Security MAC	X	X
	SNMP V2c,V3 (password encryption)	X	X
	SNMP V3 Encryption		X
	SSH		X

Entry-level Unmanaged Switches

SPIDER FAMILY

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 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 0-60° C, have a 24VDC power input via pluggable terminal block and have an average MTBF exceeding 100 years.

ALL COPPER/RJ-45

SPIDER 3TX-TAP	943 899-001	3x RJ45
SPIDER 5TX	943 824-002	5x RJ45
SPIDER 5TX EEC	943 824-102	5x RJ45
SPIDER 8TX	943 376-001	8x RJ45
SPIDER 8TX EEC	943 376-201	8x RJ45

COPPER/RJ-45 and FIBER

SPIDER 4TX/1FX	943 221-001	4x RJ45 and 1x MM, SC socket
SPIDER 4TX/1FX EEC	943 221-101	4x RJ45 and 1x MM, SC socket
SPIDER 4TX/1FX-ST EEC	943 914-001	4x RJ45 and 1x MM, ST socket,
SPIDER 4TX/1FX SM EEC	943 880-001	4x RJ45 and 1x SM, SC sockets,

NOTE: EEC is for extended environmental conditions (-40º to +70º 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 0-60° C operating range, a 24VDC power input via pluggable terminal block and have an average MTBF exceeding 100 years.
All of the multimode (MM) and singlemode (SM) fiberoptic ports are 100 Mbps and are available in a variety of connector options.

ALL COPPER/RJ45

RS2-4TX EEC (943 819-001)
4x 10/100 Mbps RJ45, link loss alarm, power loss alarm, fault relay output, ext. temp. -40º to +70º C

RS2-5TX (943 732-002)
5x 10/100 Mbps RJ45, rugged die-cast metal housing offering wall-mount option

RS2-TX (943 732-002)
8x 10/100 Mbps RJ45, link loss alarm, power loss alarm, fault relay output

COPPER/FIBER MIX

RS2-3TX/2FX EEC (943 771-001)
3x 10/100 Mbps RJ45 & 2x 100 Mbps MM fiber (SC sockets) link loss alarm, power loss alarm, fault relay output, ext. temp.-40º to +70º C

RS2-3TX/2FX-SM EEC (943 772-001)
3x 10/100 Mbps RJ45 & 2x 100 Mbps SM fiber (SC sockets) link loss alarm, power loss alarm, fault relay output, ext. temp.-40º to +70º C

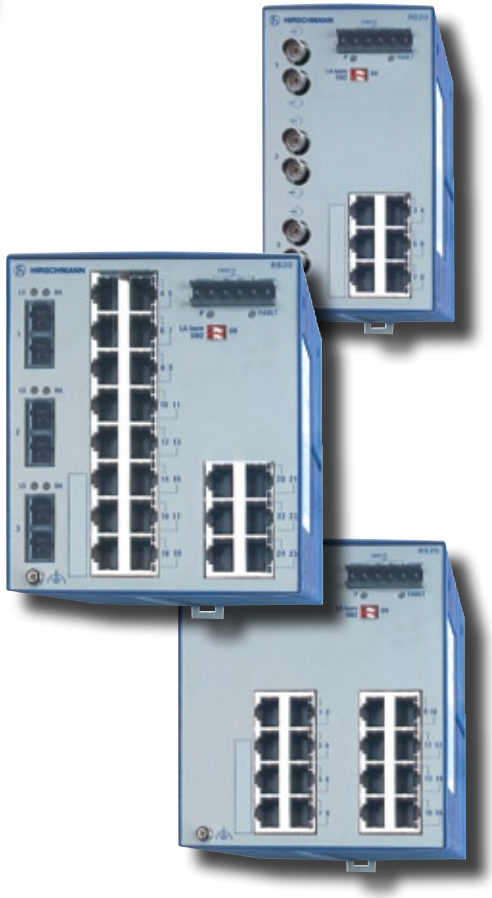
RS2-5TX/FX (943 732-102)
4x 10/100 Mbps RJ45 & 1x 100 Mbps MM fiber (MTRJ socket) rugged die-cast metal housing w/ wall-mount option

RS2-4TX/1FX (943 773-001)
4x 10/100 Mbps RJ45 and 1x 100 Mbps MM fiber (SC socket) link loss alarm, power loss alarm, fault relay output, ext temp.-40º to +70º C

RS2-4TX/1FX-SM (943 774-001)
4x 10/100 Mbps RJ45 and 1x 100 SM fiber (SC socket) link loss alarm, power loss alarm, fault relay output, ext. temp.-40º to +70º C

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 (security, media/ring redundancy, port control, no multicast filtering, etc.) while maintaining the highest feature-set for an unmanaged switch:

- 8x, 9x, 16x, 17x, 24x and 25x ports in a maximum footprint of only 4.5 inches
- Up to 3x fiber ports
- Redundant power inputs via dual 24V DC pluggable terminal blocks
- Fault relay (triggerable by loss of one power input and/or the loss of one of the links 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) fiberoptic ports
- Choice of operating temperatures and conformal coating (standard is 0º to +60º C, -40º to +70º C is available).
- Variety of approvals including IEC 61850-3, IEEE 1613, EN 50121-4 and ATEX 100a Zone 2

ALL COPPER/RJ45

RS20-1600T1T1SDAU	943 434-047	16x 10/100 Mbps RJ45

MULTIMODE

RS20-0900NNM4TDAU	943 434-058	3x 100 Mbps MM fiber (ST) and 6x 10/100 Mbps RJ45
RS20-0900MMM2TDAU	943 434-059	3x 100 Mbps MM fiber (SC) and 6x 10/100 Mbps RJ45
RS20-1600M2T1SDAU	943 434-049	1x 100 Mbps MM fiber (SC) and 15x 10/100 Mbps RJ45
RS20-1600M2M2SDAU	943 434-048	2x 100 Mbps MM fiber (SC) and 14x 10/100 Mbps RJ45
RS20-1600S2M2SDAU	943 434-052	1x 100 Mbps MM fiber (SC), 1x 100 Mbps SM fiber (SC) and 14x 10/100 Mbps RJ45
RS20-1600L2M2SDAU	943 434-055	1x 100 Mbps MM fiber (SC), 1x 100 Mbps Long-haul SM fiber (SC) and 14x 10/100 Mbps RJ45

SINGLEMODE

RS20-0900VVM2TDAU	943 434-060	3x 100 Mbps SM fiber (SC) and 6x 10/100 Mbps RJ45
RS20-1600S2T1SDAU	943 434-051	1x 100 Mbps SM fiber (SC) and 15x 10/100 Mbps RJ45
RS20-1600S2S2SDAU	943 434-053	2x 100 Mbps SM fiber (SC) and 14x 10/100 Mbps RJ45
RS20-1600L2T1SDAU	943 434-054	1x 100 Mbps Long-haul SM fiber (SC) and 15x 10/100 Mbps RJ45
RS20-1600L2S2SDAU	943 434-056	1x 100 Mbps Long-haul SM fiber (SC), 1x 100 Mbps SM fiber (SC) and 14x 10/100 Mbps RJ45
RS20-1600L2L2SDAU	943 434-057	2x 100 Mbps Long-haul SM fiber (SC) and 14x 10/100 Mbps RJ45
RS20-1600S2M2SDAU	943 434-052	1x 100 Mbps MM fiber (SC), 1x 100 Mbps SM fiber (SC) and 14x 10/100 Mbps RJ45
RS20-1600L2M2SDAU	943 434-055	1x 100 Mbps MM fiber (SC), 1x 100 Mbps Long-haul SM fiber (SC) and 14x 10/100 Mbps RJ45

Don't see what you're looking for? Need a unmanaged switch with Gigabit uplinks?

Custom-configure your unmanaged RS20 or RS30 OpenRail switch using the configuration table on page 4!

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

RS20	24	00	M2	T1	S	D	A	U

Please refer to the online OpenRail Configurator for online assistance.

Check our the online OpenRail Configurator to for 24-hour switch configuration assistance

MACH4000 High-density Gigabit Backbone Layer 2/3 Switches

MACH4000

Capable of providing as many as 48 Gigabit ports and three 10 Gigabit ports, the MACH4000 is the ultimate backbone switch series for industrial, mission-critical and other applications requiring high-port densities.
Five 19” rack mount chassis options offer a variety of port/backplane speeds, while hot-swap media modules make it a snap to add more copper and fiber ports without disrupting communication.

Standard features include:

- 19” rack-mount, redundant fan design (fan included w/ chassis), two 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 - 240VAC, 120 - 350VDC, 24VDC and 48VDC
- 0º to +60º C operating temperature

MACH4002 48+4G-L2P 943 859-101 Layer 2, Professional Management chassis
MACH4002 48+4G-L3E 943 859-201 Layer 3, Enhanced Management chassis
MACH4002 48+4G-L3P 943 859-301 Layer 3, Professional Management chassis

- **Fixed ports: 4x Gigabit Ethernet combo ports*** (1000 Mbps SFP socket or 10/100/1000 Mbps RJ45) **and 16x RJ45 10/100 Mbps**
- **Media Modules: 4 sockets (8 ports max each) for total 32 ports 10/100 Mbps**. Media Modules sold separately - see opposite page.

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

- **Fixed ports: 8x Gigabit Ethernet combo ports*** (100/1000 SFP dual speed socket or 10/100/1000 Mbps RJ45)
- **Media Modules: 2x sockets (8 ports max each) for total 16 Ports 10/100/1000 Mbps**. Media Modules sold separately - see opposite page.

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

- **Fixed ports: 3x 10Gigabit Ethernet XFP sockets and 8 Gigabit 10/100/1000 Mbps RJ45**
- **Media Modules: 2 sockets (8 ports max each) for total 16 ports 10/100/1000 Mbps**. Media Modules sold separately - see opposite page.

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

- **Fixed ports: 16 Gigabit Ethernet** (8 Gigabit Ethernet combo ports* 100/1000 Mbps SFP dual speed socket or 10/100/1000 Mbps + 8 Gigabit 10/100/1000 Mbps RJ45)
- **Media Modules: Four sockets (8 ports max each) for total of 32 ports 10/100/1000 Mbps**. Media Modules sold separately - see opposite page.

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

- **Fixed ports: Three 10Gigabit Ethernet XFP sockets and 16 Gigabit Ethernet ports** (100/1000 Mbps SFP dual speed socket or 10/100/1000 Mbps RJ45)
- **Media Modules: Four sockets (8 ports max each) for total of 32 ports 10/100/1000 Mbps**. Media Modules sold separately - see opposite page.

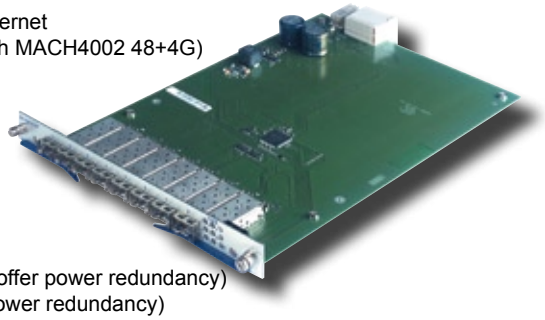
See bottom of page 8 for differences in Enhanced and Professional management features

***NOTE:* *For every SFP used, one copper port is lost.**
Fan module is included w/ each chassis. Please purchase Media Modules and power supply separately. See Accessories on page 19 for SFPs. Configuration will dictate final port count and media type.

MACH4000 Media Modules

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

NOTE: SFPs need to be purchased separately (see Accessories on page 19 for SFPs)



MACH4000 Internal Power Supplies

M4-S-AC/DC 300W	943 870-001	110 - 240V AC internal power module (does not offer power redundancy)
M4-S-24VDC 300W	943 871-001	24V DC internal power module (does not offer power redundancy)
M4-S-48VDC 300W	943 872-001	48V DC internal power module (does not offer power redundancy)

MACH4000 External Power Supplies

M4-POWER	943 874-001	Rack-mounted external power chassis. Requires at least one M4-P power module (more for redundant power), max 3 power modules
M4-P AC/DC	943 875-001	110/240V AC power module for use with external M4-POWER module
M4-P DC 24V	943 876-001	24V DC power module for use with external M4-POWER module
M4-P DC 48V	943 877-001	48V DC power module for use with external M4-POWER module
M4-POWERCABLE	943 922-001	Spare power cable to connect M4-POWER and MACH4002. 1 meter

MACH4000 Accessories

M4-AIR	943 869-001	Fan module (included with chassis), has 4 redundant fans w/ fault notification

More than 95% of Hirschmann's hardware is rated for marine use, making it ideal for off-shore oil platform use. Whether the requirement is for 8 ports or 48 ports. 10/100 megabit over twisted pair or 10 Gigabit over fiber. Hirschmann has the networking solution for virtually any application.

MACH1000 Über-Rugged™ Switches

MACH1000

Why Über-Rugged™?
It is the only means of describing 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 ambient conditions.
The MACH1000 features a 24-port custom configurable/modular design that is also available with two Gigabit uplink ports (RJ45 and/or SFP for fiber). The modular design can meet almost any media-mix need — all copper, all fiber (multimode and/or singlemode) or any combination of copper and fiber.

Standard features include:

- 19" rack-mount, fan-less design
- -40º to +85º 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 24/36/48V DC or 120/250V DC and 110/230V AC
- Extremely efficient components for minimal heat generation and high MTBF (meantime between failure)

1 2 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

M A R 1 0 3 0 - C C M M M M M M V V Z Z T T T T T T T T T T T T 9 9 U G C H P H H 0 3 . 0

Temperature rating

S	0° to +60° C
U	-40° to +85° C
F	-40° to +85° C w/ conformal coating

100 Mbps ports 1 - 24

99	Not installed (must be grouped together)
TT	2x 10/100 RJ45
MM	2x 100 Mbps multimode SC
JJ	2x 100 Mbps multimode MTRJ
NN	2x 100 Mbps mutlimode ST
VV	2x 100 Mbps singlemode SC
UU	2x 100 Mbps singlemode ST
LL	2x 100 Mbps long-haul singlemode SC
GG	2x 100 Mbps long-haul+ singlemode SC
ZZ	2x 100 Mbps SFP

Power Supply 1

C	24/36/48VDC
G	110/250VDC / 110/230VAC

Power Supply 2 (optional)

C	24/36/48VDC
G	110/250VDC / 110/230VAC
9	Empty

Gigabit ports 1 & 2

99	Not installed (MAR1020)
CC	2x SFP/RJ45 combo ports (MAR1030) A combo ports is a 10/100/1000 Mbps RJ45 and 100/1000 Mbps SFP. The RJ45 is disabled when SFP is utilized. See Accessories on page 19 for SFPs.

Approvals

H	UL508, GL, IEC 61850-3, IEEE 1613

Software Version

P	Professional: Enhanced software plus security, extended diagnostics and redundancy

Model

MAR1020	100 Mbps uplinks (add "99" in next field)
MAR1030	1000 Mbps uplinks (add "CC" in next field)

Custom Configuration

Omit unless you are ordering with pre-configured management (added fee), unique housing colors and specific firmware revisions. Contact Hirschmann for more information.

It is highly recommended that configurations are checked/verified using the online Configurator that can be found at www.hirschmann-usa.com

OCTOPUS IP67 Switches

OCTOPUS Switches

No room for an enclosure? Need to resort to open cabling? Look to the OCTOPUS family of switches! Offering the most rugged of switches available, the OCTOPUS line utilizes the industry standard (ODVA approved) 4-pole D-code M12 Ethernet connector for an economical means of incorporating “Ethernet on the machine”.
Standard features include 10/100 auto-negotiating and auto-crossing (either patch or cross-over cables will work in the ports), a 24V DC power input via M12 connector (sold separately) and a MTBF of 143 years.

Standard features include:

- Totally encapsulated design
- ODVA-standardized 4-pin-M12 D-code IP67 Ethernet connector
- Octopus M is first managed IP 67 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 -40º and as high as +70º C
- External signaling of alarms via signal contact or network messaging

OCTOPUS 5TX	943 892-001	Unmanaged IP67 switch w/ 5x 10/100 Mbps M12
OCTOPUS 8M	943 931-001	Managed IP67 switch w/ 8x 10/100 Mbps M12
OCTOPUS 16M	943 912-001	Managed IP67 switch w/ 16x 10/100 Mbps M12
OCTOPUS 16M-2FX	943 912-002	Managed IP67 switch w/ 14x 10/100 Mbps M12 and 2x 100 Mbps multimode (MicroFX connector)
OCTOPUS 24M	943 923-001	Managed IP67 switch w/ 24x 10/100 Mbps M12
OCTOPUS 24M-2FX	943 923-002	Managed IP67 switch w/ 22x 10/100 Mbps M12 and 2x 100 Mbps multimode (MicroFX connector)

OCTOPUS IP67 Connectivity Solutions

EM12S 001L0200 OCTOPUS	934 578-001	2 meter patch cord, green, 2x M12
EM12S 001L0500 OCTOPUS	934 578-002	5 meter patch cord, green, 2x M12
EM12S 001L1000 OCTOPUS	934 578-003	10 meter patch cord, green, 2x M12
EM12S OCTOPUS	934 445-001	Field-installable M12 connector

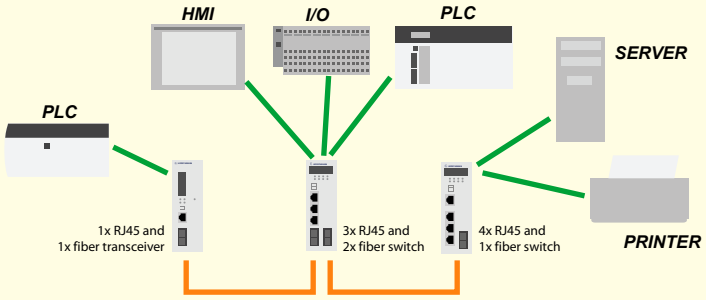
OCTOPUS IP67 Accessories

EWF125 PVC5x034L0200 50	934 402-120	Power connector (M12 5-pin right angled female w/ black 2m PVC)
EF12RJ45 OCTOPUS	934 498-001	Bulkhead M12 to RJ45
ACA21-M12 CONFIG	943 913-001	ACA21 configuration adapter for Octopus managed switches.
TERMINAL CABLE M12	943 902-001	M12 4-pin to Sub-D 9-pin terminal cable

Contact your Hirschmann representative for IP67 fiber connectors

Ethernet Transceivers/Fiber Modems

Hirschmann's Ethernet transceivers/fiber modems convert provide a simple RJ45 to fiber and fiber to RJ45 conversion.
For Ethernet fiber conversions that require additional RJ45 ports (as shown below), we'd like to recommend using a switch with a fiberoptic port(s) such as the Spider 4TX/1FX that can be found on the top of page 9.



The fiberoptic connections (in orange) offer capabilities well beyond the 330-foot limitation of twisted pair (TP) cabling (in green) — up 53+ miles without the use of repeaters (using long-haul singlemode). Additionally, fiberoptics offer RFI/EMI noise immunity, making it ideal for outdoor cabling requirements.

SPIDER 1TX/1FX MM (943 890-001)
SPIDER 1TX/1FX SM (943 891-001)
1x 10/100Base-TX, RJ45 and
1x 100Base-FX, MM or SM, SC sockets
1 pluggable terminal block, 24V DC

RT2-TX/FX (943 658-002)
RT2-TX/FX-SM (943 658-032)
1x 100Base-TX, RJ45 and 1x 100Base-FX, MM or SM, SC socket
1 pluggable terminal block, redundant 24V DC inputs), link loss alarm, power loss alarm, fault relay output

Fieldbus Transceivers/Fiber Modems

As not every network transmits Ethernet, Hirschmann has developed a series of copper-fiber converters (also often referred to as fiber modems), permitting users to extend the range of their fieldbus signals beyond the limitations of copper.
Please note that the devices below are not protocol converters - they simply extend the reach of the fieldbus by converting a protocol from copper to fiber and then back again to the same protocol.

RS485 Transceiver

OZD 485 G12	943 776-321	1 electrical and 2 optical ports, multimode - redundant ring capable
OZD 485 G12-1300	943 777-321	1 electrical and 2 optical ports, singlemode - redundant ring capable
OZD 485 G12 BASIC	943 893-321	1 electrical and 2 optical ports, multimode
OZD 485 G12 PRO	943 894-321	1 electrical and 2 optical ports, multimode - redundant ring capable
OZD 485 G12-1300 PRO	943 895-321	1 electrical and 2 optical ports, singlemode - redundant ring capable

Profibus Transceiver

OZD PROFI 12M P11	943 728-221	For plastic fiber, 1 electrical and 1 optical port
OZD PROFI 12M P12	943 728-321	For plastic fiber, 1 electrical and 2 optical ports - redundant ring capable
OZD PROFI 12M G11	943 727-221	1 electrical and 1 optical port, multimode
OZD PROFI 12M G12	943 727-321	1 electrical and 2 optical ports, multimode - redundant ring capable
OZD PROFI 12M G12 EEC	943 730-321	1 electrical and 2 optical ports, multimode - redundant ring capable, EEC*
OZD PROFI 12M G11 1300	943 729-221	1 electrical and 1 optical port, singlemode
OZD PROFI 12M G12 1300	943 729-321	1 electrical and 2 optical ports, singlemode - redundant ring capable
OZD PROFI 12M G12 1300 EEC	943 256-321	1 electrical and 2 optical ports, singlemode - redundant ring capable, EEC*

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

Genius Transceiver

OZD GENIUS G12	933 989-021	1 electrical and 2 optical ports - redundant ring capable
OZD GENIUS G12 1300	934 233-021	1 electrical and 2 optical ports, singlemode - redundant ring capable

Modbus+

MODBUS PLUS G12	943 740-021	1 electrical and 2 optical ports - redundant ring capable
MODBUS PLUS G12 1300	943 821-021	1 electrical and 2 optical ports, singlemode - redundant ring capable

Office/Enterprise-grade Switches

As Hirschmann is a true “boardroom to factory floor” networking company, part of the product offering includes high quality, high performance switches without the industrial ratings.
Available as simple managed 24-port managed switches, high-speed Gigabit switches, modular switches or high-end Layer3 switches, the Lion series of switches meets the needs of IT professionals.
The full-featured management and high traffic performance makes the Lion series compatible with larger office-grade brands while maintaining a more economical price.

Lion Rackmount Switch

LION-24TP	943 118-005	24x 100Base-TX Ports, RJ-45, with 2x Expansion Gigabit-capable Slots

Lion Modules

LION-01FX-MM	943 118-105	10/100 Uplink Module, 1x 100 Mbps MM, SC
LION-01FX-SM	943 118-205	10/100 Uplink Module, 1x 100 Mbps SM, SC
LION-GIGA-1SX	943 118-305	1000Base-SX module, 1x 1000 Mbps MM, SC
LION-GIGA-1LX	943 118-405	1000Base-LX module, 1x 1000 Mbps SM, SC
LION-GIGA-1T	943 118-505	1000Base-T module, 1x 10/100/1000 Mbps RJ45

GigaLion Gigabit Rackmount Switch

GigaLION-24TP	943 860-001	24x 10/100/1000 Base-TX Ports, RJ-45

SmartLion Modular Rackmount Switch

SmartLion-TP/FX	943 885-005	Up to 24x 10/100BASE-TX ports (RJ-45 connectors) or 24x 100BASE-FX (SC connectors) or mixed configuration TX/FX via modules, and two additional Gigabit Ethernet ports via uplink module. Media modules sold separately.

SmartLion Modules

SmartLion-XM-8TP	943 885-105	8x 10/100 Mbps RJ45
SmartLion-XM-8FX-MM	943 885-205	8x 100 Mbps MM, SC
SmartLion-XM-8FX-SM	943 885-305	8x 100 Mbps SM, SC
SmartLion-XM-2TP	943 885-405	2x 10/100/1000 Mbps RJ45
SmartLion-XM-2SFP	943 885-505	2x 1000 Mbps via SFP*

NOTE: SFPs need to be purchased separately (see Accessories on page 19 for SFPs).

PowerLion

PowerLion-24TP	943 886-001	Layer 3, 24x 10/100/1000 Mbps RJ45, 4 of which are Gigabit SFP combo ports*

PowerLion Modules

PowerLION-XM-C30	943 886-401	Stacking cable, 30 cm.
PowerLION-XM-C130	943 886-501	Stacking cable, 130 cm.
PowerLION-XM-10G	943 886-201	10 Gigabit uplink module - requires XENPAK-10G-LR below
XENPAK-10G-LR	943 886-901	10 Gigabit transceiver for use with above 10 Gigabit module

NOTE: SFPs need to be purchased separately (see Accessories on page 19 for SFPs).

BAT Wireless Access Point/Client

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 has an extensive feature list that sets it apart from your average commercially-available options:

- Rugged metal DIN rail mount housing
- Dual LAN - IEEE 802.11b/g and 802.11a/h
- Redundant WLAN connections
- Simultaneous transmission over separate frequencies (2.4 GHz and 5 GHz)
- Up to 108 Mbps bandwidth
- IEEE 802.11i and IEEE 802.1x security
- Redundant 24V DC power inputs (including IEEE 802.3af PoE support)
- Redundant connections using Spanning Tree
- Built-in IP routing, fast roaming and firewall
- -20° up to +50° (short-term up to +70°C)
- Includes two 3dBi dipole dual-band antennas and two 50 Ohm terminators

Contact Hirschmann for assistance with your wireless application

Access Point/Client

BAT54-RAIL	943 926-002*	DIN rail mounted access point w/ two front-mounted antennas

Antennas - 802.11a/b/g

BAT-ANT-N-6ABG	944 903-421	Omni-directional antenna suited for vehicle-mount, 2 meter cable

Antennas - 802.11a/h/n

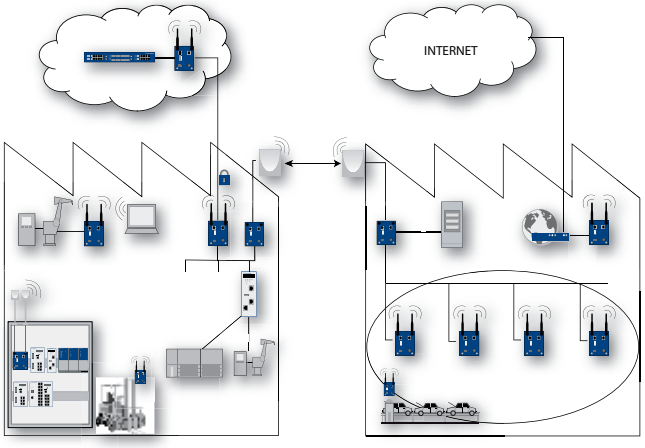
BAT-ANT-8A	943 903-301	Omni-directional antenna for 5 GHz, up to 8.0 dBi gain, 1 meter cable, N connector
BAT-ANT-N-12 A	943 903-320	Linear directional antenna for 5 GHz, up to 14.0 dBi gain, 1 meter cable, N connector
BAT-ANT-N-23/9 A	943 903-340	Linear directional antenna for 5 GHz, 23 dBi gain, 1 meter cable, N connector
BAT-ANT-TNC-10 A DS	943 903-330	Linear polarization directional diversity antenna for 5 GHz, 1.6 dBi gain, 2x 2 meter cable, TNC connector

Antennas - 802.11b/g

BAT-ANT-8G	943 903-401	Omni-directional antenna for 2.4 GHz, 8.0 dBi gain, 1 meter cable, N connector
BAT-ANT-TNC-8B/G DS	943 903-310	Linear polarization directional diversity antenna for 2.4 GHz, 1.5 dBi gain, 2x 2 meter cable, TNC connector
BAT-TNC-B-D-085-02	943 903-411	Linear directional antenna for 802.11g, w/out cable, 1.5 dBi gain, TNC female connector
BAT-ANT-N-14G	943 903-380	Directional antenna for 2.4 GHz, 1 meter cable, N connector
BAT-ANT-TNC-B-D-085-01	943 056-111	Circular polarized antenna for 2.4 GHz, 2 meter cable, TNC connector
BAT-ANT-TNC-B-D-085-02	943 903-411	Linear directional antenna for 2.4 GHz, 2 meter cable, TNC connector

Accessories

BAT SURGE ARRESTOR	943 903-370	5kA surge arrestor, N female to N female
BAT-CLB-7-TNC	943 903-501	Low signal loss cable, N male to TNC male - 7m
BAT-CLB-7-N	943 903-350	Low signal loss cable, N male to N male - 7m
BAT-PIGTAIL	943 903-360	0.2 meter pigtail, N female to RPSMA plug



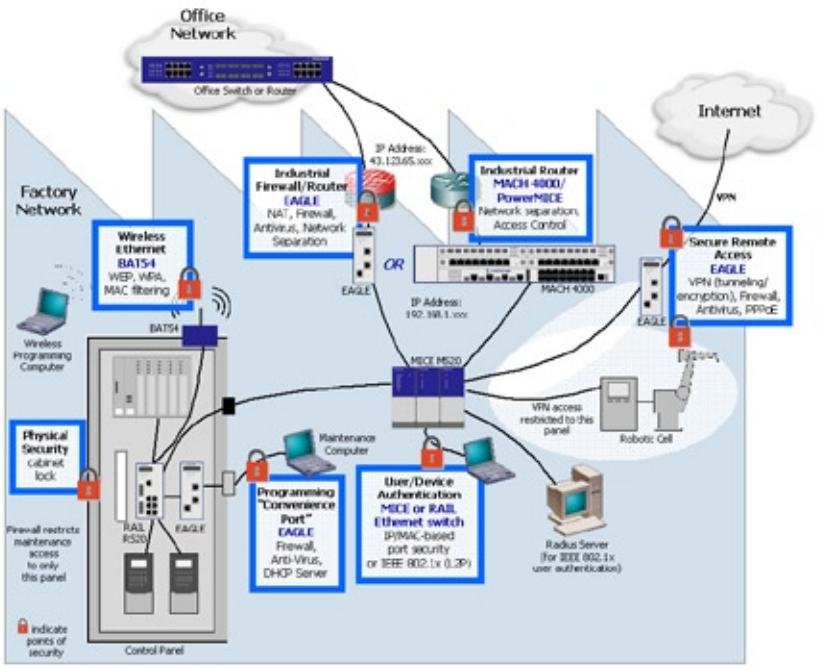
Note: For (Latin American) applications requiring the use of the European/non-FCC version of the BAT54-RAIL, please use part no. 943 926-001

EAGLE mGuard Firewall/VPN Router

A high Speed VPN, firewall, routing and anti-virus solution all in One Package, the Eagle allows users to achieve the highest level of security for industrial Ethernet networks.

All security functions are integrated into the self-contained independent EAGLE mGuard 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.

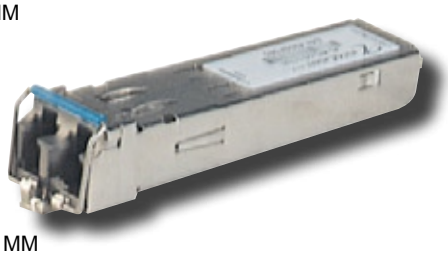
- Various media connection options (fiber and/or RJ45)
- Maximum data throughput via encrypted high speed VPN (250 tunnels)
- 1:1 NAT /Firewall
- DIN rail mount with 9.6V to 60V DC (redundant) inputs
- USB port supports configuration flash adapter
- Remote administration via Internet
- High capacity anti-virus ClamAV engine



		Trusted Port	Untrusted/Public Port
EAGLE mGuard VPN TX/TX	943 011-301	Twisted pair	Twisted pair
EAGLE mGuard TX/TX	943 011-311	Twisted pair	Twisted pair
EAGLE mGuard VPN TX/MM SC	943 011-302	Twisted pair	Multimode, SC
EAGLE mGuard TX/MM SC	943 011-312	Twisted pair	Multimode, SC
EAGLE mGuard VPN TX/SM SC	943 011-303	Twisted pair	Singlemode, SC
EAGLE mGuard TX/SM SC	943 011-313	Twisted pair	Singlemode, SC
EAGLE mGuard VPN TX/LH SC	943 011-304	Twisted pair	Long Haul, SC
EAGLE mGuard TX/LH SC	943 011-314	Twisted pair	Long Haul, SC
EAGLE mGuard VPN MM SC/TX	943 011-305	Multimode, SC	Twisted pair
EAGLE mGuard MM SC/TX	943 011-315	Multimode, SC	Twisted pair
EAGLE mGuard VPN MM SC/MM SC	943 011-306	Multimode, SC	Multimode, SC
EAGLE mGuard MM SC/MM SC	943 011-316	Multimode, SC	Multimode, SC
EAGLE mGuard VPN MM SC/SM SC	943 011-307	Multimode, SC	Singlemode, SC
EAGLE mGuard MM SC/SM SC	943 011-317	Multimode, SC	Singlemode, SC
EAGLE mGuard VPN MM SC/LH SC	943 011-308	Multimode, SC	Long Haul, SC
EAGLE mGuard MM SC/LH SC	943 011-318	Multimode, SC	Long Haul, SC

Accessories

SFPs (Small Form Pluggable transceivers)



100 Mbps Ethernet

M-FAST SFP-MM/LC	943 865-001	100BASE-FX, 5 km w/ 50/125 µm MM, 4 km w/ 62,5/12,5µm MM
M-FAST SFP-MM/LC EEC	943 945-001	100BASE-FX, 5 km w/ 50/125 µm MM, 4 km w/ 62,5/12,5µm MM
M-FAST SFP-SM/LC	943 866-001	100BASE-FX, 25 km w/ 9/125 µm SM
M-FAST SFP-SM/LC EEC	943 946-001	100BASE-FX, 25 km w/ 9/125 µm SM
M-FAST SFP-SM+/LC	943 867-001	100BASE-FX, 25-65 km w/ 9/125 µm SM
M-FAST SFP-SM+/LC EEC	943 947-001	100BASE-FX, 25-65 km w/ 9/125 µm SM
M-FAST SFP-LH/LC	943 868-001	100BASE-FX, 40-100 km w/ 9/125 µm SM
M-FAST SFP-LH/LC EEC	943 948-001	100BASE-FX, 40-100 km w/ 9/125 µm SM

Gigabit Ethernet

M-SFP-SX/LC	943 014-001	1000Base-SX, 550m w/ 50/125 µm MM, 275m w/ 62.5/125 µm MM
M-SFP-SX/LC EEC	943 896-001	1000Base-SX, 550m w/ 50/125 µm MM, 275m w/ 62.5/125 µm MM
M-SFP-LX/LC	943 015-001	1000Base-LX, 550m w/ 50/125 µm MM, 550m w/ 62.5/125 µm MM, 20km w/ 9/125 µm SM
M-SFP-LX/LC EEC	943 897-001	1000Base-LX, 550m w/ 50/125 µm MM, 550m w/ 62.5/125 µm MM, 20km w/ 9/125 µm SM
M-SFP-LH/LC	943 042-001	1x 1000Base-LX, 24-72km w/ 9/125 µm SM-LH
M-SFP-LH+/LC	943 049-001	1x 1000Base-LX, 60-120km w/ 9/125 µm SM-LH

10 **Gigabit Ethernet**

M-XFP-ZR/LC	943 921-001	1x 10GBASE-SX, 40-80 km w/ 9/125 µm SM
M-XFP-ER/LC	943 920-001	1x 10GBASE-SX, 10-40 km w/ 9/125 µm SM
M-XFP-LR/LC	943 919-001	1x 10GBASE-SX, 2-10 km w/ 9/125 µm SM
M-XFP-SR/LC	943 917-001	1x 10GBASE-SX, 33m w/ 50/125 µm MM or 300m w/ modal bandwidth 2000 [MHz x km] fiber

Power Supplies

RPS30	943 662-003	24V DC power supply w/ 1.3 A output
RPS80 EEC	943 662-080	24V DC power supply w/ 3.0 A output, -25 ºC to +70 ºC
RPS120 EEC	943 662-120	24V DC power supply w/ 4,5 A output, -25 ºC to +70 ºC
RPS60/48V EEC	943 952-001	48V DC PoE power supply w/ 1.25A output, -10 °C to +70 °C

Programming and Configuration Backup

ACA 21-USB	943 271-001	The ACA auto configuration adapter for managed OpenRail, MACH and Octopus (w/ adapter below) switches that enables easy commissioning and replacement.
Serial/Terminal Cable	943 301-001	This must-have tool permits management via switch's RJ11 serial port. Ownership of at least one is **highly** recommended for any user of managed OpenRail and MACH switches or EAGLE firewall.

Miscellaneous

19" DIN Rail Adapter	943 766-002	Allows for DIN rail mount switches to be mounted in a 19" rack

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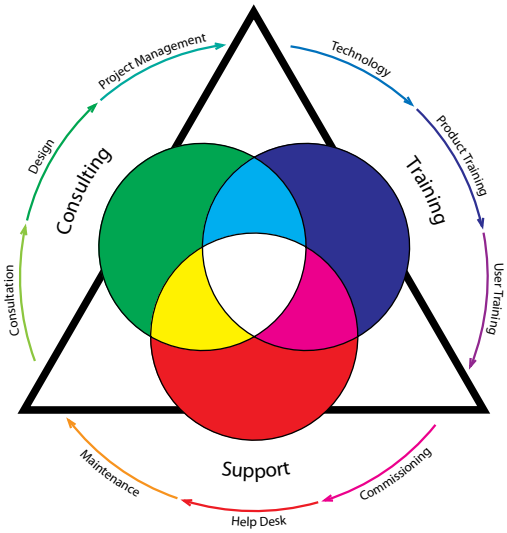
Networking Services



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 knows industrial networks and has the global network support structure to be there when it really counts.

Our Technical Services and Support 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 TSS team has their own field of technical expertise, ensuring that customers get the best to assist them and their company.

Please contact your Hirschmann representative regarding any technical services that you or your company may need.

Consultation and Design
- Network Topology & Hardware Design
- Network Security Design

Audit
- Network Traffic Analysis
- Network Security Analysis
- Network Redundancy Analysis
- Wireless Site Survey

Commissioning
- Pre-Delivery Device Configuration
- Product Installation, Configuration and Documentation
- Product and Network Testing
- Configuration to Protocol
- VLAN Configuration
- Product Security Configuration
- Disaster Recovery/Profile Backup Testing & Configuration

Maintenance
- Product Hardware & Software Upgrades
- Scheduled Network Traffic Analysis
- Scheduled Network Security Analysis

Technical Support
- Phone & On-site Consultation
- Warranty Support

Training
- Basic Ethernet and Networking
- Advanced Ethernet and Networking
- Management
- Security
- Wireless

CONTROL ENGINEERING customer satisfaction AWARD

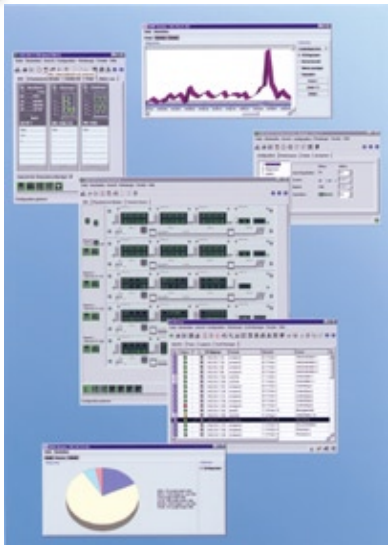
Customer Satisfaction 2007
Networking Hardware

Industrial Profiles

Available for OpenRail, MACH and Octopus, Hirschmann's Industrial Profiles are a recent addition to the managed switchs' 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 enable and disable individual ports automatically.
OpenRail users with firmware prior to 3.0 can upgrade simply by downloading and flashing the free firmware onto the switch.
For more information or for access to the firmware, please contact your local Hirschmann representative for more information.

Software

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 (instead of one at a time using a web-browser). Faults and network status information is clearly displayed via a interactive GUI, permitting users to make educated decisions and troubleshoot issues. HiVision also provides a wide variety of network statistics, including bandwidth utilization, and traffic levels.
Compatible with all managed OpenRail, MACH1000, MACH4000, Lion 24TP and PowerLion switches. HPUX versions available upon request.

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

Industrial HiVision Network Visualization Software

Ideally suited for the auditing and monitoring network connections and throughputs, Industrial HiVision's interface draws/illustrates the network as it sees the connections – switches, devices, PCs, printers, drives, I/O and more (even unmanaged devices/switches can be mapped).
Industrial HiVision provides real-time network load/utilization and link status information from multiple switches. Compatible with most brands of managed Ethernet devices that have an IP address.

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

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

Top Ten Reasons To Use Hirschmann

1. Robust
High performance circuitry means that less heat is generated. This means that there is no dependence on a fan for cooling and that the circuits have an extremely high MTBF (meantime between failure) while being able to operate at temperatures as high as 85°C.

2. Easy to Configure
Managed switches feature built-in (password protected) web interface. Configuration via SNMP and command line interface (CLI) is also available. Remote configuration and monitoring is possible through the network.

3. Fast Replacement
Fast switch replacement/MTTR (mean time to repair) using copy-cat and/or configuration archiving using USB drive.

4. IT-Compatible
Fully IT-compatible managed switch functionality with SNMP and RMON; compatible with industry standard network management tools and other brands of switches.

5. Media Redundancy Options
HiPer-Ring allows simplified redundant network topologies which will recover from media failure within 50 ms (Gigabit ring) or 300 ms (100 Mbps ring) – no software configuration is required. RSTP (Rapid Spanning Tree) and trunking/link aggregation redundancy is also available.

6. EtherNet/IP and PROFINET Profiles
Configure and monitor your managed Ethernet switches from within the PLC/HMI. For example, “over temperature”, “lost redundancy”, “link status”, and “security violation” could all be displayed on a PanelView Plus or other HMI.

7. Fault Contact(s)
97% of the switches include at least one configurable fault contact that can provide indication of lost power supply, lost link, lost redundancy, temperature out of limits, etc.

8. Broad Product Line
Managed and unmanaged switches (4 – 52 ports in an almost limitless copper/fiber mix), layer 3 routers, media converters, wireless, firewalls with VPN tunneling and network management software (SNMP & OPC).

9. Network “Visualization”
Industrial HiVision software allows for easy monitoring of the Ethernet network without IT knowledge. Capable of monitoring and alarming redundant ring status, bandwidth utilization, availability, etc. of switches and other Ethernet devices (e.g., Servers, PLC, HMI, I/O, drives) on the network.

10. Design Innovation
Continuous product introductions to meet expanding customer needs. This includes gigabit, industrial profiles, software tools, form factors (e.g., IP67 Octopus switch), USB port built into switch, etc.

HIRSCHMANN
A Belden Company

Leading industrial and mission-critical networking solutions

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INETOVED2 - October 2007